

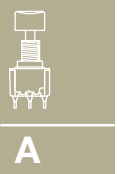


Pushbutton Product Selection Guide

Pushbutton									
Series	ELUM	EP	TP	E020	8020	E010	8060	8500	KM
Switch Type	Mom./Latching	Tiny	Tiny	Snap-acting Mom.	Snap-acting Mom.	Miniature	Alternate Action	Sub-miniature	Sub-miniature
Poles/Throws	SPDT	SPST, SPDT, DPST	SPST, SPDT, DPST	SPDT, DPDT	SPDT, DPDT, 3PDT, 4PDT	SPDT	SPDT, DPDT	SPST	SPST, SPDT
Max. Current	3.5 VA	1 Amp	1 Amp	1 Amp	1 Amp	4 Amps	6 Amps	3 Amps	1 Amp
Process Sealed		•		•		•		•	
Illuminated	•				•		•	•	
PCB Mount Options									
Thru-hole	•	•	•	•	•	•	•	•	•
Vertical		•	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	•	•	•
Surface Mount	•	•							
Panel Mount			•		•	•	•	•	•
Page No.	A-4	A-9	A-15	A-21	A-29	A-46	A-52	A-62	A-67

Pushbutton							
Series	8600	8700	GP	PN	PHB	F	NE-18
Switch Type	Micro-miniature	Over Travel	Ultra-miniature	Alternate & Mom. Action	Short Stroke	Alternate & Mom. Action	Mains / Power
Poles/Throws	SPST	SPST	SPST, SPDT	SPDT, DPDT, 4PDT	DPDT, 4PDT	DPDT, 4PDT, 6PDT, 8PDT, 10PDT	DPST, DPDT Varied
Max. Current	500 mA	1 Amp	0.4 VA	200 mA	100 mA	500 mA	6 A
Process Sealed			•				
PCB Mount Options							
Thru-hole	•	•	•	•	•	•	•
Vertical	•	•	•				
Right Angle			•	•	•	•	•
Surface Mount			•				
Panel Mount	•	•				•	•
Page No.	A-71	A-74	A-77	A-81	A-84	A-88	A-98

Pushbutton Product Selection Guide



A
Pushbutton

Pushbutton								
Series	FP	AP	HP	NP	PBA	PWR	PB	PS
Switch Type	Ultra Miniature	Industrial	Hall Effect	Sealed Power	Snap-acting Mom.	Momentary Detent	Miniature	Sub-miniature Microminiature
Poles/Throws	SPST	SPST	Linear Output	SPDT	DPST	SPST	DPDT 4PDT	SPDT DPDT
Max. Current	0.4 VA	400mA	10 mA	5 Amp	250mA	2 A	0.3A / 1A	0.1 / 1A 0.3 / 2A
Process Sealed	•	IP67	IP68	IP68		IP65		
PCB Mount Options								
Thru-hole	•	•		•	•		•	•
Vertical	•	•	•	•				•
Right Angle	•				•		•	•
Panel Mount		•	•	•				•
Wire Leads		•	•	•				
Solder Lug		•						
Surface Mount						•		
Quick Connect								
Page No.	A-107	A-110	A-116	A-118	A-125	A-128	A-129	A-137



A

Pushbutton

ELUM™ Series Right Angle Illuminated Latching Pushbutton

**LEAD FREE
COMPATIBLE OPTION**

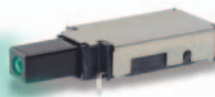
Features/Benefits

- SPDT (N.O. & N.C.)
- Low height above PCB
- Reliable self-cleaning contact
- Surface-mount or thru-hole PCB
- Standard or custom actuator
- Central LED illumination
- Latching or Momentary
- Long travel. Smooth feel
- RoHS compliant and compatible

Typical Applications

- Telecom network equipment
- Automotive electronics
- Consumer electronics
- Computer, server, modem, data storage
- Professional instrumentation, medical

Patent Numbers
6,974,924 B2 US
EP1583118B1 Europe



Materials

FIXED CONTACTS: Stainless steel, silver plated with gold flash
 TERMINALS: Stainless steel, silver plated
 MOVABLE CONTACTS: Copper alloy, silver plated with gold flash
 BASE: Glass filled LCP (UL94V-0)
 ACTUATOR: Glass filled nylon 4/6 (UL94V-0)
 COVER: Stainless steel

Electrical

MAXIMUM POWER: 3.5 VA
 MIN./MAX. VOLTAGE: 20 mV – 50 VDC
 MIN./MAX. CURRENT: 0.01 mA – 250 mA
 DIELECTRIC STRENGTH: ≥ 250 Vrms
 CONTACT RESISTANCE: ≤ 50 mΩ
 INSULATION RESISTANCE: ≥ 10⁹ Ω
 BOUNCE TIME: ≤ 1 ms
 LED SPECIFICATIONS: See page A-5

Mechanical

OPERATING FORCE: 2.5 N at Full Travel
 SWITCHING TRAVEL: .067" (1.7 mm)
 LATCH TRAVEL: .131" (3.6 mm)
 FULL TRAVEL: .200" (5.1 mm)

Operating Environment

OPERATING TEMPERATURE: -40°C TO 80°C.
 STORAGE TEMPERATURE: -40°C TO 80°C.
 RELATIVE HUMIDITY: 90% R.H. @ 80°C.
 OPERATING LIFE: 30,000 Cycles.
 VIBRATION: Per EIA 186-E Method
 MECHANICAL SHOCK: Per EIA 186-E Method 12.
 OVERLOAD: Withstands 40 N for 1 minute without damage

Process Environment

SOLDERABILITY: According to Mil STD 202F Method 208D or EIA RS-186E Method 9.
 LEAD FREE PROCESS COMPATIBLE: 260°C peak, 10 seconds Max. above 250° C.
 WASHING PROCESS: No clean process compatible (SMT)
 Bottom wash compatible (Thru-hole)
 SHEAR TEST (SWITCH/PCB): > 40 N

Packaging

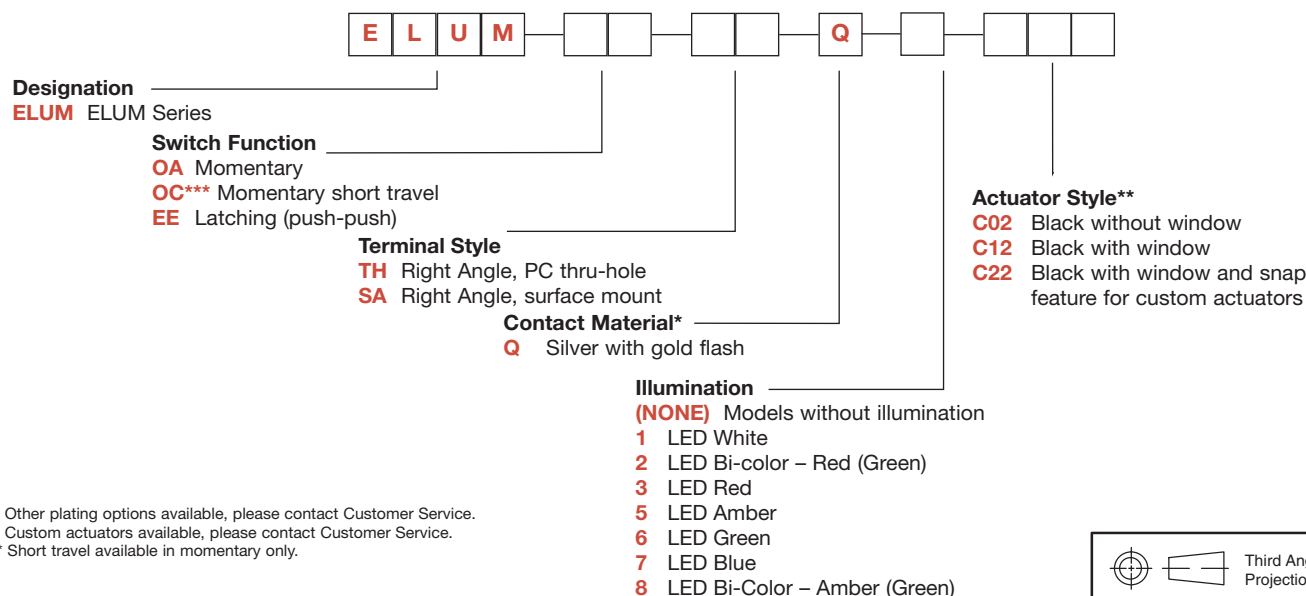
"SA" Terminal Style SMT: Tape and reel per EIA 481-2 (450/reel)
 "TH" Terminal Style PC: Tray (60/tray)

NOTE: Any models supplied with Q, contact material are RoHS compliant.

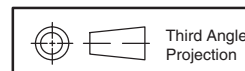
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



* Other plating options available, please contact Customer Service.
 ** Custom actuators available, please contact Customer Service.
 *** Short travel available in momentary only.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ELUM™ Series Right Angle Illuminated Latching Pushbutton

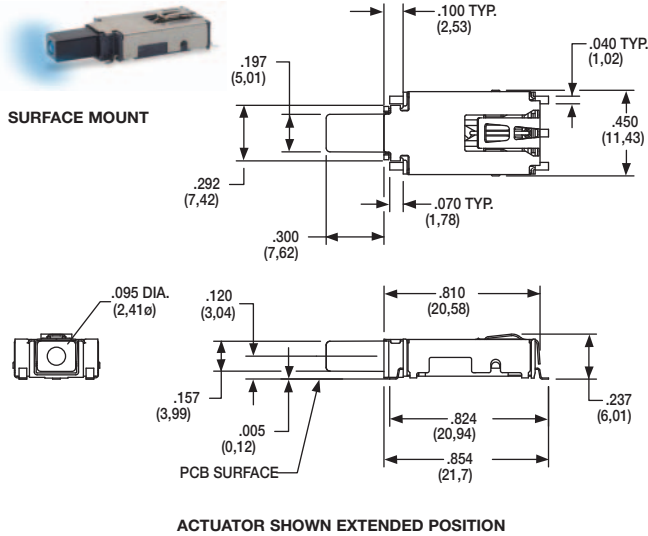


A

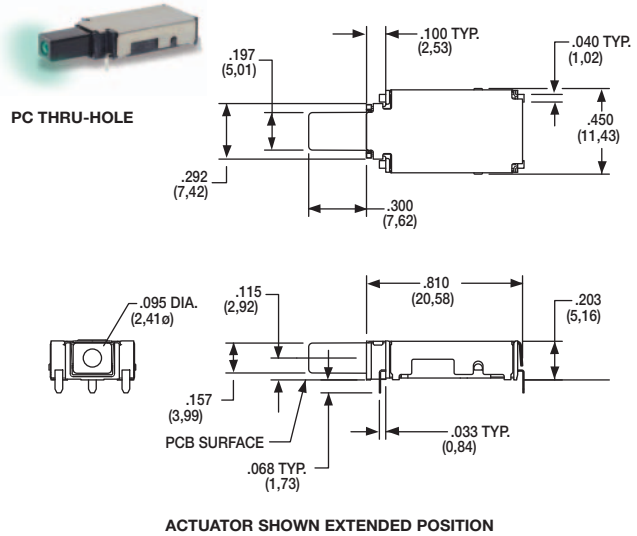
Pushbutton

STANDARD OPTIONS

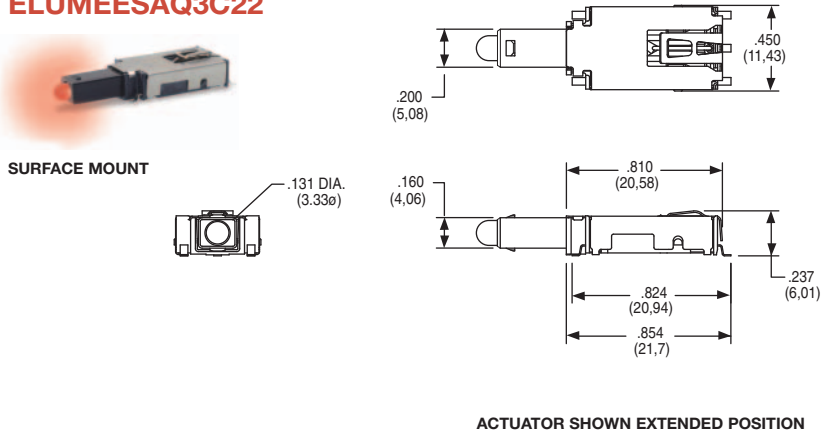
ELUMEESAQ7C12



ELUMOATHQ6C12



ELUMEESAQ3C22



DESIGNATION **ELUM** □ □ □ □ □ □ □ □ □ □

ELUM ELUM SERIES, Illuminated Latching Pushbutton

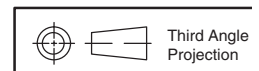
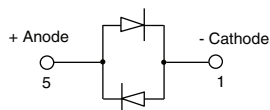
SWITCH FUNCTION **■** □ □ □ □ □ □ □ □ □ □

OPTION CODE	NO. OF POLES	POSITION 1	CONNECTED TERMINALS	POSITION 2	CONNECTED TERMINALS	SCHEMATIC
		SWITCH FUNCTION		SWITCH FUNCTION		
OA / OC	SP Momentary	ON	3 - 4	ON (Mom.)	3 - 2	
EE	SP Latching (Push-Push)	ON	3 - 4	ON	3 - 2	

For SPST N.O. function, only terminals 3 & 2 are used.
 For SPST N.C. function, only terminals 3 & 4 are used.
 Circuit: Make before break

LED pins 1 & 5 are independent of switch function.

NOTE:
 For bi-color LED's the polarity must be reversed to alternate the color



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

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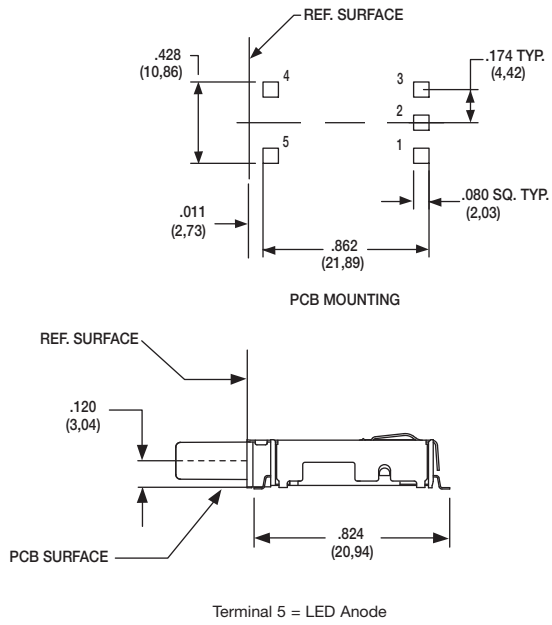
ELUM™ Series Right Angle Illuminated Latching Pushbutton

Pushbutton
A

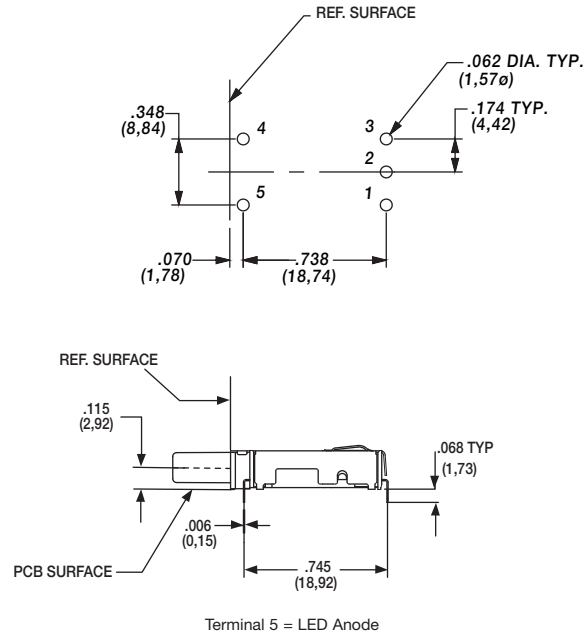
TERMINAL STYLE



SA RIGHT ANGLE, SURFACE MOUNT



TH RIGHT ANGLE, PC THRU-HOLE



CONTACT MATERIAL



OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
Q	SILVER WITH GOLD FLASH	SILVER	250 mA

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

FIXED CONTACTS AND TERMINALS: Stainless steel, silver plated with gold flash

MOVABLE CONTACTS: Copper alloy, silver plated with gold flash

NOTE: Any models supplied with Q, contact material are RoHS compliant.

ILLUMINATION



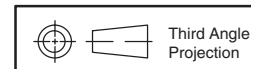
OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY* MIN	TYPICAL INTENSITY* MAX	PEAK WAVELENGTH	Vf Forward Voltage
		(mcd)		(nm)	
0	Model without illumination	N/A		N/A	
1	LED Super White	4,000	5,000	N/A	3.5
2	LED Bi-Color – Red (Green)	10	20	635/565	2.0
3	LED Red	4	8	700	2.0
5	LED Amber	35	50	610	2.0
6	LED Green	35	50	565	2.0
7	LED Super Blue	800	1,500	470	3.8
8	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

*LED FORWARD CURRENT: 20 mA

LED FORWARD VOLTAGE: see chart above

LED REVERSE VOLTAGE: 5.0 V MAX

* For information on specific and custom LED, please contact Customer Service.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ELUM™ Series Right Angle Illuminated Latching Pushbutton



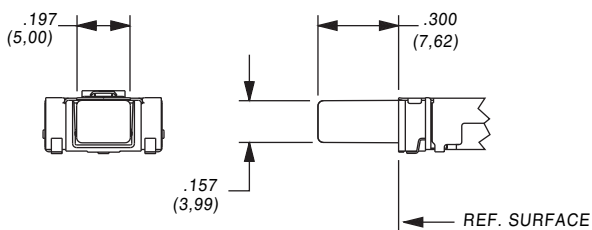
A

Pushbutton

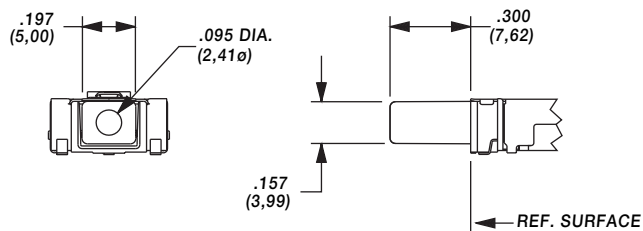
ACTUATOR STYLE*



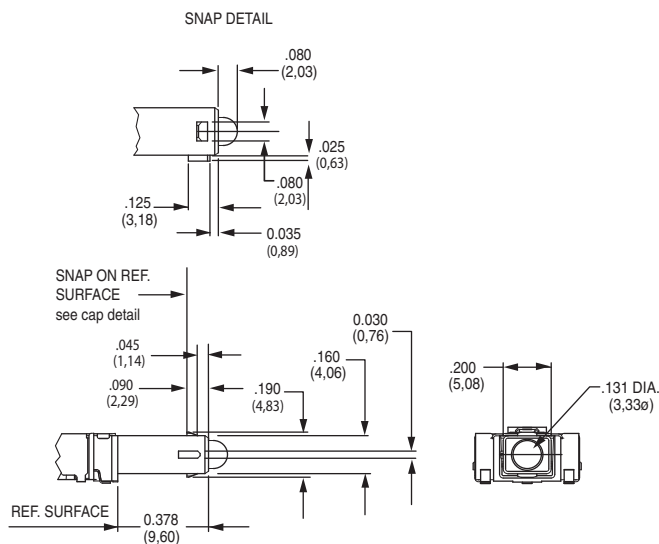
C02 BLACK WITHOUT WINDOW



C12 BLACK WITH WINDOW

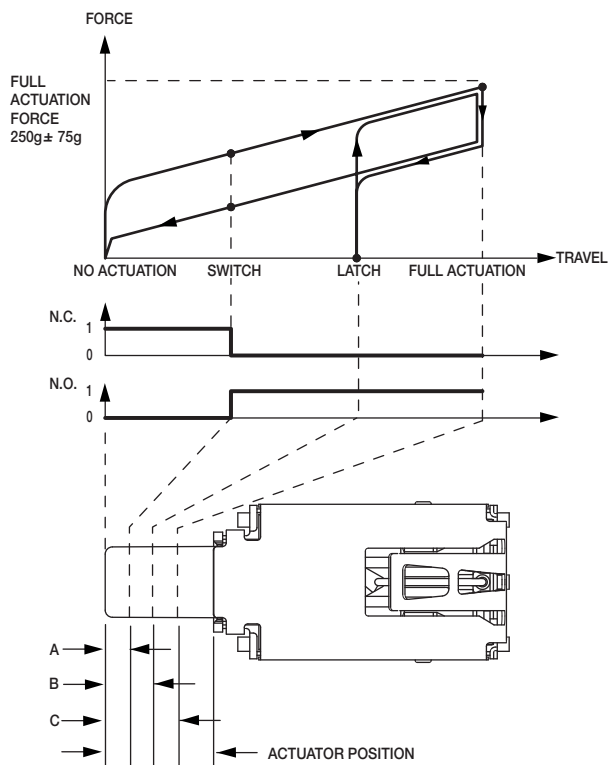


C22 BLACK WITH WINDOW AND SNAP FEATURE TO ACCEPT CUSTOM CAP



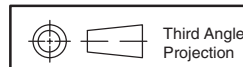
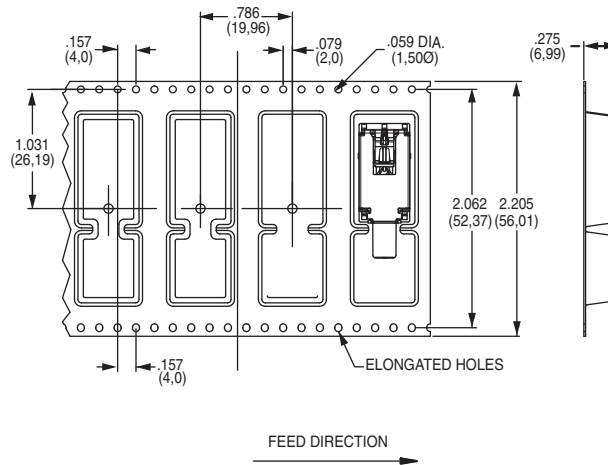
* Custom actuators available, please contact Customer Service.

FORCE TRAVEL DIAGRAM



OA, EE ACTUATOR POSITION			
A	SWITCH POINT	.067 ± .020	1,7 ± 0.5mm
B	LATCH	.131 ± .020	3,3 ± 0.5mm
C	FULL ACTUATION	.200 ± .020	5,1 ± 0.5mm
OC ACTUATOR POSITION			
A	SWITCH POINT	.067 ± .020	1,7 ± 0.5mm
C	FULL ACTUATION	.098 ± .020	2,5 ± 0.5mm

TAPE & REEL



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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ELUM™ Series Right Angle Illuminated Latching Pushbutton

AVAILABLE HARDWARE

Pushbutton
A

Cap



PART NO.

957C00000 High temperature black cap with universal standby symbol

956C02000 High temperature black cap with no symbol

Material: 4/6 Nylon SMT compatible

Cap



PART NO.

181D01000 Paint and Laser Etched with black paint and universal standby symbol

Material: Clear polycarbonate

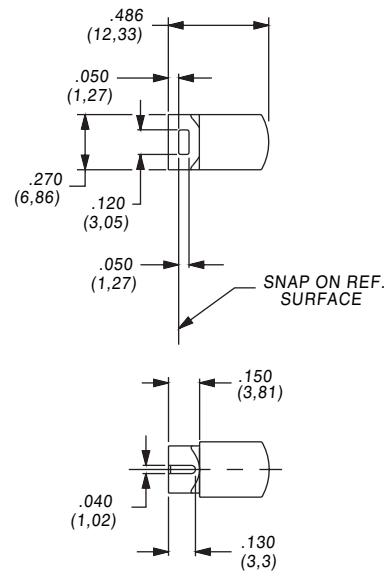
Cap



PART NO.

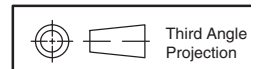
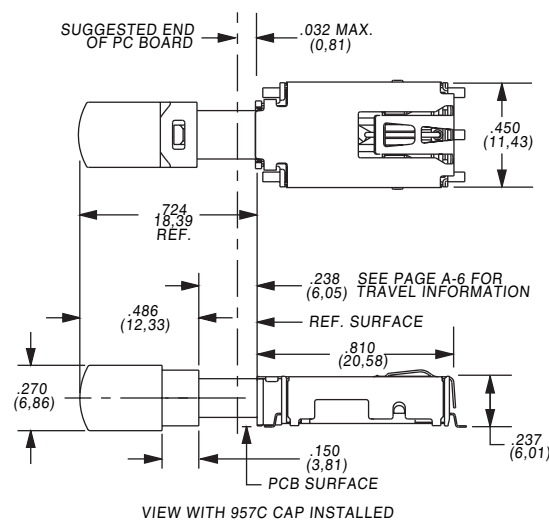
181D00000 Paint and laser etched with white paint underlay and black paint with universal standby symbol.

Material: Clear polycarbonate



NOTE: Caps are for use with the C22 actuator style. Other colors and symbols available, consult Customer Service Center.

CAP INSTALLATION



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

EP Series Sealed Tiny Pushbutton Switches



A

Pushbutton

Features/Benefits

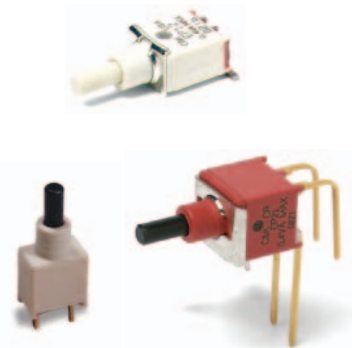
- Sealed against solder & cleaning processes
- Thru-hole and surface mount models
- Snap-fitting actuator accepts standard caps
- Tape & reel packaging available
- RoHS compliant models available



Models Available

Typical Applications

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page A-13 for additional ratings.

ELECTRICAL LIFE: EP11, EP21 models: 60,000 make-and-break cycles at full load. EP12 models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹ Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

PACKAGING: Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-14 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

Materials

CASE & BUSHING: High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) on EP11 / EP12 models; glass filled nylon 6/6 on EP21.

PLUNGER: Thermoplastic polyester or glass filled nylon (UL 94V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled LCP (UL 94V-0).

SWITCH SUPPORT: Brass, matte-tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-13 for additional contact materials.

TERMINAL SEAL: Epoxy.

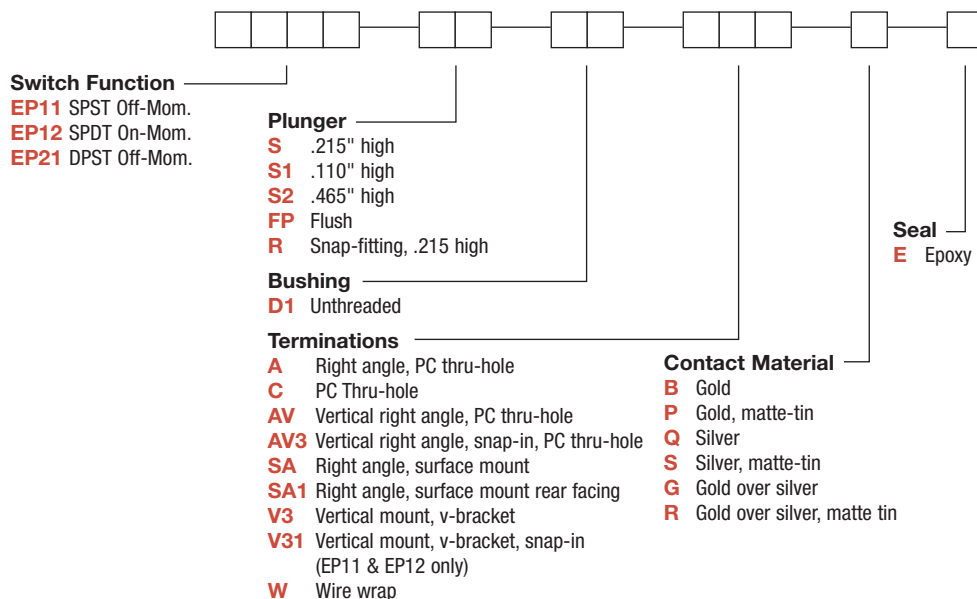
NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

CAUTION: PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-10 thru A-14. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



EP Series Sealed Tiny Pushbutton Switches

Pushbutton A

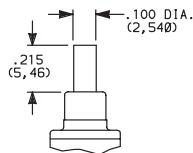
SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	EP11	OFF	MOM.	OPEN	1-3	SPST
	EP12	ON	MOM.	2-1	2-3	SPDT
SPDT <p>Part number shown: EP12SD1CBE</p>						
DP	EP21	OFF	MOM.	OPEN	1-3,4-6	DPST
DPST <p>Part number shown: EP21SD1CBE</p>						

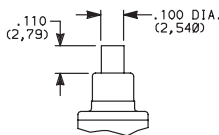
MOM. = Momentary
 All models with all options when ordered with G, Q, R or S contact material.

PLUNGER

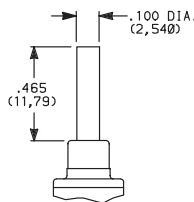
S .215" HIGH



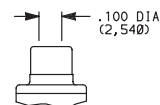
S1 .110" HIGH



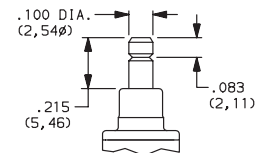
S2 .465" HIGH



FP FLUSH PLUNGER



R SNAP-FITTING



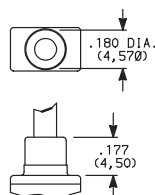
S1 & S2 actuators are not available with EP12 & EP21 models.

FP & R actuators are not available with EP21 model.

NOTE: Caps available for plunger options, see page A-14.

BUSHING

D1 UNTHREADED



NOTE: Internal actuator o-ring standard.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



EP Series Sealed Tiny Pushbutton Switches

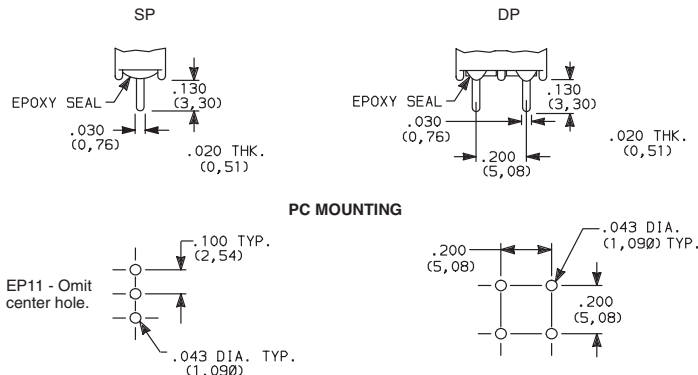


A
Pushbutton

TERMINATIONS

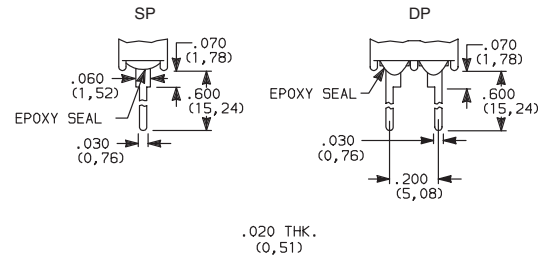


C PC THRU-HOLE



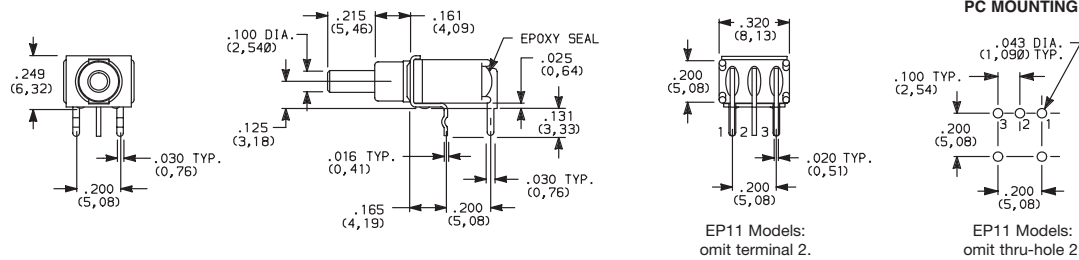
SP and DP

W WIRE WRAP



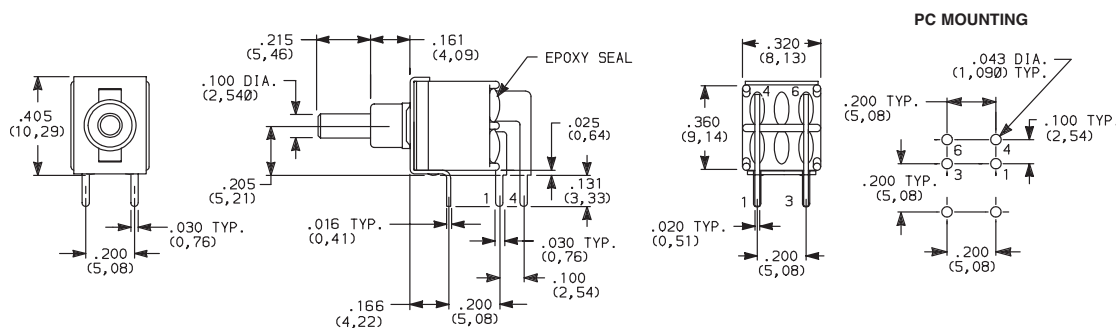
SP and DP

A RIGHT ANGLE, PC THRU-HOLE



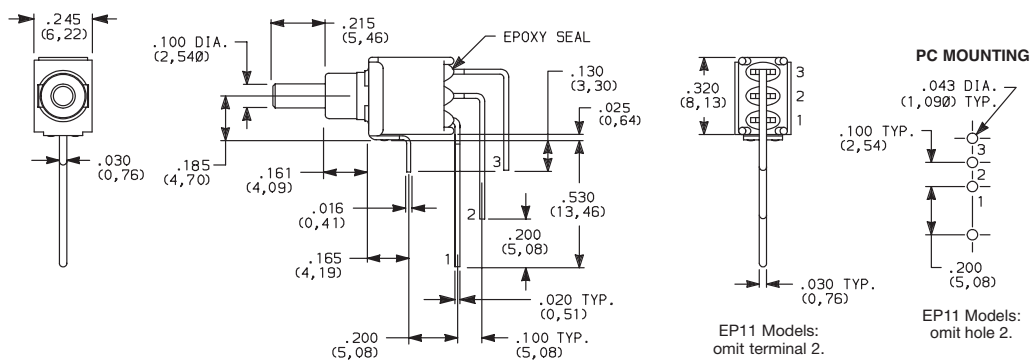
EP12SD1ABE
SPDT

A RIGHT ANGLE, PC THRU-HOLE



EP21SD1ABE
DPST

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



EP12SD1AVBE
SPDT

NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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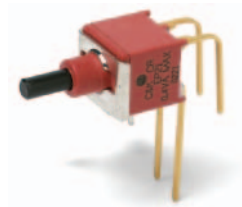
EP Series Sealed Tiny Pushbutton Switches

Pushbutton

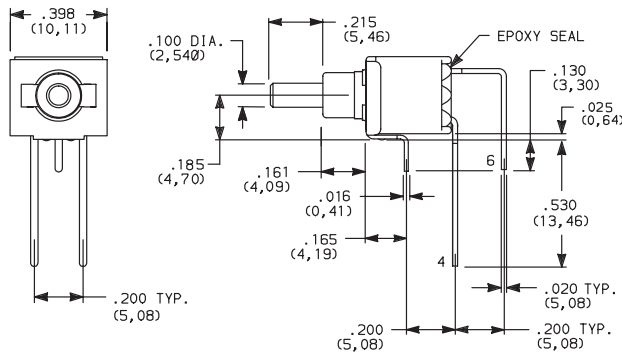
A

TERMINATIONS

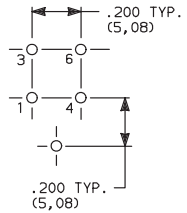
AV VERTICAL RIGHT ANGLE, THRU-HOLE



EP21SD1AVBE DPST



PC MOUNTING

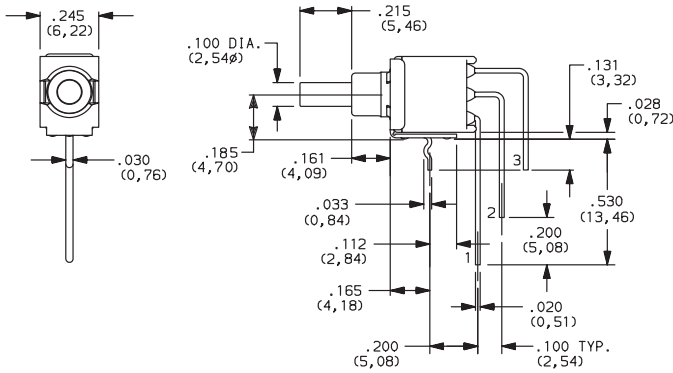


NOTE: Terminal bend radii and lead-in manufacturing option.

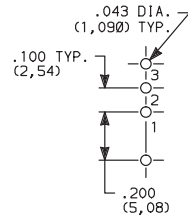
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



EP12SD1AV3BE SPST



PC MOUNTING

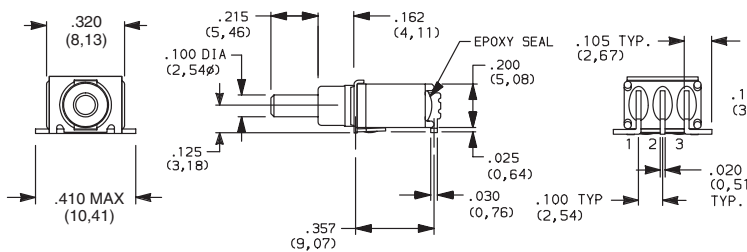


EP11 Models: omit hole 2.

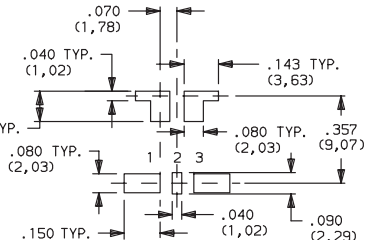
SA RIGHT ANGLE, SURFACE MOUNT



EP12SD1SAPE SPDT



PC MOUNTING



EP11 Models: omit pad 2.

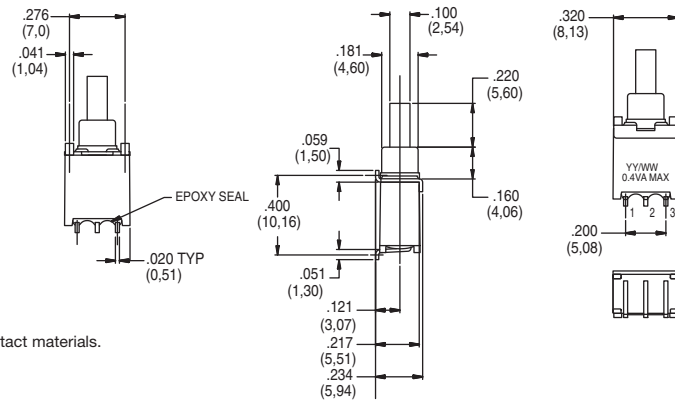
Available with P contact material only. Not Available on DPST models.

EP11 Models: omit terminal 2.

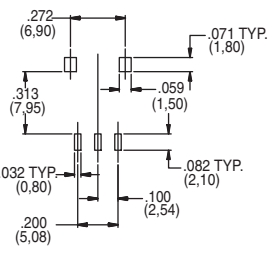
SA1 RIGHT ANGLE, SURFACE MOUNT



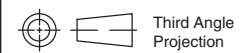
EP12SD1SA1BE SPDT



PC MOUNTING



SA1 is only available with B and P contact materials. Not Available on DPST models.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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EP Series Sealed Tiny Pushbutton Switches



A

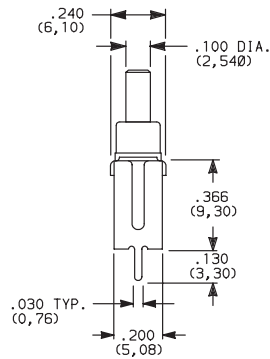
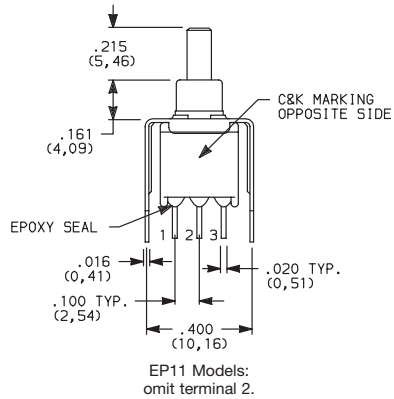
Pushbutton

TERMINATIONS

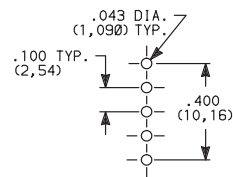


V3 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING

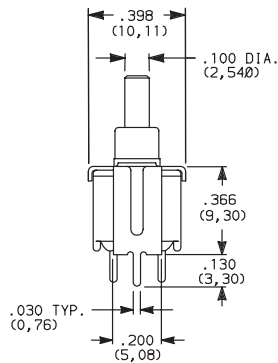
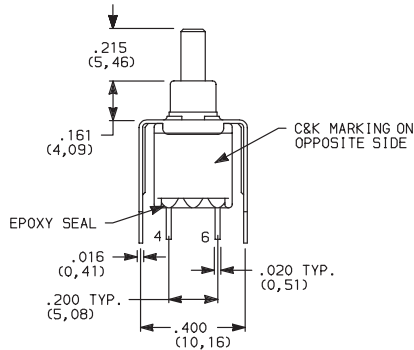


EP11 Models: omit centerhole.

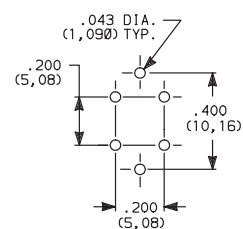


EP12SD1V3BE SPDT

V3 VERTICAL MOUNT, V-BRACKET



PC MOUNTING



EP21SD1V3BE DPST

CONTACT MATERIAL



OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	1 AMP @ 120 V AC OR 28 V DC.
S		MATTE-TIN ⁶		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁶		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

² END CONTACTS: Coin silver, with gold plate over nickel plate.

³ CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

⁶ TERMINALS: Copper alloy, with matte tin over nickel plate.

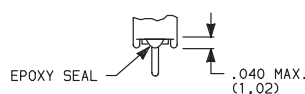
NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

All models with all options when ordered with G, S, R or Q contact material.

SEAL



E EPOXY SEAL



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

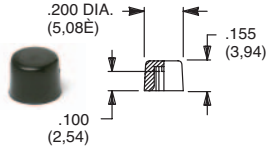


EP Series Sealed Tiny Pushbutton Switches

Pushbutton
A

AVAILABLE HARDWARE

Cap



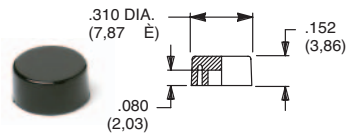
PART NO.

508101000 WHITE
508102000 BLACK
508103000 RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap



PART NO.

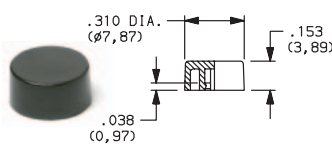
465801000 WHITE
465802000 BLACK
465803000 RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap

Compatible with snap-fitting plungers
EP11 & EP12 Models. R option only.



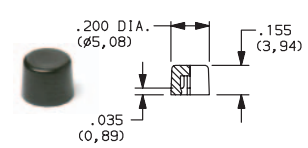
PART NO.

585A01000 WHITE
585A02000 BLACK
585A03000 RED

Material: Nylon
Finish: Gloss

Cap

Compatible with snap-fitting plungers
EP11 & EP12 Models. R option only.



PART NO.

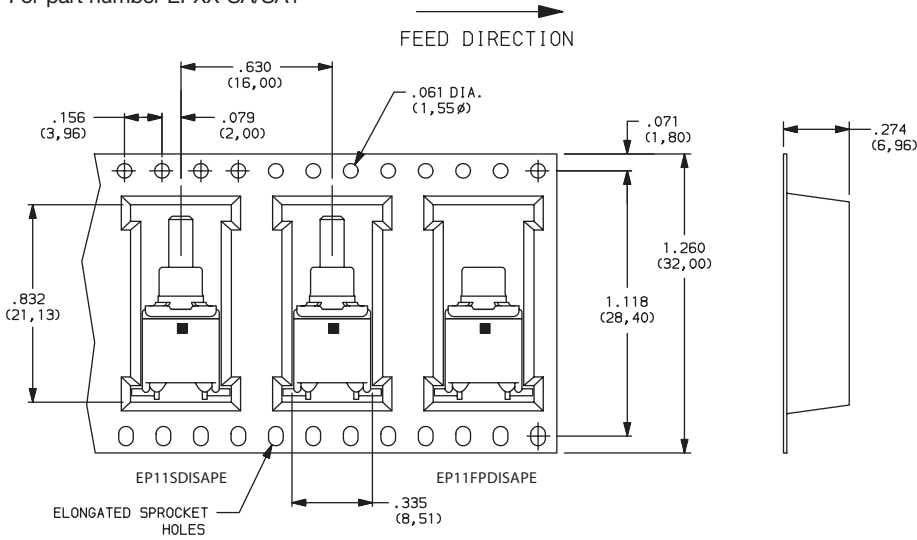
785A01000 WHITE
785A02000 BLACK
785A03000 RED

Material: Nylon
Finish: Gloss

NOTE: Other colors available, consult Customer Service Center.

TAPE & REEL

For part number EPXX-SA/SA1



REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

TP Series Tiny Pushbutton Switches



A
Pushbutton

Features/Benefits

- **Subminiature size**—capable of switching 1 AMP
- **Vertical & right angle terminations**
- **PC & panel mount models**
- **Snap-in front panel mounting available**
- **Epoxy terminal seal-compatible with bottom wash cleaning**
- **RoHS compliant models available**



Models Available

Typical Applications

- **Telecommunications and networking equipment**
- **Computers and peripherals**
- **Instrumentation and controls**



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-19 for additional ratings.

ELECTRICAL LIFE: TP11, TP21 MODELS: 60,000 make-and-break cycles at full load. TP12 MODELS: 30,000 cycles.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with Q, B, P, R or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 4/6 or 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0).

PLUNGER: Thermoplastic polyester (UL 94V-0).

CAP & FRAME: Nylon, black standard.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, matte-tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page A-19 for additional contact materials.

CENTER CONTACT & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page A-19 for additional contact materials.

TERMINAL SEAL: Epoxy. Refer to soldering and cleaning in Technical Data Chapter

HARDWARE: Nut & Locking Ring: Brass nickel plated.
Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-16 thru A-20. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.

<p>Switch Function</p> <p>TP11 SPST Off-Mom.</p> <p>TP12 SPDT On-Mom.</p> <p>TP21 DPST Off-Mom.</p>	<p>Actuator or Bushing</p> <p>SH .155" high plunger, threaded, .220" high bushing, flat</p> <p>SH8 .155" high plunger, unthreaded, .220" high bushing, round</p> <p>SH9 .155" high plunger, unthreaded, .220" high bushing, flat</p> <p>J81 Snap-in with frame</p> <p>LT .215" high plunger, threaded, .310" high bushing, flat</p> <p>LT9 .215" high plunger, unthreaded, .310" high bushing, flat</p> <p>MS9 .130" high plunger, .020" high bushing, round</p>	<p>Terminations</p> <p>A Right angle, PC thru-hole</p> <p>C PC Thru-hole</p> <p>Z Solder lug</p> <p>AV Vertical right angle, PC thru-hole</p> <p>V3 Vertical mount, v-bracket</p> <p>W Wire wrap</p>	<p>Seal</p> <p>E Epoxy</p>	<p>Cap Color</p> <p>2 Black</p> <p>NONE Models with no cap</p> <p>1 White</p>	<p>Contact Material</p> <p>B Gold</p> <p>P Gold, matte-tin</p> <p>Q Silver</p> <p>G Gold over silver</p> <p>R Gold over silver, matte-tin</p>	<p>Frame Color</p> <p>2 Black</p> <p>NONE Models with no frame</p>
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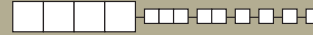
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



TP Series Tiny Pushbutton Switches

Pushbutton
A

SWITCH FUNCTION

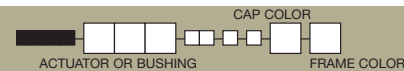


NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	TP11	OFF	MOM.	OPEN	1-3	SPST 1 2 3
	TP12	ON	MOM.	2-1	2-3	SPDT NC 1 2 (COMMON) 3 NO
SPDT 						
DP	TP21	OFF	MOM.	OPEN	1-3,4-6	DPST 1 3 4 6
DPST 						

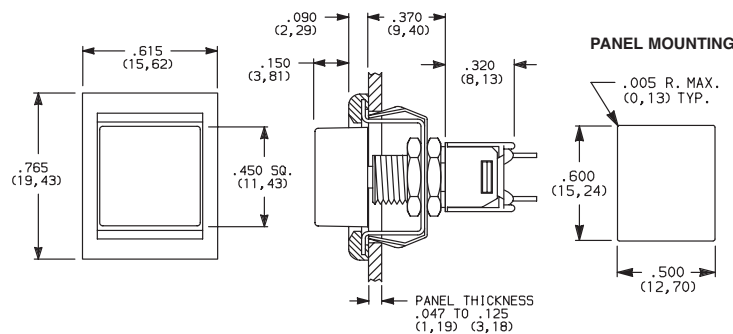
MOM. = Momentary

All models with all options when ordered with G, Q or R contact material.

ACTUATOR—SNAP-IN FRONT MOUNT



J81 SNAP-IN WITH FRAME



OPTION CODE	CAP COLOR
2	BLACK
1	WHITE

OPTION CODE	FRAME COLOR
2	BLACK
NONE	No Frame Color (J80 option)

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.
NOTE: Available with Z, C, or W terminations.

NOTE: Caps & frames available separately, see page A-20.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



TP Series Tiny Pushbutton Switches



A

Pushbutton

SH .155" HIGH PLUNGER,
.220" HIGH BUSHING,
THREADED, FLAT

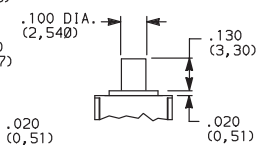
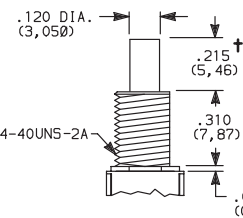
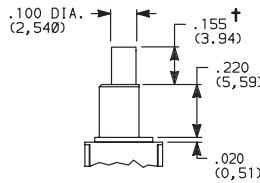
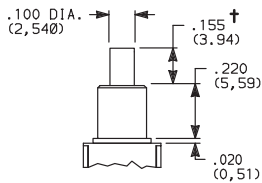
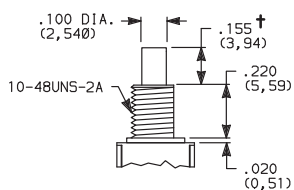
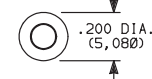
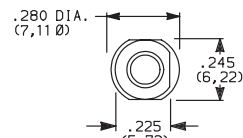
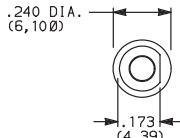
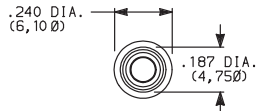
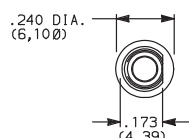
SH8 .155" HIGH PLUNGER,
.220" HIGH BUSHING,
UNTHREADED

SH9 .155" HIGH PLUNGER,
.220" HIGH BUSHING,
UNTHREADED, FLAT

LT .215" HIGH PLUNGER,
.310" HIGH BUSHING,
THREADED

MS9 .130" HIGH
PLUNGER

LT9 .215" HIGH PLUNGER,
.310" HIGH BUSHING,
UNTHREADED



Standard with Z, C, W terminations.

Standard with A, AV, V3 terminations.

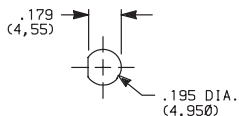
Not available with Z terminations.

† Subtract .016 (0,41) for models with A, AV or V3 terminations.

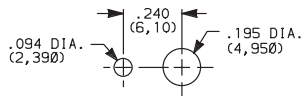
NOTE: Caps available for plunger options, see page A-20.

PANEL MOUNTING

10-48 BUSHING

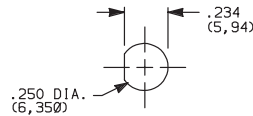


Without locking ring

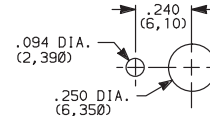


With standard locking ring

1/4 IN. BUSHING



Without locking ring

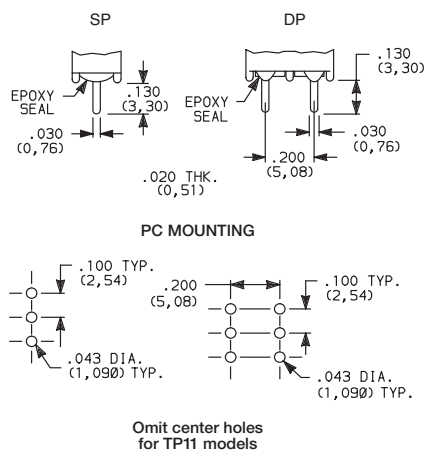


With standard locking ring

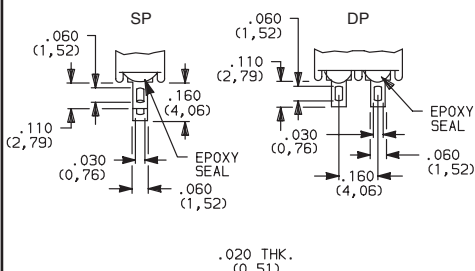
NOTE: One mounting nut, locking ring and lockwasher supplied standard with 10-48 threaded bushings (two nuts with 1/4-40 bushings). Optional mounting nut and locking ring styles and finishes available separately, see section "Technical Data and Additional Hardware".

TERMINATIONS

C PC THRU-HOLE

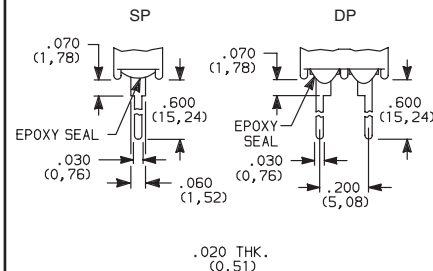


Z SOLDER LUG



Not available with MS9 bushing or P or R contact material.

W WIRE WRAP



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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TP Series Tiny Pushbutton Switches

TERMINATIONS



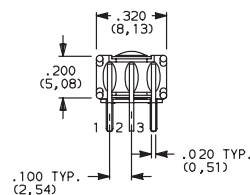
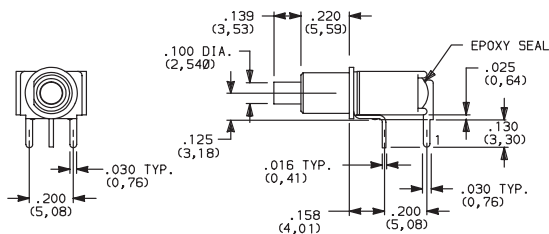
Pushbutton

A

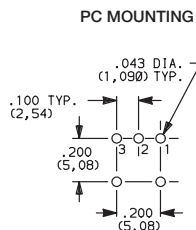
A RIGHT ANGLE, PC THRU-HOLE



**TP12SH9ABE
SPDT**

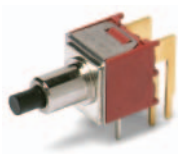


**TP11 Models:
omit terminal 2.**

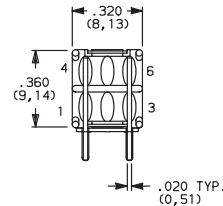
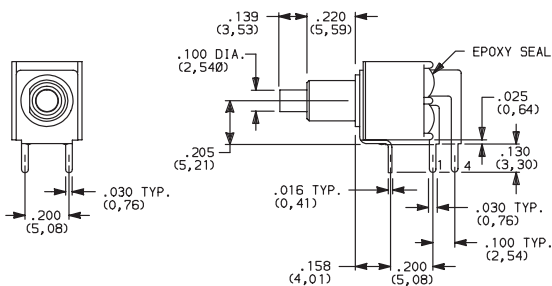


**TP11 Models:
omit hole 2.**

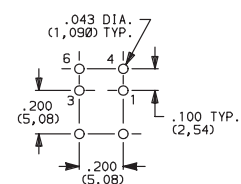
A RIGHT ANGLE, PC THRU-HOLE



**TP21SH9ABE
DPST**



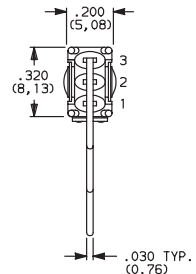
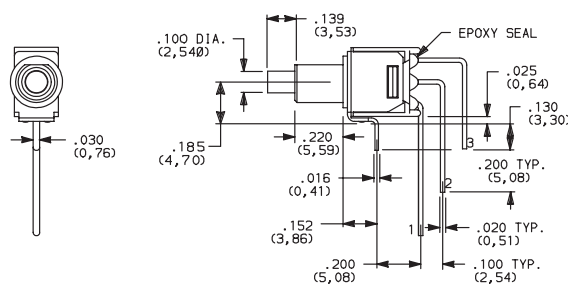
PC MOUNTING



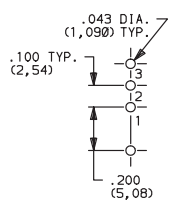
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



**TP12SH9AVBE
SPDT**



PC MOUNTING



**TP11 Models:
omit hole 2.**

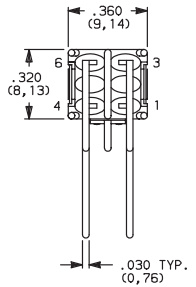
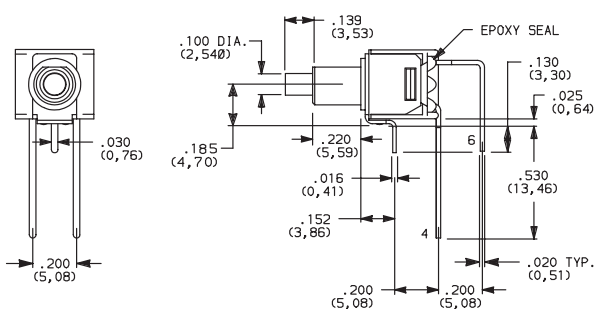
**TP11 Models:
omit terminal 2.**

NOTE: Terminal bend radii and lead-in manufacturing option.

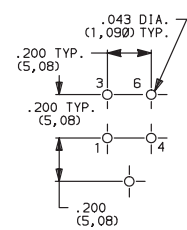
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



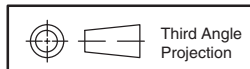
**TP21SH9AVBE
DPST**



PC MOUNTING



NOTE: Terminal bend radii and lead-in manufacturing option.



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

TP Series Tiny Pushbutton Switches

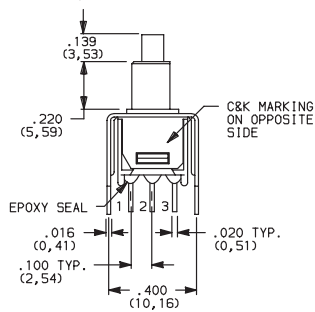


A

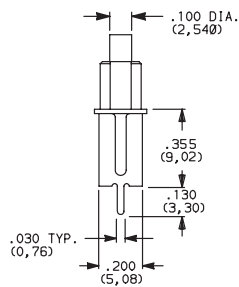
Pushbutton

TERMINATIONS

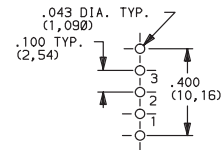
V3 VERTICAL MOUNT, V-BRACKET



TP11 Models:
omit terminal 2.



PC MOUNTING

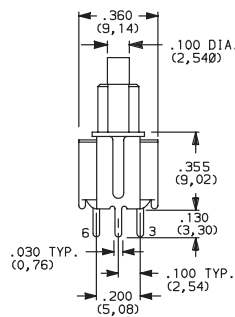
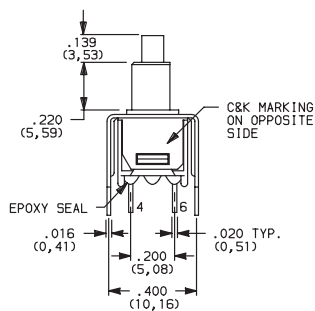


TP11 Models:
omit hole 2.

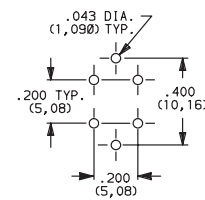


TP12SH9V3BE
SPDT

V3 VERTICAL MOUNT, V-BRACKET



PC MOUNTING



TP21SH9V3BE
DPST

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	1 AMP @ 120 V AC OR 28 V DC.
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁶		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

² END CONTACTS: Coin silver, with gold plate over nickel plate.

³ CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

⁶ TERMINALS: Copper alloy, with matte-tin over nickel plate.

NOTE: Any models supplied with P, R, Q, B or G contact material are RoHS compliant.

All models with all options when ordered with R, G, or Q contact material.

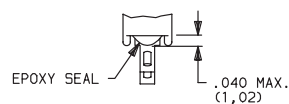
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations

P, R contact materials not available with Z terminations.

SEAL

E EPOXY SEAL



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

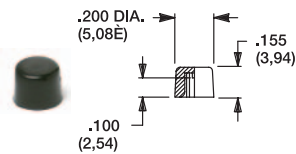


TP Series Tiny Pushbutton Switches

Pushbutton
A

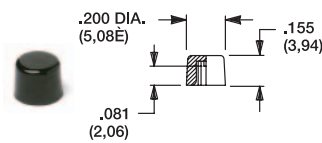
AVAILABLE HARDWARE

Cap, .100" DIA. Plungers



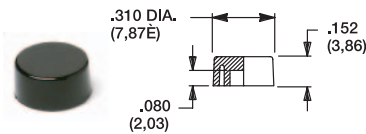
PART NO.
508101000 WHITE
508102000 BLACK
 Material: Nylon
 Finish: Gloss

Cap, .100" DIA. Plungers
(Recommended for S9 plunger)



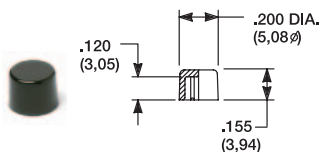
PART NO.
538701000 WHITE
538702000 BLACK
 Material: Nylon
 Finish: Gloss

Cap, .100" DIA. Plungers



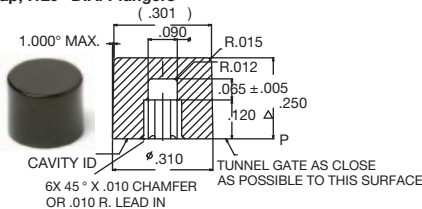
PART NO.
465801000 WHITE
465802000 BLACK
 Material: Nylon
 Finish: Gloss

Cap, .120" DIA. Plungers



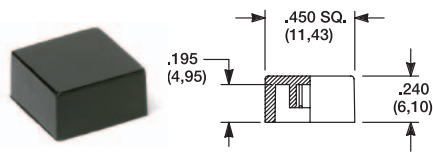
PART NO.
708901000 WHITE
708902000 BLACK
 Material: Nylon
 Finish: Gloss

Cap, .120" DIA. Plungers



PART NO.
891D01000 WHITE
891D02000 BLACK
 Material: Nylon
 Finish: Gloss

Cap, J81 option only



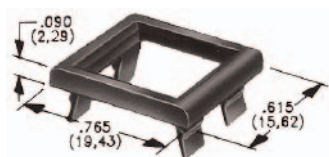
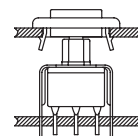
PART NO.
484601000 WHITE
484602000 BLACK
 Material: Nylon
 Finish: Gloss

PART NO.
798201000 WHITE
798202263 BLACK
 Material: Nylon
 Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
 Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

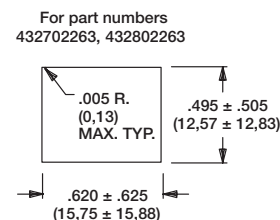
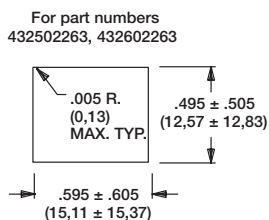
TYPICAL APPLICATION



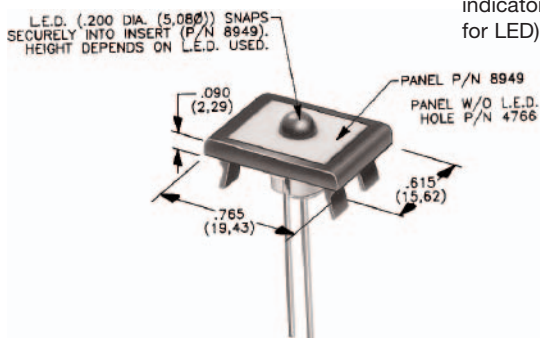
.047" (1,19) PANEL THK. .062" (1,57) PANEL THK. .090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

PART NO. **PART NO.** **PART NO.** **PART NO.**
432502263 **432602263** **432702263** **432802263** BLACK

PANEL MOUNTING



Panel Inserts



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

PANEL INSERT WITH HOLE FOR LED

PART NO.
894902000

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A

Pushbutton

Features/Benefits

- Process sealed with disposable splashproof boot
- Long life contact design
- Snap-fitting plunger available
- RoHS compliant models available

Typical Applications

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: B contact material (EX25 Models): 0.4 VA max. @ 20 V AC or DC max. G contact material (EX21 Models): 1 AMP @120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max.
Note: Break-before-make contacts. Multi-pole contacts do not make and break simultaneously. See page A-26 for additional ratings.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with P, R, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

SWITCH SUPPORT: Brass or steel, matte-tin.

SWITCH SUPPORT RETAINER: Stainless steel.

N.O. & N.C. CONTACTS: EX25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. EX21 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-26 for additional contact materials.

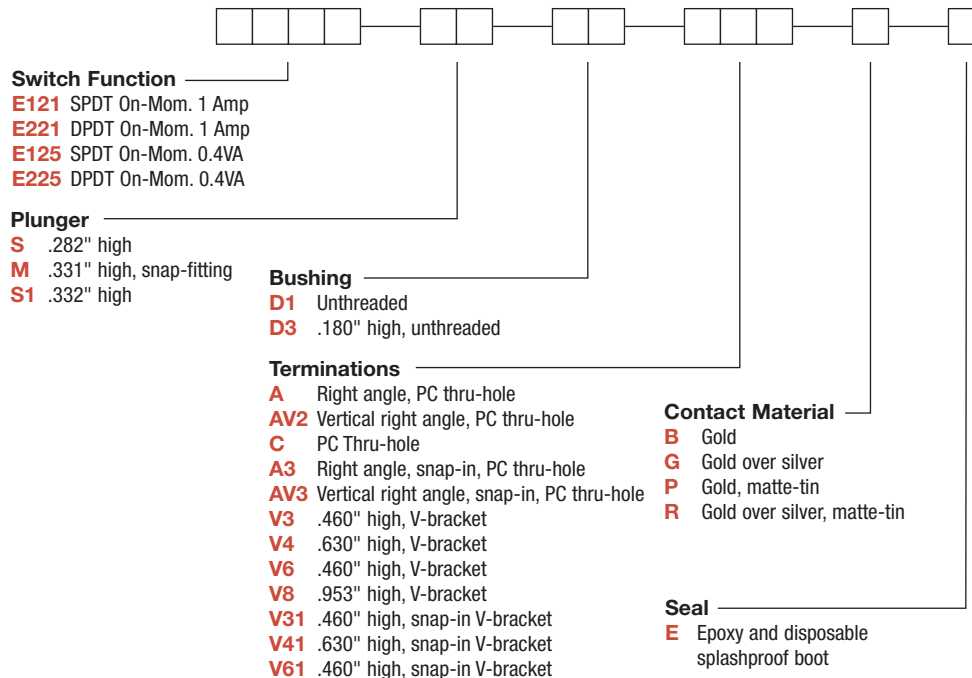
COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate. See page A-26 for additional contact materials.

TERMINAL SEAL: Epoxy.

DISPOSABLE BOOT: Vinyl splashproof boot supplied standard. Remove and discard only after soldering and cleaning processes are complete.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-22 thru A-28. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



E020 Series Sealed Snap-acting Momentary Pushbutton Switches

Pushbutton
A

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	E121	ON	MOM.	1-3	1-2	
	E125	ON	MOM.			
SPDT <p>Part number shown: E121SD1CGE</p>						
DP	E221	ON	MOM.	1-3,4-6	1-2,4-5	
	E225	ON	MOM.			
DPDT <p>Part number shown: E221SD1CBE</p>						

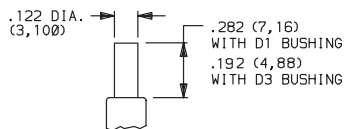
MOM. = Momentary

E121, E221 models with all options when ordered with G or R contact material.

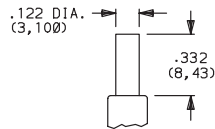
EX25 models must be ordered with B or P contact material.
EX21 models must be ordered with G or R contact material.

PLUNGER

S .282" HIGH

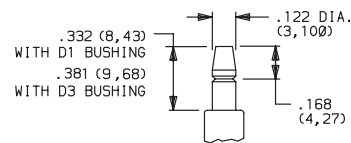


S1 .332" HIGH



Not Available with D1 bushing.

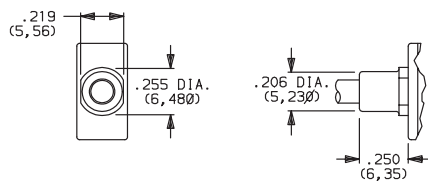
M .332" HIGH SNAP-FITTING



NOTE: Caps available for all plunger options, see page A-27.

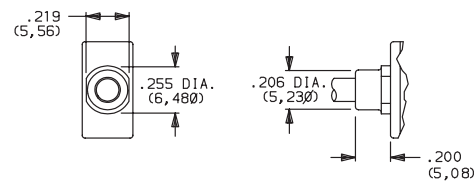
BUSHING

D1 UNTHREADED

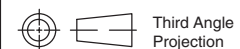


Not available with S1 actuator.

D3 .180" HIGH UNTHREADED



NOTE: Disposable splashproof vinyl over actuator and bushing supplied std., see page A-26.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E020 Series Sealed Snap-acting Momentary Pushbutton Switches

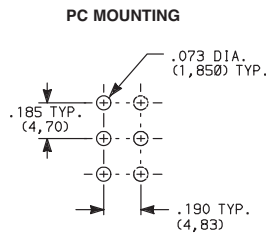
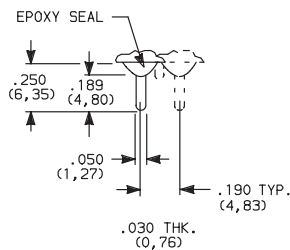


A

Pushbutton

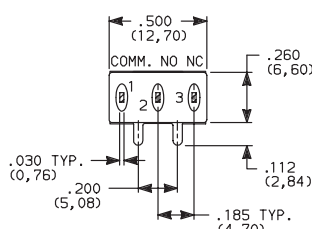
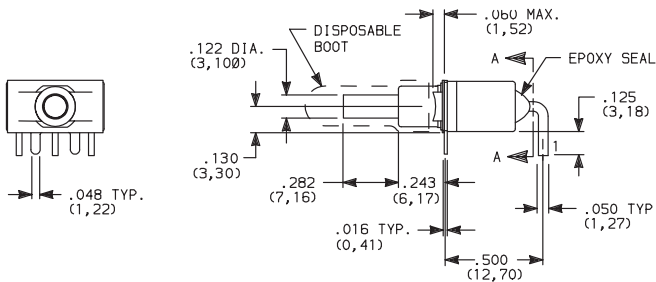
TERMINATIONS

C PC THRU-HOLE



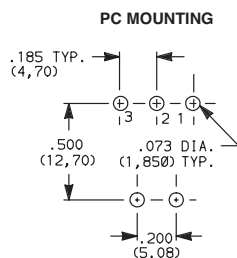
SPDT and DPDT

A RIGHT ANGLE, PC THRU-HOLE



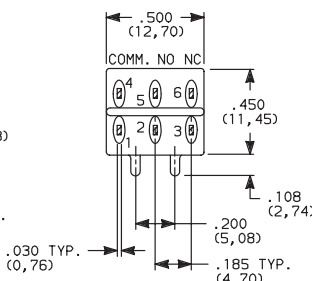
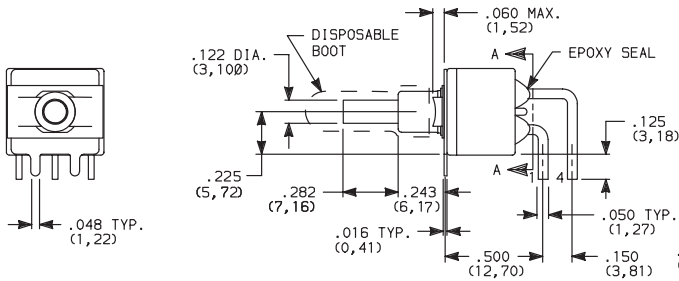
E121SD1AGE
SPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



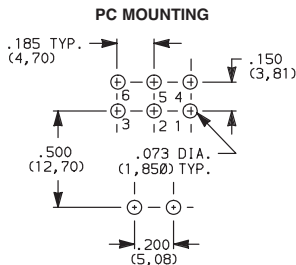
NOTE: Terminal bend radii and lead-in manufacturing option.

A RIGHT ANGLE, PC THRU-HOLE



E221SD1AGE
DPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





E020 Series Sealed Snap-acting Momentary Pushbutton Switches

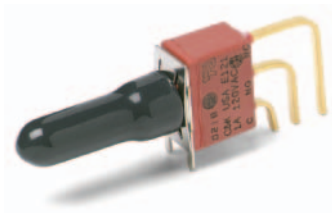
TERMINATIONS



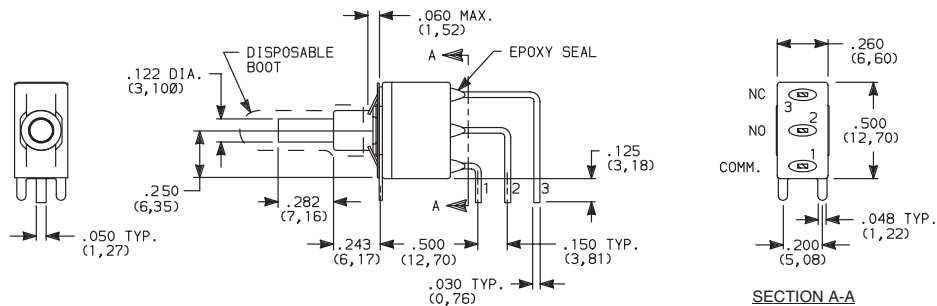
Pushbutton

A

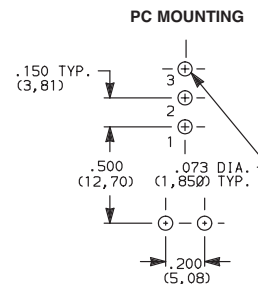
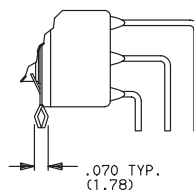
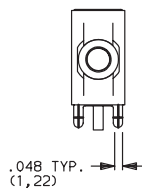
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE,
.150" PITCH



**E121SD1AV2GE
SPDT**

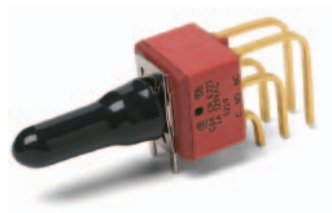


AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,
.150" PITCH

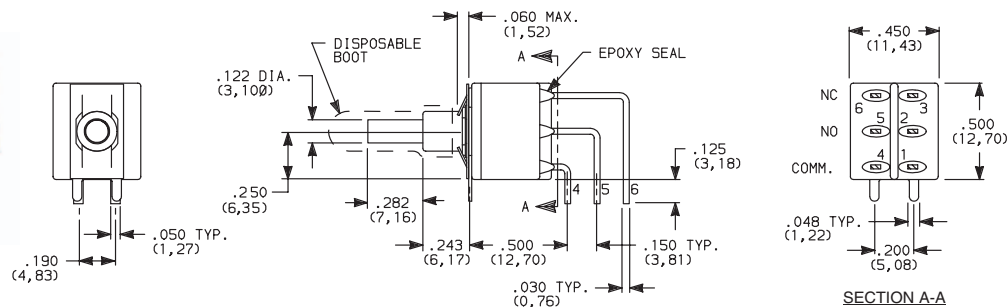


NOTE: Terminal bend radii and lead-in manufacturing option.

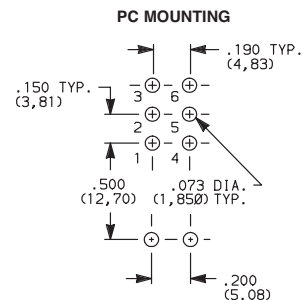
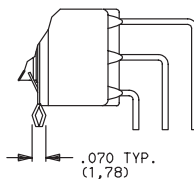
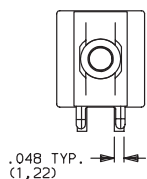
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE,
.150" PITCH



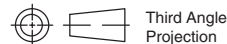
**E221SD1AV2GE
DPDT**



AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE,
.150" PITCH



NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E020 Series Sealed Snap-acting Momentary Pushbutton Switches



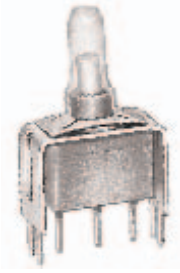
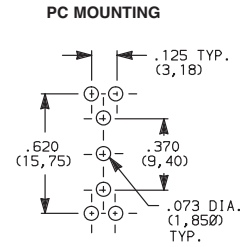
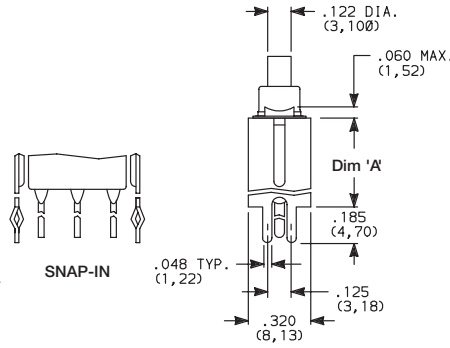
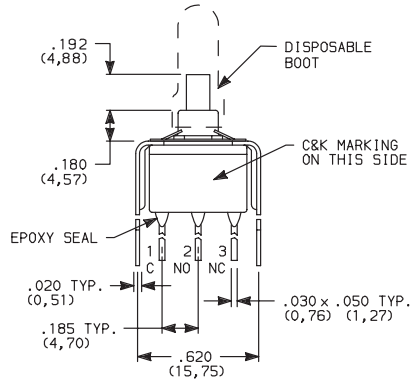
A

Pushbutton

TERMINATIONS

V3, V4 VERTICAL MOUNT, V-BRACKET

V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN

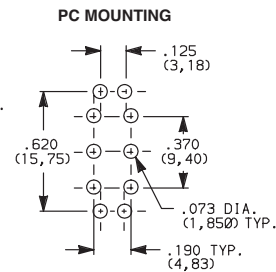
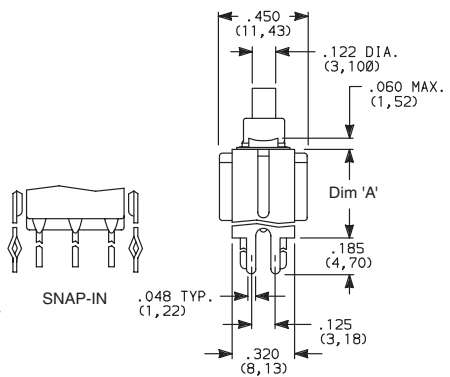
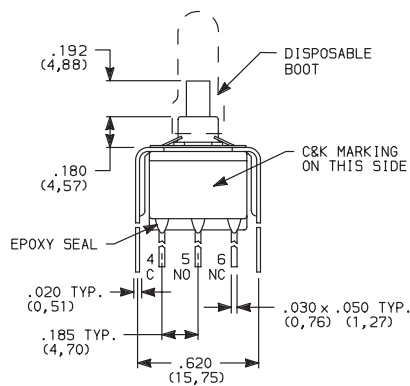


**E121SD3_GE
SPDT**

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)

V3, V4 VERTICAL MOUNT, V-BRACKET

V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN

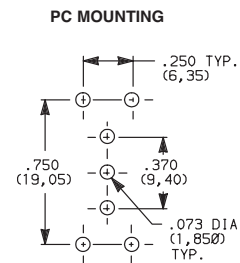
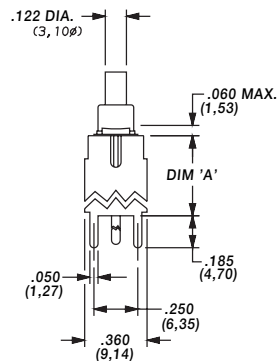
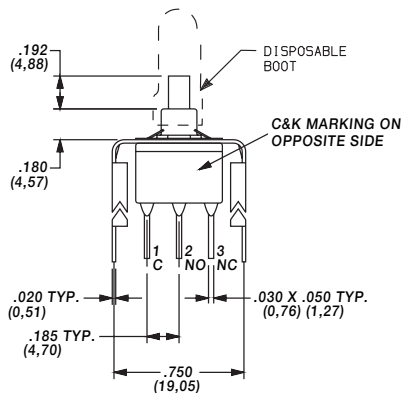


**E221SD3_GE
DPDT**

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)

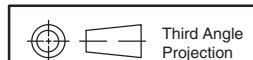
V6, V8 VERTICAL MOUNT, V-BRACKET

V61, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



**E121SD3_GE
SPDT**

OPTION CODE	DIM 'A'
V6, V61	.460 (11,68)
V8, V81	.953 (24,21)



Third Angle Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com



E020 Series Sealed Snap-acting Momentary Pushbutton Switches

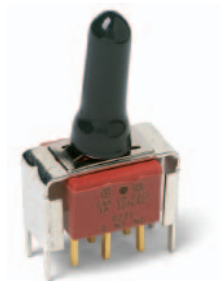
Pushbutton

A

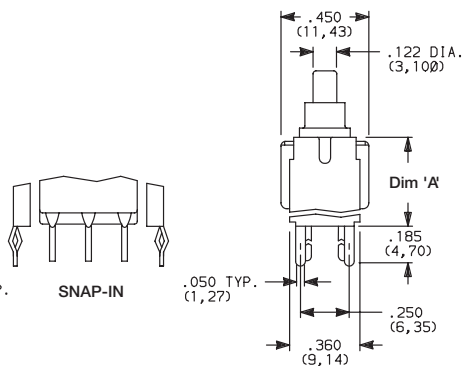
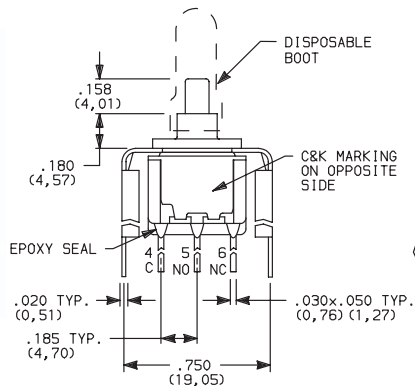
TERMINATIONS

V6, V8 VERTICAL MOUNT, V-BRACKET

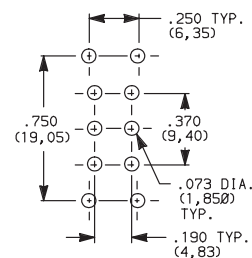
V61, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E221SD3V6GE DPDT



PC MOUNTING



OPTION CODE	DIM 'A'
V6, V61	.460 (11,68)
V8, V81	.953 (24,21)

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	EX25 MODELS ONLY: 0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁴		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	EX21 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁴		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

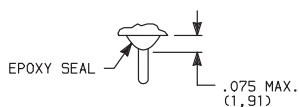
- ¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- ² N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- ³ COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- ⁴ TERMINALS: Copper alloy, with matte-tin alloy over nickel plate.

NOTE: Any models supplied with P, R, B or G contact material are RoHS compliant.

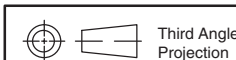
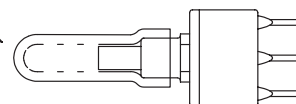
E121, E221 models with all options when ordered with mandatory G, or R contact material.
 P or B contact material must be ordered with EX25 models.
 R or G contact material must be ordered with EX21 models.

SEAL

E EPOXY SEAL AND DISPOSABLE SPLASHPROOF BOOT



Disposable splashproof boot supplied standard. Remove and discard boot *only after* soldering and cleaning processes are complete.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

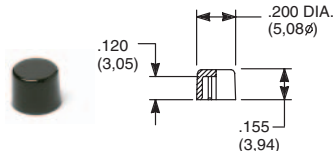
E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A
Pushbutton

AVAILABLE HARDWARE

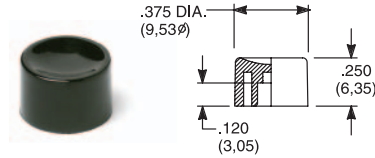
Cap



PART NO.
708901000 WHITE
708902000 BLACK
708903000 RED

Material: Nylon
 Finish: Gloss

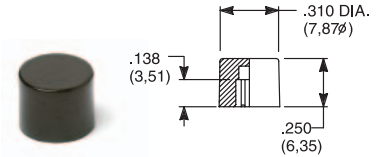
Cap



PART NO.
752701000 WHITE
752702000 BLACK
752703000 RED

Material: Nylon
 Finish: Gloss

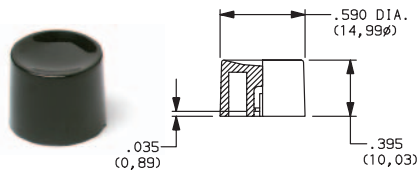
Cap



PART NO.
801801000 WHITE
801802000 BLACK
801803000 RED

Material: Nylon
 Finish: Gloss

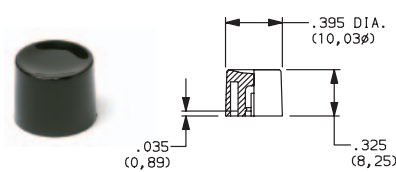
Cap, Snap-fitting plunger



PART NO.
452D01000 WHITE
452D02000 BLACK
452D03000 RED

Material: Nylon
 Finish: Gloss

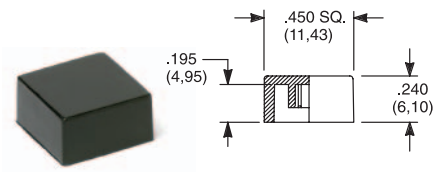
Cap, Snap-fitting plunger



PART NO.
894101000 WHITE
894102000 BLACK
894103000 RED

Material: Nylon
 Finish: Gloss

Cap



PART NO.
484601000 WHITE
484602000 BLACK
484603000 RED

Material: Nylon
 Finish: Gloss

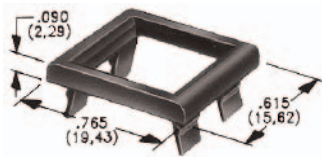
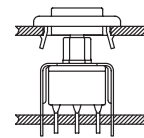
PART NO.
798201000 WHITE
798202263 BLACK
798203000 RED

Material: Nylon
 Finish: Matte

NOTE: Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



.047" (1,19) PANEL THK.

PART NO.
432502263

.062" (1,57) PANEL THK.

PART NO.
432602263

.090" (2,29) PANEL THK.

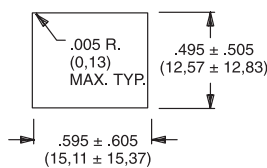
PART NO.
432702263

.125" (3,18) PANEL THK.

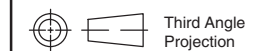
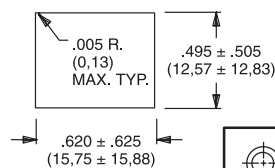
PART NO.
432802263 BLACK

PANEL MOUNTING

For part numbers
 4325xxxxx, 4326xxxxx



For part numbers
 4327xxxxx, 4328xxxxx



Third Angle
 Projection



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



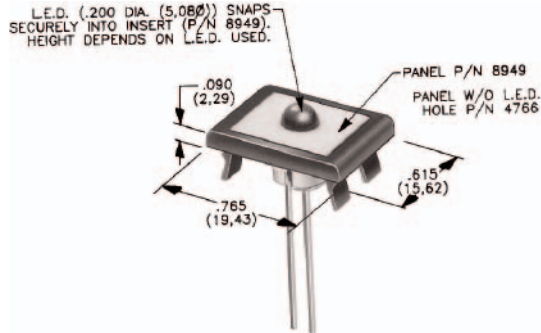
E020 Series Sealed Snap-acting Momentary Pushbutton Switches

AVAILABLE HARDWARE

Pushbutton
A

PANEL INSERTS

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

BLANK PANEL INSERT WITHOUT HOLE FOR LED

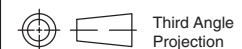
PART NO.

PART NO.

894902000

476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8020 Series Snap-acting Momentary Pushbutton Switches



A
Pushbutton

Features/Benefits

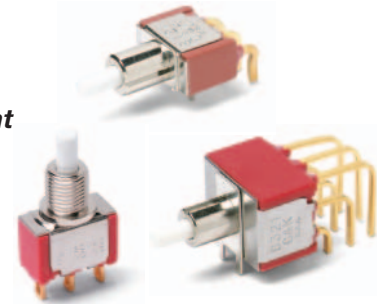
- Positive tactile feel
- Multi-positions available
- Wide variety of termination options
- Epoxy terminal seal compatible with bottom wash cleaning
- RoHS compliant models available



Models Available

Typical Applications

- Instrumentation
- Computer peripherals
- Telecommunications equipment



Specifications

CONTACT RATING: B contact material (8X25 Models): 0.4 VA max. @ 20 V AC or DC maximum. G contact material (8X21, U8X1 Models): 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-makecontacts. Multi-pole contacts do not make and break simultaneously. See page A-43 for additional ratings.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: 8X2X MODELS: -30°C to 75°C.
U8X1 MODELS: -30°C to 65°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with B, P, R, or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

CAP & FRAME: Nylon, black, standard.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

N.O. & N.C. CONTACTS: 8X21, U8X1 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-43 for additional contact materials.

8X25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-43 for additional contact materials.

COMMON CONTACT & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

TERMINAL SEAL: Epoxy. Refer to soldering and cleaning Technical Data Chapter.

HARDWARE: Nut & Locking Ring: Brass, nickel plated;
Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-30 thru A-45. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Switch Function

- 8121** SPDT On-Mom. 1 Amp
- 8125** SPDT On-Mom. 0.4VA
- 8221** DPDT On-Mom. 1 Amp
- 8225** DPDT On-Mom. 0.4VA
- 8321** 3PDT On-Mom. 1 Amp
- 8325** 3PDT On-Mom. 0.4VA
- 8421** 4PDT On-Mom. 1 Amp
- 8425** 4PDT On-Mom. 0.4VA

Note: UL/CSA models available, see page A-30 and A-31.

Actuator or Plunger

- S** Plunger
- NONE** Snap-in
- J80** Snap-in
- J81** Snap-in w/frame
- J82** Snap-in w/frame for LED
- J83** Snap-in w/frame & flush cap
- J84** Snap-in w/frame for LED, flush cap
- J85** Snap-in w/frame & LED
- J95** PC w/V-bracket & LED
- L** Plunger
- M** Snap-fitting plunger

Bushing

- D9** .280" high, keyway
- H** .250" high, flat
- NONE** No bushing choice required
- D** .280" high, keyway
- D2** .288" high, flat
- D3** .180" high
- D8** .288" high, flat
- H9** .250" high, flat, hi torque
- Y** .350" high, keyway
- Y3** 6.35mm high, keyway, hi torque
- Y4** .378" high, flat, hi torque
- Y9** .350" high, keyway

Contact Material

- B** Gold
- P** Gold, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

Seal

- E** Epoxy
- I** Epoxy potted base

Cap Color

- 2** Black
- NONE** Models without caps
- 1** White
- 3** Red
- 4** Orange
- 5** Yellow
- 6** Green
- 7** Blue
- 9** Gray

Frame Color

- 2** Black
- NONE** Models without frame
- 1** White
- 3** Red
- 5** Yellow
- 6** Green
- 9** Gray

LED Color

- 3** Red
- NONE** Models without LED
- 5** Yellow
- 6** Green

Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- A2** Right angle, PC thru-hole
- A3** Right angle, snap-in, PC thru-hole
- A4** Right angle, PC thru-hole, reversed terminals
- A6** Right angle, PC thru-hole
- AV** Vertical right angle, PC thru-hole
- AV1** Vertical right angle, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- R** Right angle with PCB
- R2** Right angle with PCB, reversed terminals
- V2** .555" high, V-bracket
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V7** .630" high, V-bracket
- V8** .953" high, V-bracket
- V9** 1.150" high, V-bracket
- V31** .460" high, snap-in V-bracket
- V61** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- W1** .964" long, wire wrap
- W3** .425" long, wire wrap
- W4** 1.062" long, wire wrap
- Z3** Quick connect



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

SWITCH FUNCTION

Pushbutton

A

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
SP	8121	U811	ON	MOM.	1-3	1-2	
	8125		ON	MOM.			
<p>SPDT</p> <p>Part number shown: 8121SHZGE</p> <p>Terminal Nos. For Reference Only</p>							
DP	8221	U821	ON	MOM.	1-3,4-6	1-2,4-5	
	8225		ON	MOM.			
<p>DPDT</p> <p>Part number shown: 8221SHZGE</p> <p>Terminal Nos. For Reference Only</p>							
3P	8321	U831	ON	MOM.	1-3,4-6,7-9	1-2,4-5,7-8	
	8325		ON	MOM.			
<p>3PDT</p> <p>Part number shown: 8321SHZGE</p> <p>Terminal Nos. For Reference Only</p>							

MOM. = Momentary

*U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com

8020 Series Snap-acting Momentary Pushbutton Switches



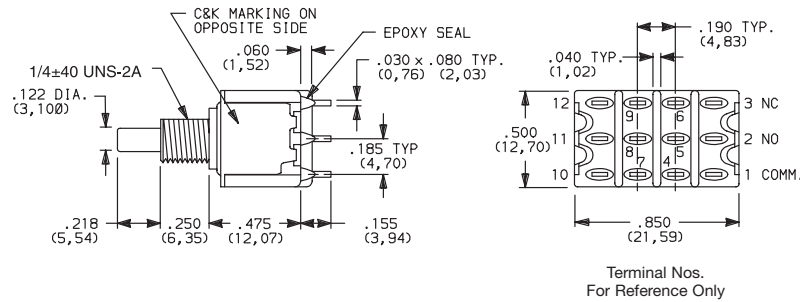
A

Pushbutton

SWITCH FUNCTION

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
4P	8421	U841	ON	MOM.	1-3,4-6,7-9,10-12	1-2,4-5,7-8,10-11	
	8425		ON	MOM.			

4PDT



Part number shown: 8421SHZGE

Terminal Nos. For Reference Only

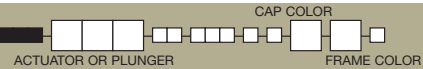
MOM. = Momentary

* U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.

ACTUATOR—SNAP-IN FRONT MOUNT

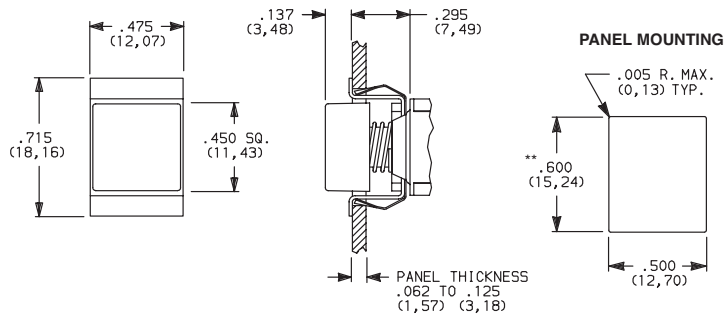


OPTION CODE	CAP AND FRAME COLOR
2	BLACK
NONE	No Frame Color (J80 option)
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center. Cap and Frame Finish: matte.

NOTE: Caps and frames available separately, see pages A-44 and A-45.

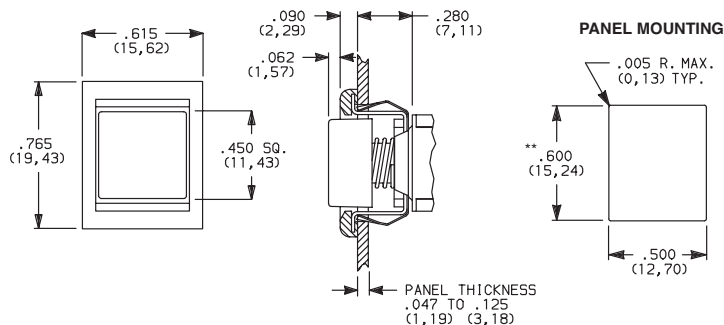
J80 SNAP-IN



NOTE: No frame color choice required.

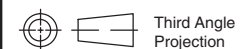
** Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

J81 SNAP-IN WITH FRAME



NOTE: Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

** Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.



Third Angle Projection

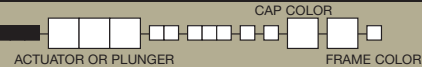


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



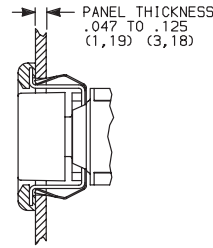
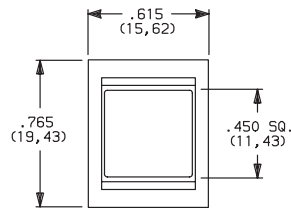
8020 Series Snap-acting Momentary Pushbutton Switches

ACTUATOR—SNAP-IN FRONT MOUNT

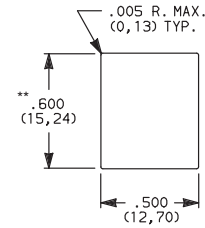


Pushbutton
A

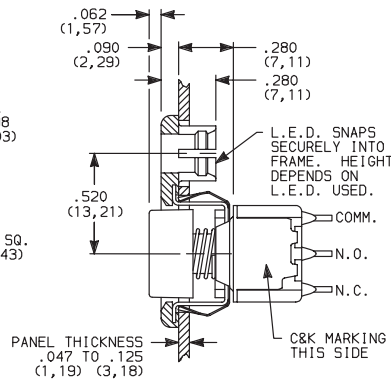
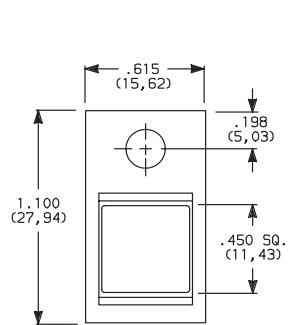
J83 SNAP-IN WITH FRAME AND FLUSH CAP



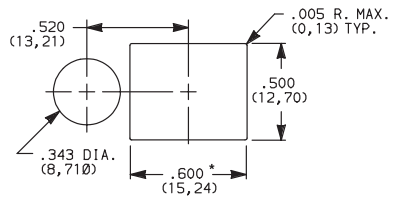
PANEL MOUNTING



J82 SNAP-IN WITH FRAME FOR LED



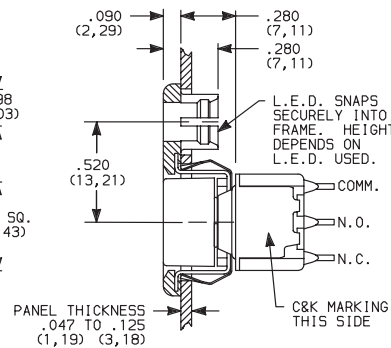
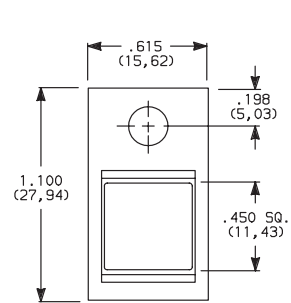
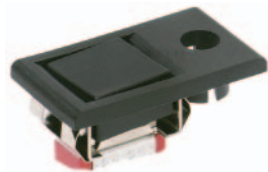
PANEL MOUNTING



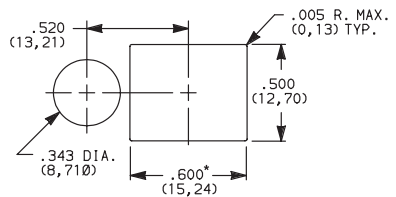
* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

LED not included.
For LED information, see page A-45.

J84 SNAP-IN WITH FRAME FOR LED, FLUSH CAP



PANEL MOUNTING



* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

LED not included.
For LED information, see page A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center.
Cap and Frame Finish: matte.

Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

NOTE: Caps and frames available separately, see pages A-44 and A-45.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



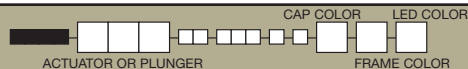
8020 Series Snap-acting Momentary Pushbutton Switches



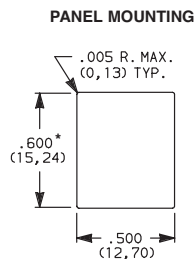
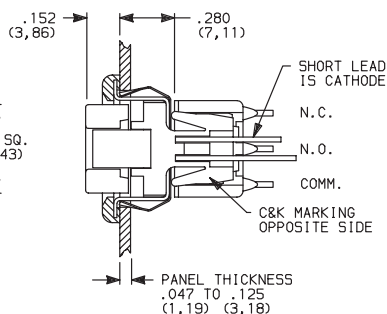
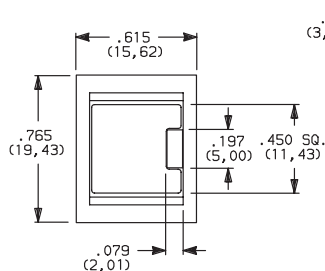
A

Pushbutton

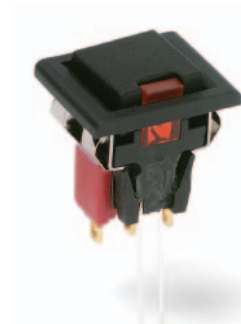
ACTUATOR—SNAP-IN FRONT MOUNT



J85 SNAP-IN WITH FRAME AND LED



* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.



8121J85ZGE223 SPST

Available with C, W-W4, Z or Z3 terminations and SPDT models only. For LED information see page A-45.

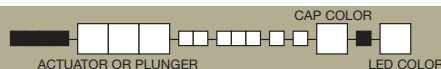
NOTE: Caps & frames available separately, see pages A-44 and A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

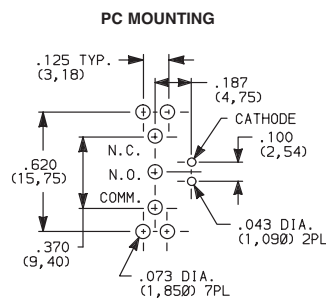
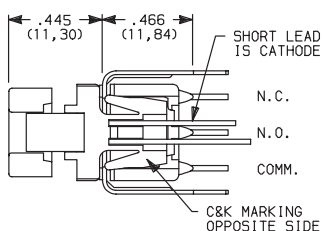
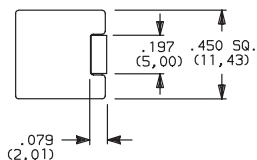
OPTION CODE	LED COLOR
3	RED
5	YELLOW
6	GREEN

For LED information see page A-45.

ACTUATOR—PC MOUNT



J95 PC WITH V-BRACKET AND LED



8121J95V3GE23 SPST

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

OPTION CODE	LED COLOR
3	RED
5	YELLOW
6	GREEN

For LED information see page A-45.

NOTE: Caps available separately, see page A-44. Available with V3 terminations and SPDT models only.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





8020 Series Snap-acting Momentary Pushbutton Switches

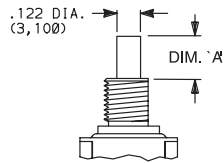
Pushbutton

A

PLUNGER

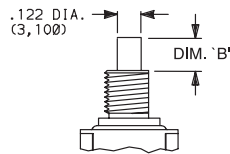


S PLUNGER

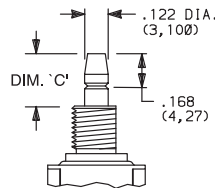


NONE NO PLUNGER CHOICE REQUIRED
(JXX ACTUATORS)

L PLUNGER



M SNAP-FITTING PLUNGER



AVAILABLE BUSHINGS	DIM. 'A' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'A' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'A' FOR V3-V61 TERMINATIONS
D, D9	.244 (6,20)	.228 (5,79)	.224 (5,69)
H, H9	.218 (5,54)	.202 (5,13)	.198 (5,03)
Y, Y9	.203 (5,16)	.187 (4,75)	.183 (4,65)
Y3	(5,54)	(5,13)	(5,03)
Y4	.185 (4,70)	.169 (4,29)	.165 (4,19)
D2, D8	N/A	.232 (5,89)	.228 (5,79)
D3	N/A	.162 (4,11)	.158 (4,01)

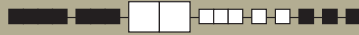
AVAILABLE BUSHINGS	DIM. 'B' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'B' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'B' FOR V3-V61 TERMINATIONS
Y, Y9	.178 (4,52)	.162 (4,11)	.158 (4,01)
Y4	.090 (2,29)	.074 (1,88)	.070 (1,78)

AVAILABLE BUSHINGS	DIM. 'C' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'C' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'C' FOR V3-V61 TERMINATIONS
D, D9	.297 (7,54)	.281 (7,14)	.277 (7,04)
H, H9	.267 (6,78)	.251 (6,38)	.247 (6,27)
Y, Y9	.259 (6,58)	.243 (6,17)	.239 (6,07)
Y3	(6,78)	(6,37)	(6,27)
Y4	.259 (6,58)	.243 (6,17)	.239 (6,07)
D2, D8	N/A	.273 (6,93)	.269 (6,83)
D3	N/A	.361 (9,17)	.357 (9,07)

N/A = NOT AVAILABLE

NOTE: When selecting plunger option, bushing selection must also be made, see next page. No plunger option is required when any JXX actuator option is selected. Additional plunger lengths are available on SPDT and DPDT models, consult Customer Service Center. Not all plunger lengths sufficient for use with caps, see page A-44.

BUSHING

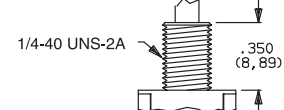
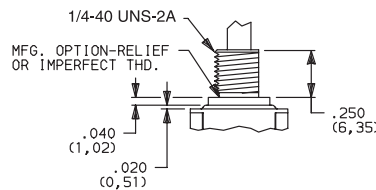
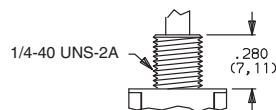
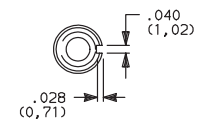
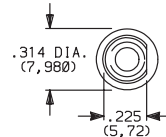
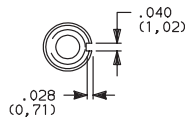


NONE NO BUSHING
CHOICE REQUIRED
(JXX ACTUATORS)

D .280" HIGH THREADED, KEYWAY
D9 .280" HIGH UNTHREADED,
KEYWAY

H .250" HIGH THREADED, FLAT
H9 .250" HIGH UNTHREADED, FLAT

Y .350" HIGH THREADED, KEYWAY
Y9 .350" HIGH UNTHREADED, KEYWAY



D9 bushing standard with A-A6,
R, R2 AV-AV3 terminations.

H bushing standard with C, W-W4, Z or Z3 terminations.
H, H9 bushings not available on single pole models with
A3-A6, R, R2 terminations.

**Will withstand 12 in./lbs. of torque with
no distortion.**



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

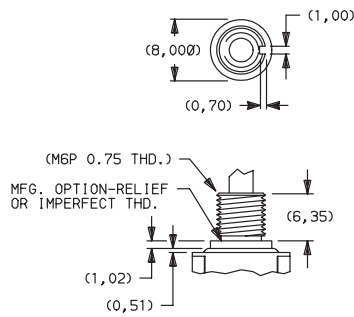
8020 Series Snap-acting Momentary Pushbutton Switches



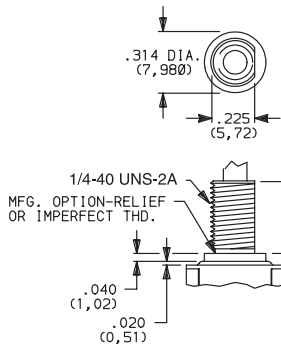
A Pushbutton

BUSHING

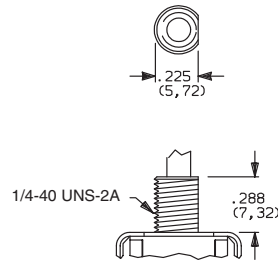
Y3 6.35mm THREADED, KEYWAY



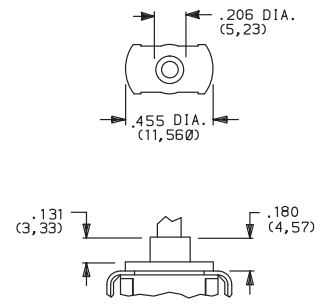
Y4 .378" HIGH THREADED, FLAT



D2 .288" HIGH THREADED, FLAT
D8 .288" HIGH UNTHREADED, FLAT



D3 .180" HIGH UNTHREADED



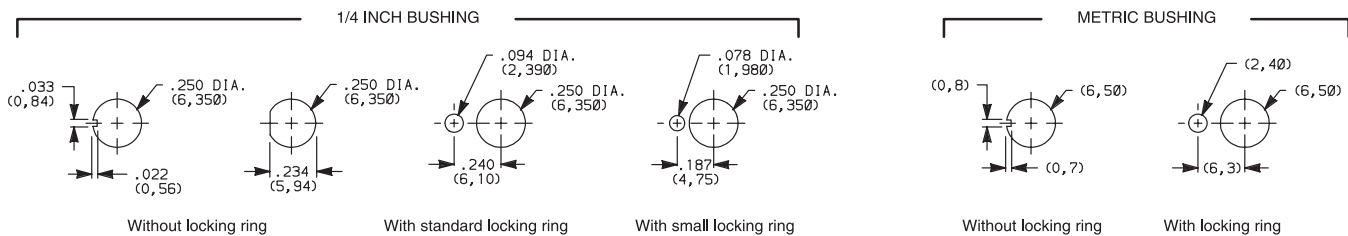
Y3 & Y4 bushings not available on single pole models with A3-A6, R, R2 terminations. Will withstand 12 in./lbs. of torque with no distortion.

D2, D8 bushings not available with C, W-W4, Z, Z3 terminations.

D3 bushing available with A, A2, A3, AV, AV2, AV3 and V2-V61 terminations only.

NOTE: No bushing option choice required when JXX actuator option is selected. When selecting bushing option, plunger selection must also be made, see previous page. Plunger lengths vary with bushing and termination options selected.

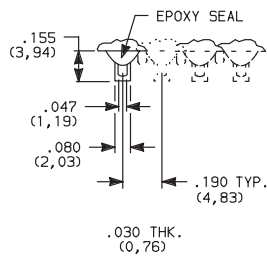
PANEL MOUNTING



NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles available, see section "Technical Data and Additional Hardware".

TERMINATIONS

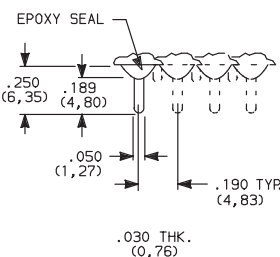
Z SOLDER LUG



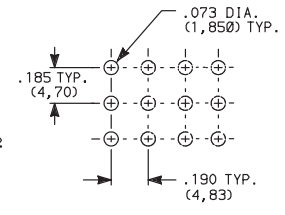
SPDT thru 4PDT

Not available with J95 actuator, P or R contact material.

C PC THRU-HOLE



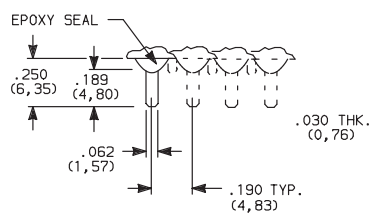
PC MOUNTING



SPDT thru 4PDT

Not available with J95 actuator option.

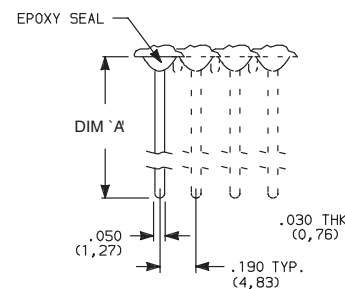
Z3 QUICK CONNECT



SPDT thru 4PDT

Not available with J95 actuator, P or R contact material. Mating quick connector available, order part number 530100000, page A-44.

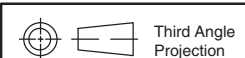
W W1, W3, W4 WIRE WRAP



OPTION CODE	DIM 'A'
W	.750 (19,05)
W1	.964 (24,49)
W3	.425 (10,80)
W4	1.062 (26,97)

SPDT thru 4PDT

Not available with J95 actuator option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com



8020 Series Snap-acting Momentary Pushbutton Switches

TERMINATIONS



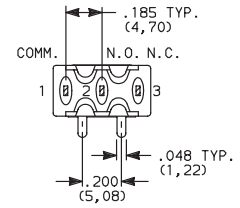
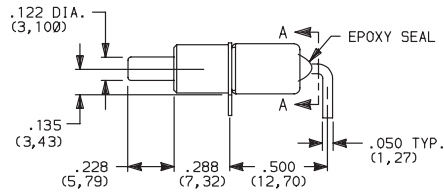
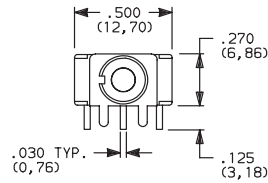
A

Pushbutton

A RIGHT ANGLE, PC THRU-HOLE

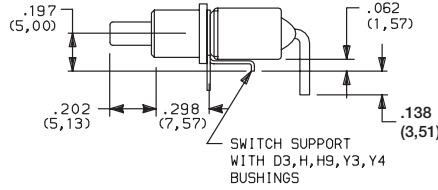


**8121SD9AGE
SPDT**



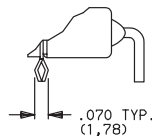
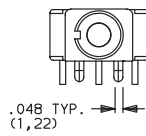
SECTION A-A

Terminal Nos.
For Reference Only.

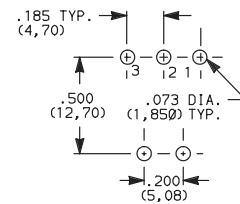


Part Number 8121SH9AGE

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

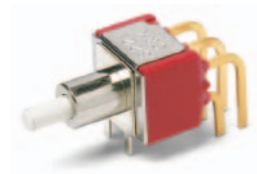


PC MOUNTING

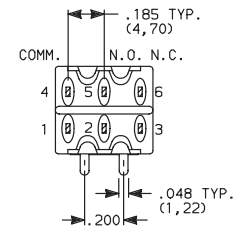
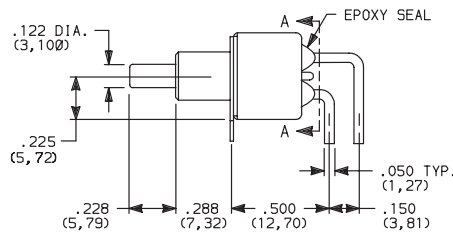
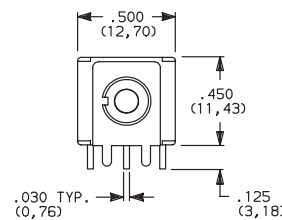


Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

A RIGHT ANGLE, PC THRU-HOLE

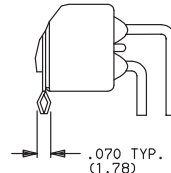
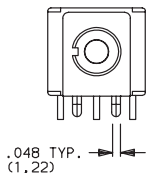


**8221SD9AGE
DPDT**

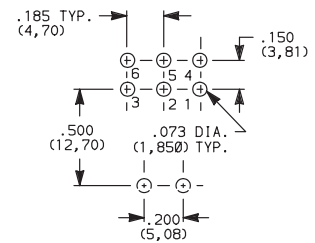


SECTION A-A

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



PC MOUNTING



Not available with JXX actuators and I seal option.
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8020 Series Snap-acting Momentary Pushbutton Switches

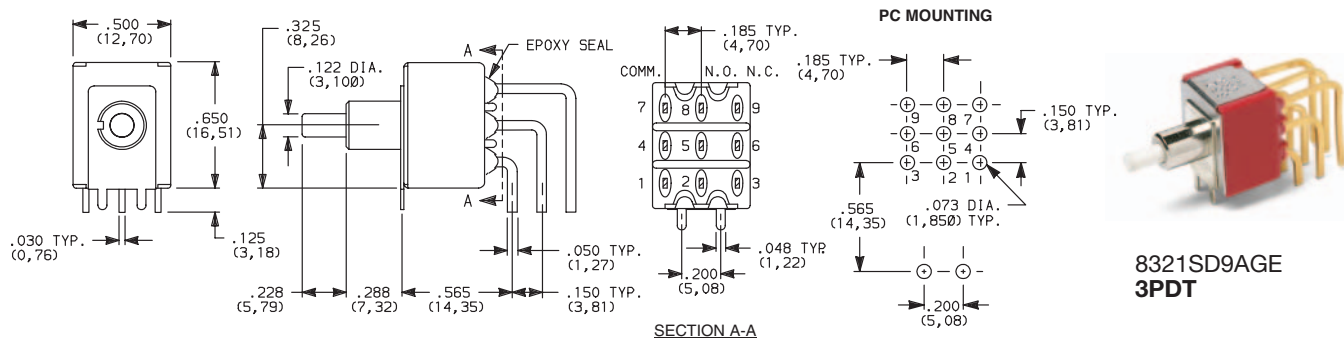


A

Pushbutton

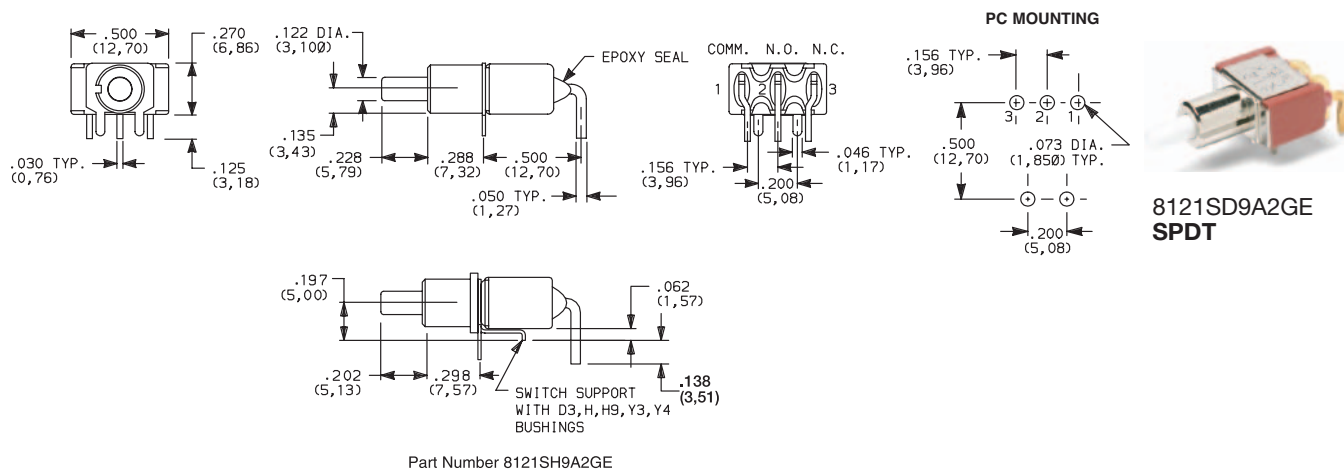
TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE



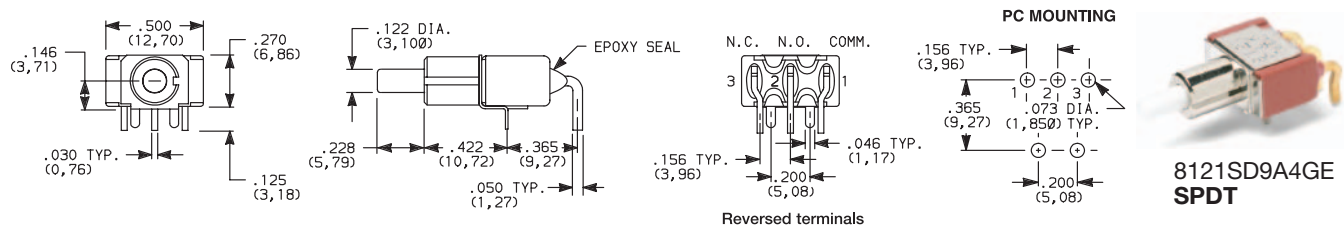
Not available with JXX actuators and I seal option.
Terminal bend radii and lead-in manufacturing option.

A2 RIGHT ANGLE, PC THRU-HOLE



Not available with JXX actuators, I seal option.
Terminal bend radii and lead-in manufacturing option.

A4 RIGHT ANGLE, PC THRU-HOLE, REVERSED TERMINALS



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal.
Terminal bend radii and lead-in manufacturing option.

The A4 and R2 termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R2, the A4 option is available with UL/CSA.



Third Angle Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

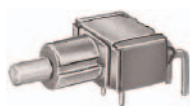
TERMINATIONS



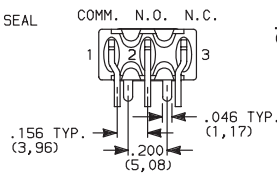
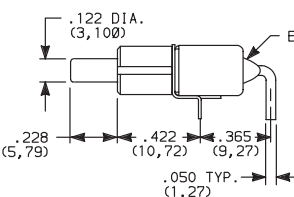
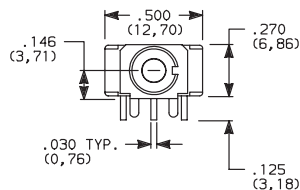
Pushbutton

A

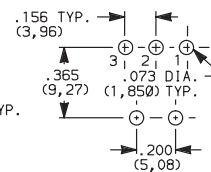
A6 RIGHT ANGLE, PC THRU-HOLE



8121SD9A6GE
SPDT



PC MOUNTING



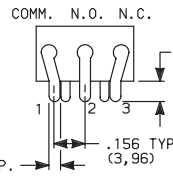
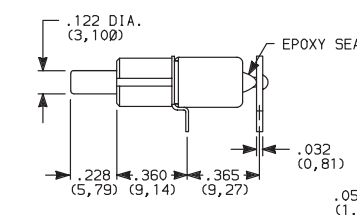
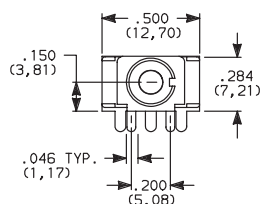
The A6 and R termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R, the A6 option is available with UL/CSA.

Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal. Terminal bend radii and lead-in manufacturing option.

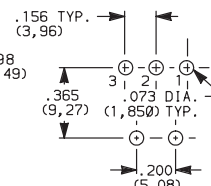
R RIGHT ANGLE WITH PCB



8121SD9RGE
SPDT



PC MOUNTING

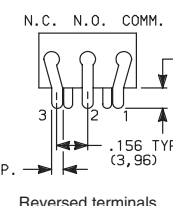
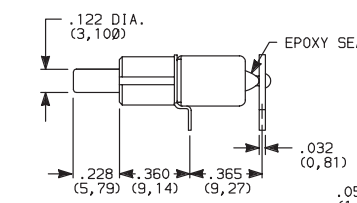
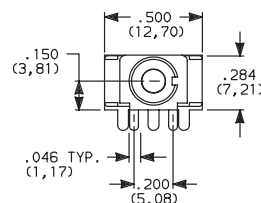


Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R termination not UL/CSA approved.

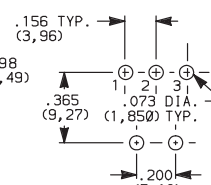
R2 RIGHT ANGLE WITH PCB, REVERSED TERMINALS



8121SD9R2GE
SPDT



PC MOUNTING

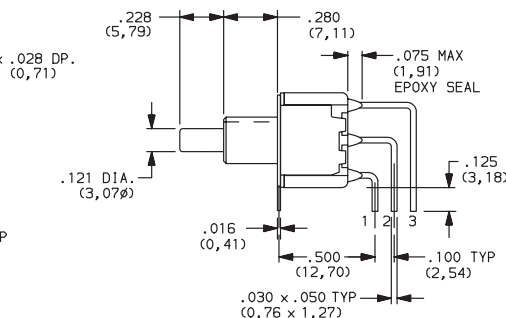
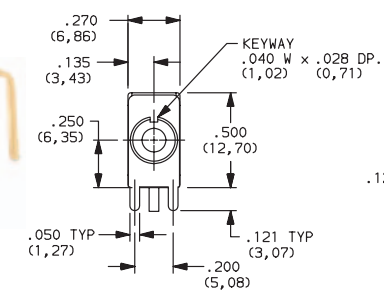


Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R2 termination not UL/CSA approved.

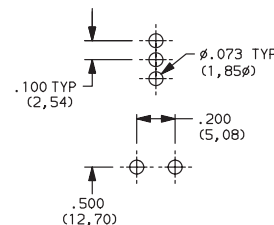
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE, .100" PITCH



8121SD9AVGE
SPDT



PC MOUNTING



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

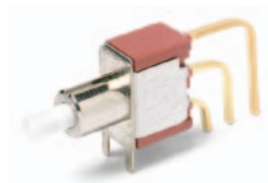
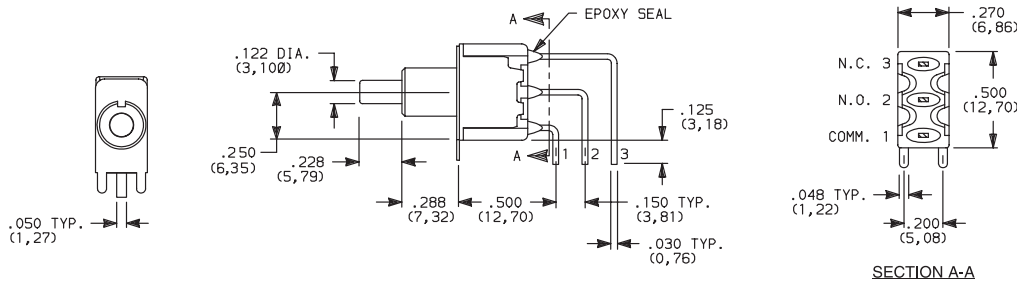


A

Pushbutton

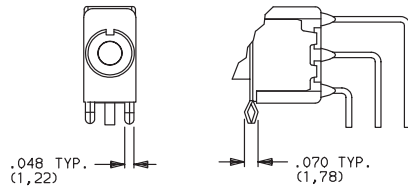
TERMINATIONS

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

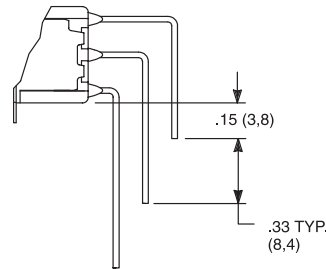


8121SD9AV2GE
SPDT

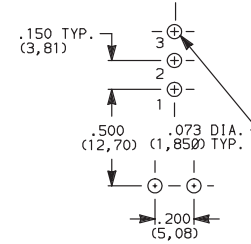
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH

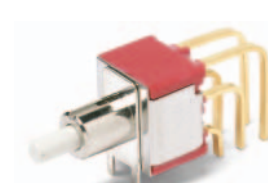
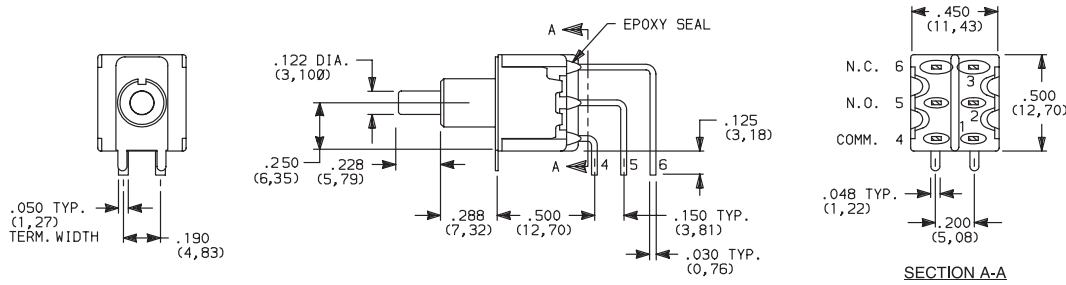


PC MOUNTING



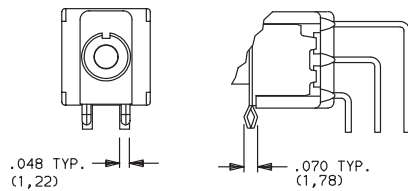
Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

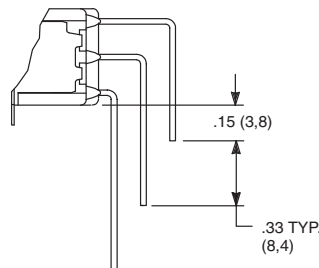


8221SD9AV2GE
DPDT

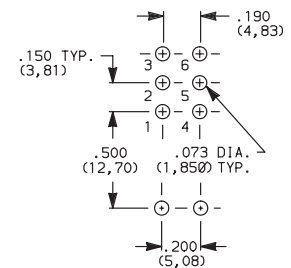
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



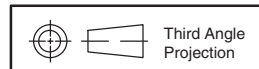
AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH



PC MOUNTING



Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com



8020 Series Snap-acting Momentary Pushbutton Switches

TERMINATIONS

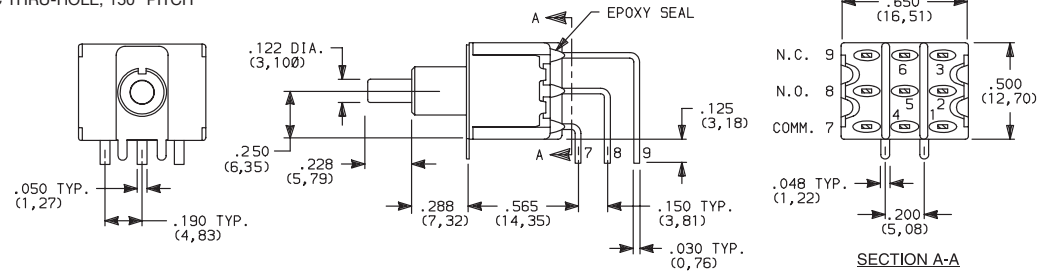


Pushbutton
A

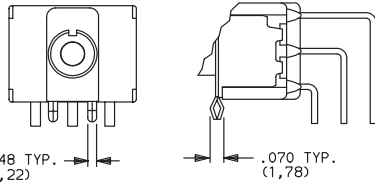
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



8321SD9AV2GE
3PDT

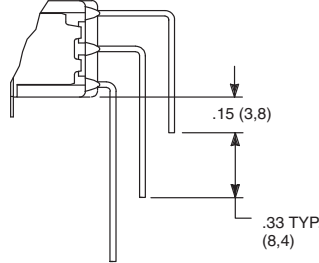


AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



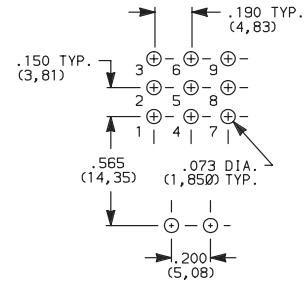
Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH



SECTION A-A

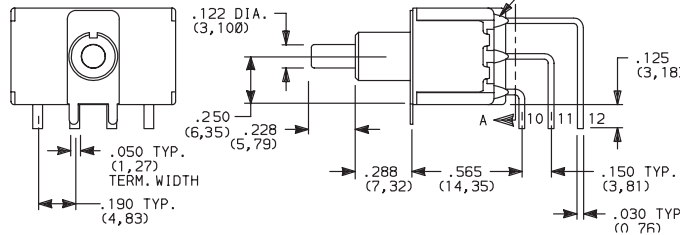
PC MOUNTING



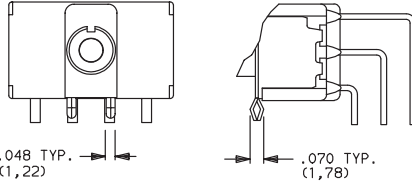
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH



8421SD9AV2GE
4PDT

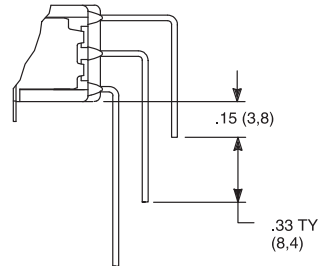


AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



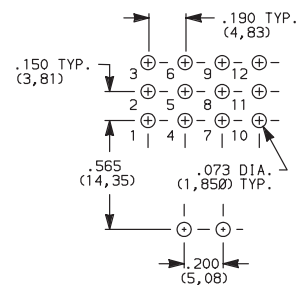
Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH



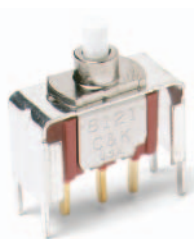
SECTION A-A

PC MOUNTING



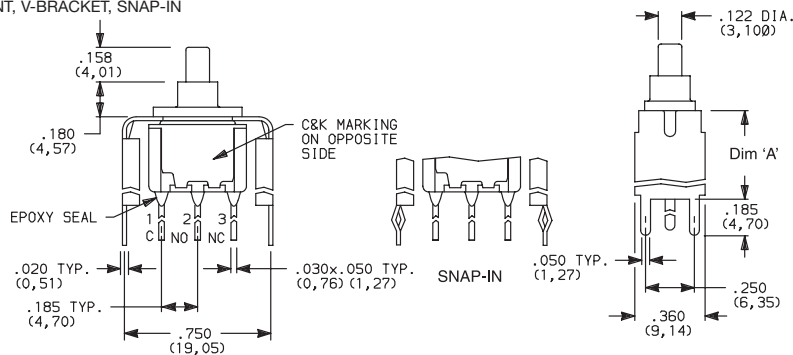
V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN

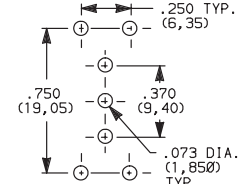


8121SD3_GE
SPDT

Not available with JXX actuators and I seal.



PC MOUNTING



OPTION CODE	DIM 'A'
V2	.555 (14,10)
V6, V61	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8020 Series Snap-acting Momentary Pushbutton Switches



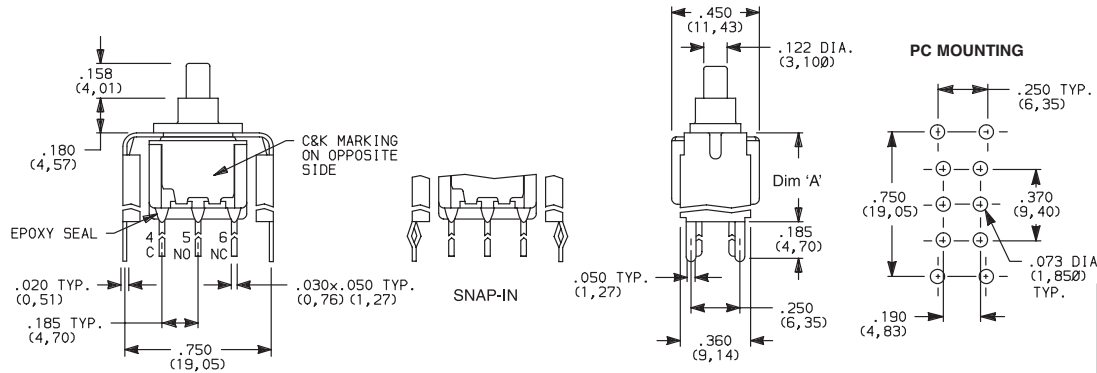
A

Pushbutton

TERMINATIONS

V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN

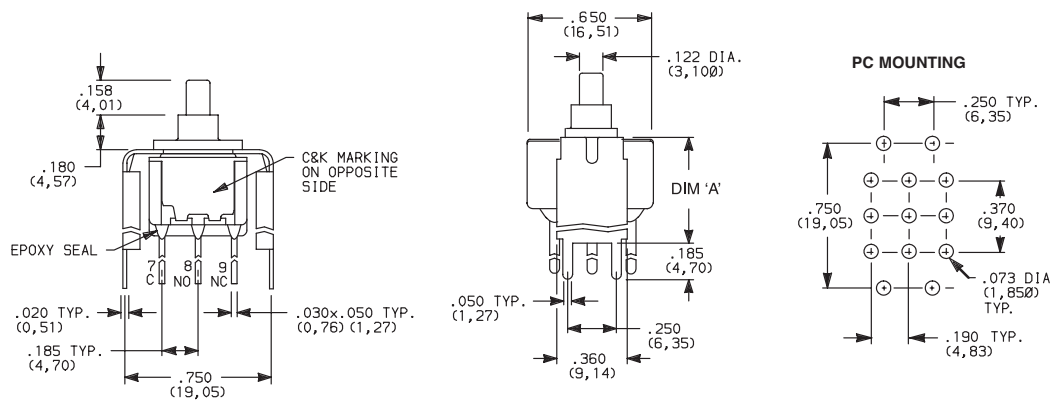


8221SD3_GE DPDT

OPTION CODE	DIM 'A'
V2	.555 (14,10)
V6, V61	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.

V2, V7, V8 VERTICAL MOUNT, V-BRACKET

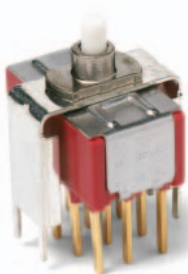
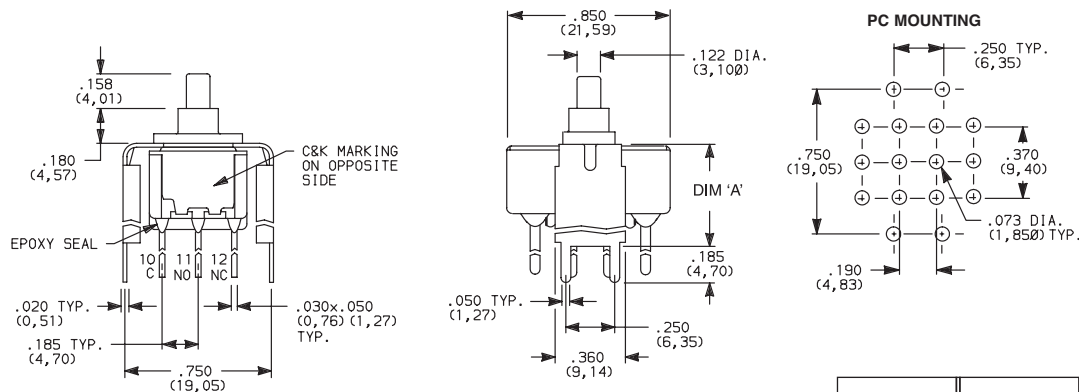


8321SD3_GE 3PDT

OPTION CODE	DIM 'A'
V2	.555 (14,10)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.

V2, V7, V8 VERTICAL MOUNT, V-BRACKET



8421SD3_GE 4PDT

OPTION CODE	DIM 'A'
V2	.555 (14,10)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.



Third Angle Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

TERMINATIONS



Pushbutton

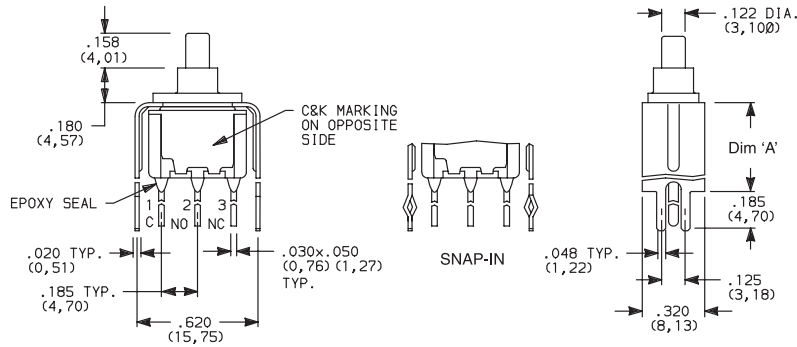
A

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

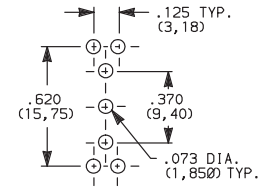
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



8121SD3_GE
SPDT



PC MOUNTING



OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

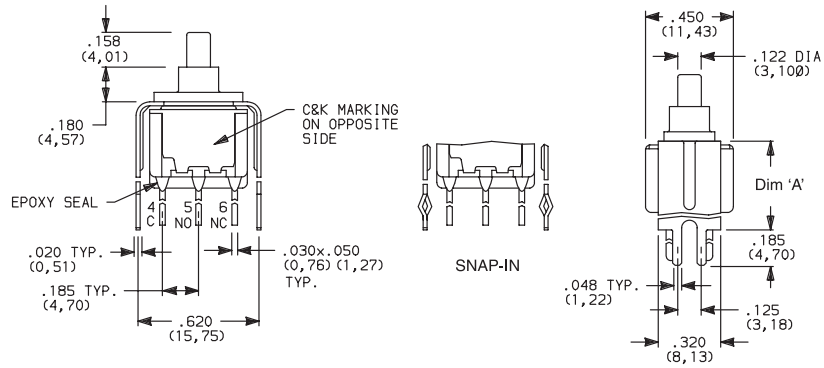
Not available with J8X actuators and I seal.

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

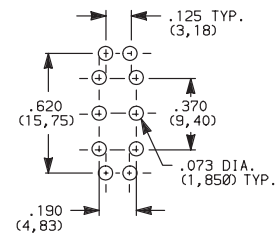
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



8221SD3_GE
DPDT



PC MOUNTING



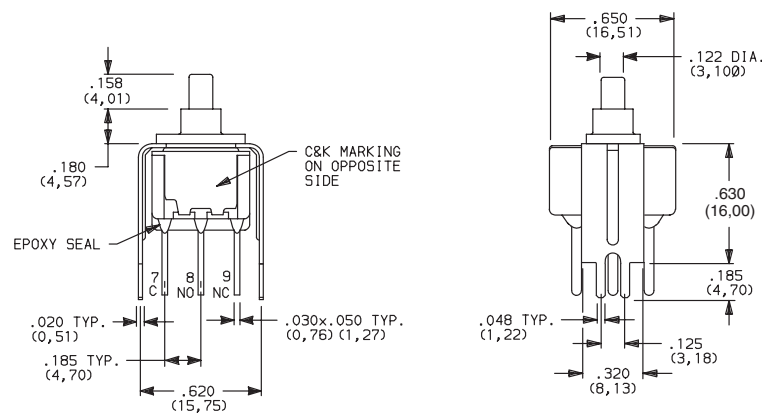
OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with J8X actuators and I seal.

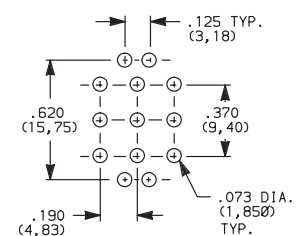
V4, V9 VERTICAL MOUNT, V-BRACKET



8321SD3V4GE
3PDT



PC MOUNTING



OPTION CODE	DIM 'A'
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with JXX actuators and I seal.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8020 Series Snap-acting Momentary Pushbutton Switches

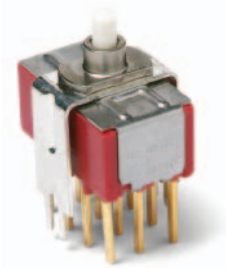
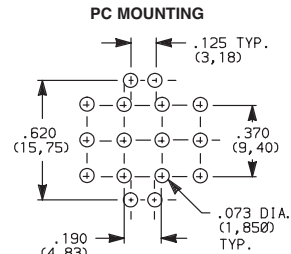
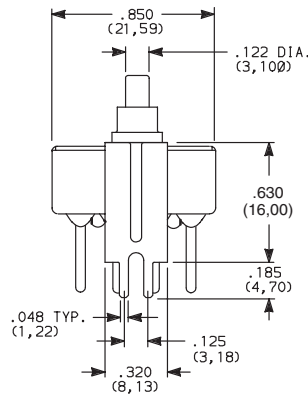
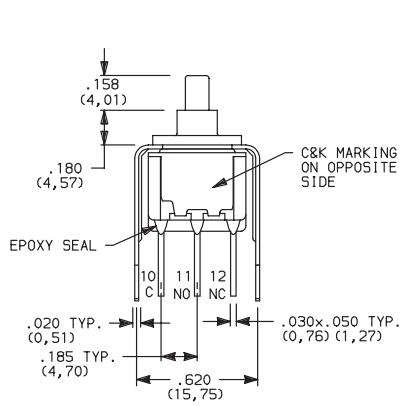


A

Pushbutton

TERMINATIONS

V4, V9 VERTICAL MOUNT, V-BRACKET



8421SD3V4GE
4PDT

OPTION CODE	DIM 'A'
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with JXX actuators and I seal.

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	8x25 MODELS ONLY: 0.4 MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁴		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	8X21, U8X1 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁴		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- ¹ ALL CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- ² N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- ³ COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- ⁴ TERMINALS: Copper alloy, with matte-tin over nickel plate.

NOTE: Any models supplied with B, P, R or G contact material are RoHS compliant.

U811-U841 models with all options (except R, R2 terminations) when ordered with mandatory G or R contact material.

B or P contact material must be ordered with 8X25 models.

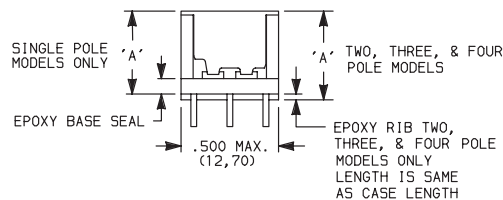
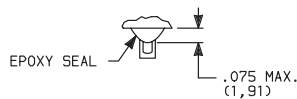
G or R contact material must be ordered with 8X21, U8X1 models.

P or R contact material not available with Z, Z3 terminations.

SEAL

E EPOXY SEAL

I EPOXY POTTED BASE



NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

NOTE: Available with C, W-W4, Z, Z3 terminations only.



Third Angle Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com

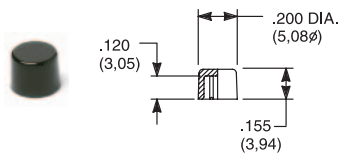


8020 Series Snap-acting Momentary Pushbutton Switches

Pushbutton
A

AVAILABLE HARDWARE

Cap

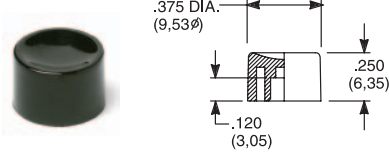


PART NO.

- 708901000 WHITE
- 708902000 BLACK
- 708903000 RED
- 708904000 ORANGE
- 708905000 YELLOW
- 708906000 GREEN
- 708907000 BLUE
- 708909000 GRAY

Material: Nylon
Finish: Gloss

Cap

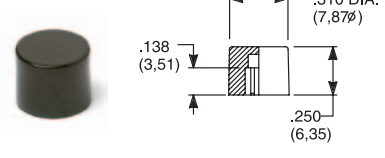


PART NO.

- 752701000 WHITE
- 752702000 BLACK
- 752703000 RED
- 752704000 ORANGE
- 752705000 YELLOW
- 752706000 GREEN
- 752707000 BLUE
- 752709000 GRAY

Material: Nylon
Finish: Gloss

Cap

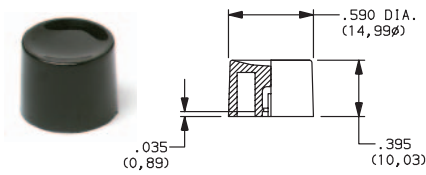


PART NO.

- 801801000 WHITE
- 801802000 BLACK
- 801803000 RED
- 801804000 ORANGE
- 801805000 YELLOW
- 801806000 GREEN
- 801807000 BLUE
- 801809000 GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

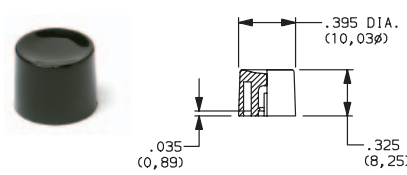


PART NO.

- 452D01000 WHITE
- 452D02000 BLACK
- 452D03000 RED
- 452D04000 ORANGE
- 452D05000 YELLOW
- 452D06000 GREEN
- 452D07000 BLUE
- 452D09000 GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

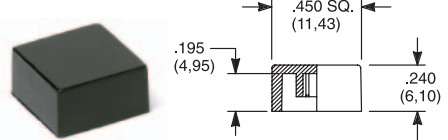


PART NO.

- 894101000 WHITE
- 894102000 BLACK
- 894103000 RED
- 894104000 ORANGE
- 894105000 YELLOW
- 894106000 GREEN
- 894107000 BLUE
- 894109000 GRAY

Material: Nylon
Finish: Gloss

Cap, J80, J81, J82, J83 & J84 options only



PART NO.

- 484601000 WHITE
- 484602000 BLACK
- 484603000 RED
- 484604000 ORANGE
- 484605000 YELLOW
- 484606000 GREEN
- 484607000 BLUE
- 484609000 GRAY

Material: Nylon
Finish: Gloss

PART NO.

- 798201000 WHITE
- 798202263 BLACK
- 798203000 RED
- 798204000 ORANGE
- 798205000 YELLOW
- 798206000 GREEN
- 798207000 BLUE
- 798209000 GRAY

Material: Nylon
Finish: Matte

Frame



PART NO.

- 615602263 BLACK

Material: Nylon
Finish: Matte

Frame

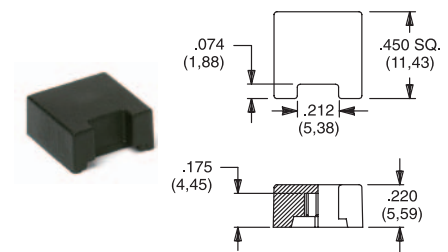


PART NO.

- 613302263 BLACK

Material: Nylon
Finish: Matte

Cap, J85 & J95 options only



PART NO.

- 459701000 WHITE
- 459702000 BLACK
- 459703000 RED
- 459704000 ORANGE
- 459705000 YELLOW
- 459706000 GREEN
- 459707000 BLUE
- 459709000 GRAY

Material: Nylon
Finish: Gloss

PART NO.

- 476801000 WHITE
- 476802000 BLACK
- 476803000 RED
- 476804000 ORANGE
- 476805000 YELLOW
- 476806000 GREEN
- 476807000 BLUE
- 476809000 GRAY

Material: Nylon
Finish: Matte

Fits Z3 Termination female connector



PART NO.

- 530100000

Available in loose pieces.

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
Other cap & frame colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

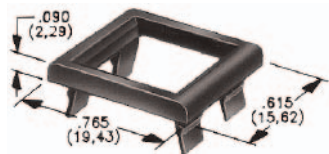
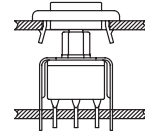


A Pushbutton

AVAILABLE HARDWARE

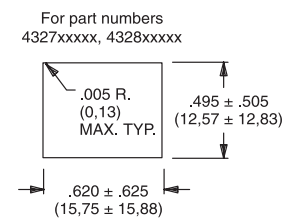
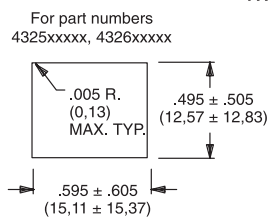
Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



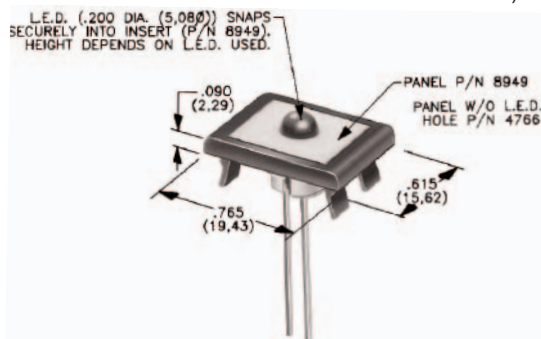
.047" (1,19) PANEL THK.	.062" (1,57) PANEL THK.	.090" (2,29) PANEL THK.	.125" (3,18) PANEL THK.
PART NO. 432502263	PART NO. 432602263	PART NO. 432702263	PART NO. 432802263 BLACK

PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.
894902000

PART NO.
476602000 BLACK

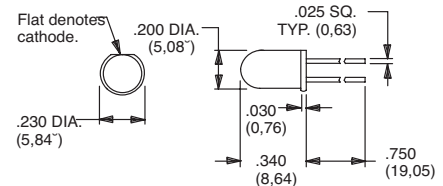
Special colors, custom markings available, consult Customer Service Center.

LED INFORMATION

SWITCHES WITH LED SUPPLIED: J85, J95 OPTIONS:

Rectangular LEDs are supplied on 8020 Series pushbutton switches with J85 and J95 options. These LEDs are factory installed and are not replaceable. The following specifications apply:

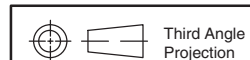
OPTION CODE	COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT	MAX RATINGS AT 25°C AMBIENT TEMPERATURE		
					FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd	2.1 V	20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd		10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW



Suggested LED for J82 & J84 options. Dimensions for reference only.

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

Caution: Circuit elements must limit forward current of LED to 50mA max. continuous. * Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center. LEDs are not supplied with J82, J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

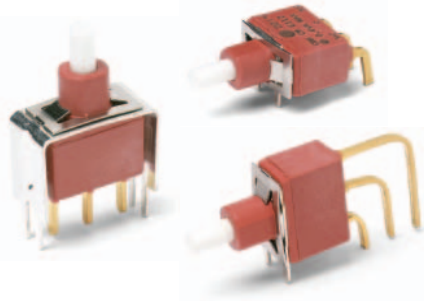




A

Pushbutton

E010 Series Sealed Momentary Pushbutton Switches



Features/Benefits

- Process sealed, withstands soldering and cleaning
- Long life contact design
- Snap-fitting plunger available, accepts a variety of caps
- RoHS compliant models available

Typical Applications

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC. See page A-50 for additional ratings.

ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with P, Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0), with internal o-ring seal standard.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

SWITCH SUPPORT RETAINER: Stainless steel.

END CONTACTS: Q contact material: Coin silver, silver plated. See A-50 for additional ratings.

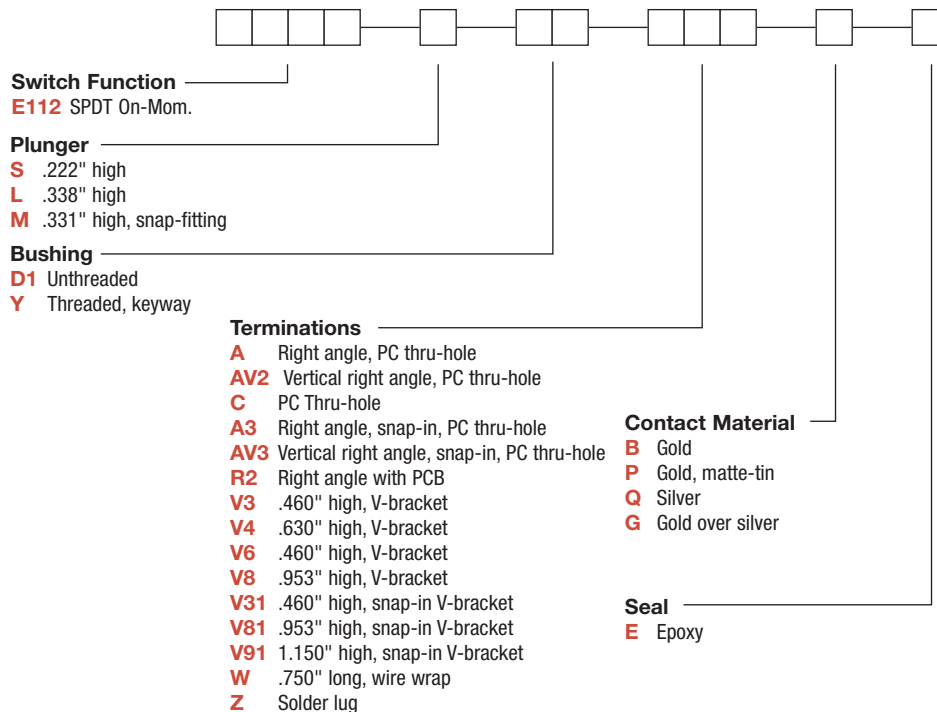
CENTER CONTACTS & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-50 for additional ratings.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & locking ring-Brass, nickel plated. Lockwasher-Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-47 thru A-51. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E010 Series Sealed Momentary Pushbutton Switches



A

Pushbutton

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	E112	ON	MOM.	2-1	2-3	

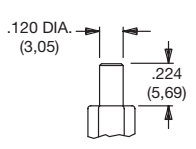
SPDT

Part number shown: E112SD1CQE

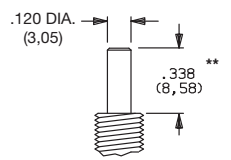
MOM. = Momentary
 All models with all options when ordered with G or Q contact material.

PLUNGER

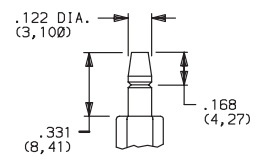
- S** .218" HIGH
- L** .338" HIGH
- M** .331" HIGH, SNAP-FITTING



Standard with D1 bushing (as shown).
 † Subtract .100 (2,54) from plunger length when ordered with Y bushing.



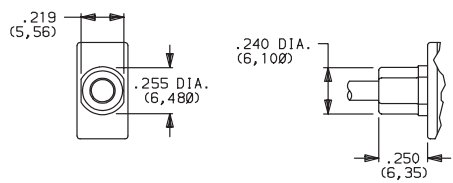
Standard with Y bushing (as shown).
 ** Add .100 (2,54) from plunger length when ordered with D1 bushing.



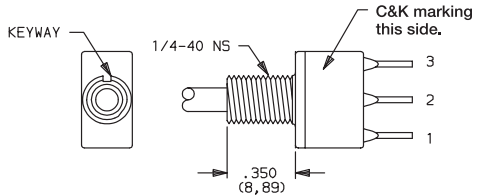
NOTE: Caps available for all plunger options, see pages A-50 and A-51.

BUSHING

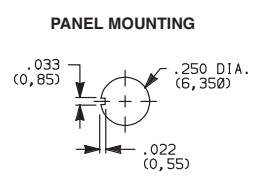
- D1** UNTHREADED
- Y** THREADED, KEYWAY



S plunger standard with D1 bushing.



L plunger standard with Y bushing. Available only with C, Z terminations.
 Hardware: One dress nut part number 299D01201, one hex nut and lockwasher supplied standard.
Withstands 4 in./lbs. without distortion.



NOTE: Internal o-ring actuator seal standard for all bushing options.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



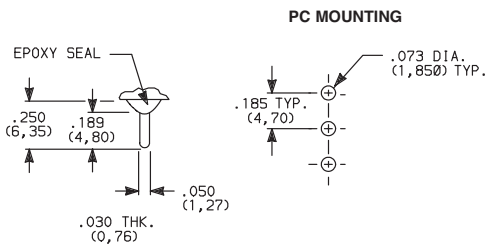
E010 Series Sealed Momentary Pushbutton Switches

Pushbutton

A

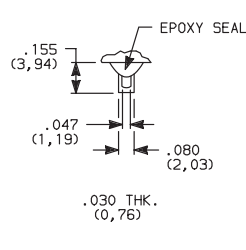
TERMINATIONS

C PC THRU-HOLE



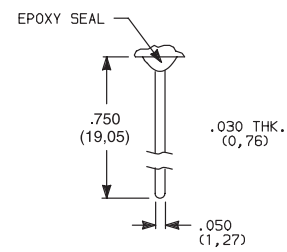
SPDT

Z SOLDER LUG



SPDT Not available with P contact materials.

W WIRE WRAP

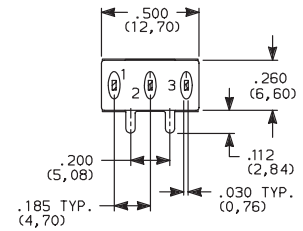
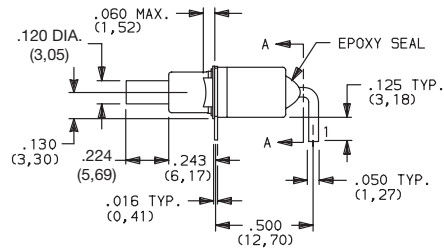
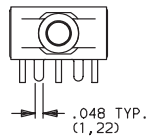


SPDT

A RIGHT ANGLE, PC THRU-HOLE

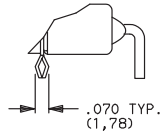
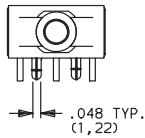


E112SD1ABE
SPDT

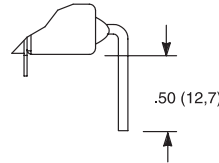


SECTION A-A

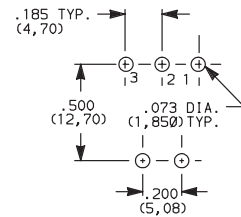
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



AW RIGHT ANGLE, EXTENDED, PC THRU-HOLE



PC MOUNTING

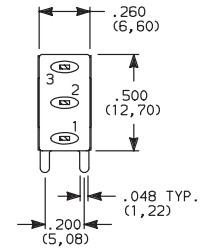
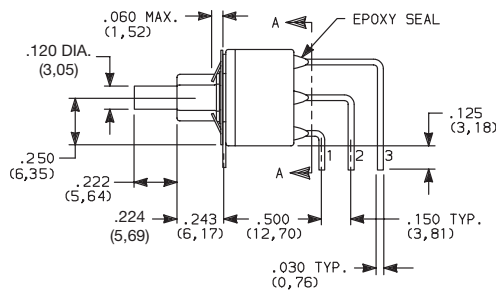
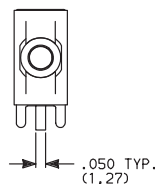


NOTE: Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150° PITCH

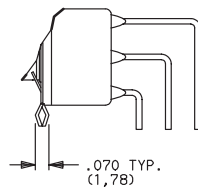
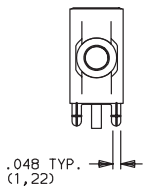


E112SD1AV2BE
SPDT

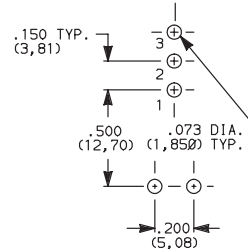


SECTION A-A

AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



PC MOUNTING



NOTE: Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E010 Series Sealed Momentary Pushbutton Switches

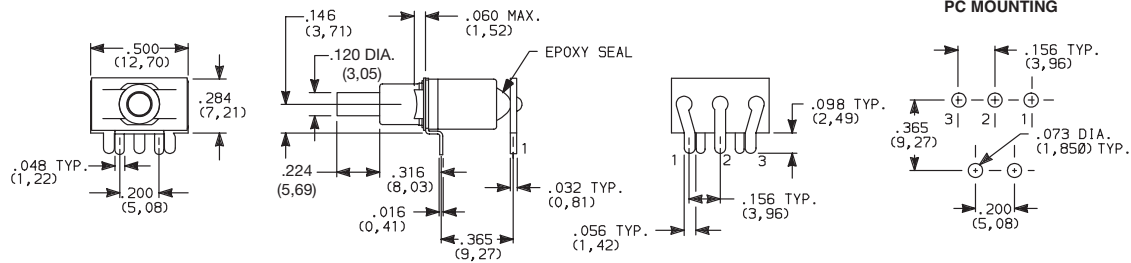


A

Pushbutton

TERMINATIONS

R2 RIGHT ANGLE WITH PCB

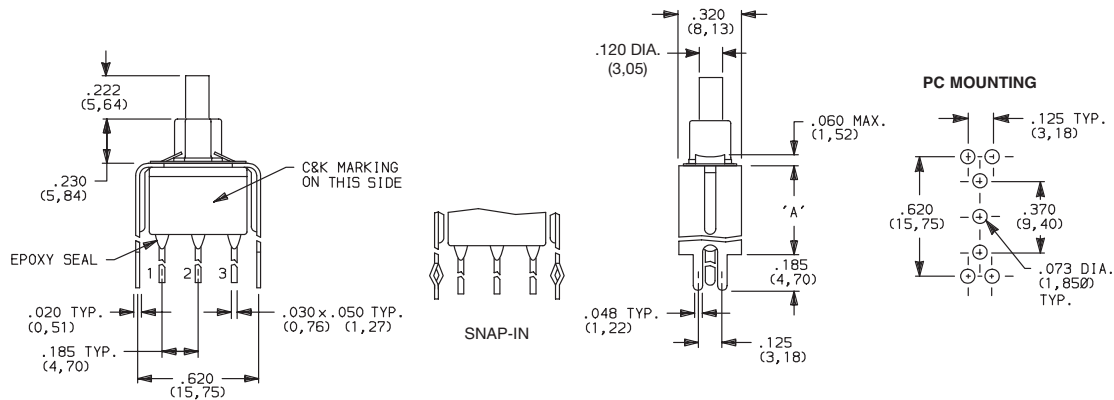


E112SD1R2BE
SPDT

NOTE: Available with D1 bushing and B contact material only.

V3, V4 VERTICAL MOUNT, V-BRACKET

V31, V91 VERTICAL MOUNT, V-BRACKET, SNAP-IN



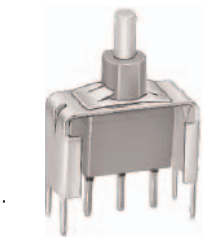
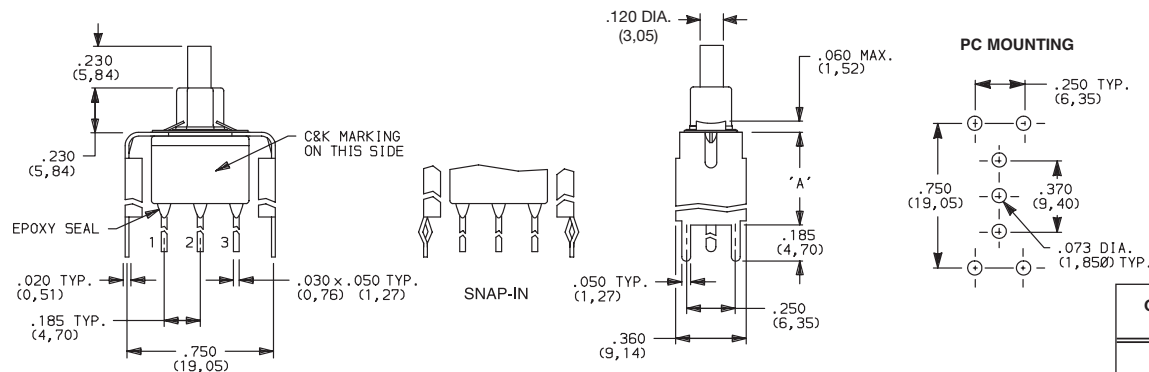
E112SD1_BE
SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V91	1.150 (29,21)

NOTE: Available with D1 bushing only.

V6, V8 VERTICAL MOUNT, V-BRACKET

V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E112SD1_BE
SPDT

OPTION CODE	DIM 'A'
V6	.460 (11,68)
V8, V81	.953 (24,21)

NOTE: Available with D1 bushing only.



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E010 Series Sealed Momentary Pushbutton Switches

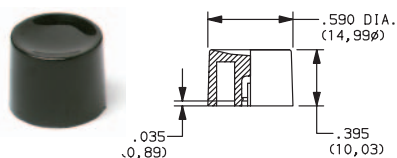


A

Pushbutton

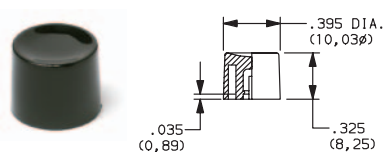
AVAILABLE HARDWARE

Cap, Snap-fitting plunger



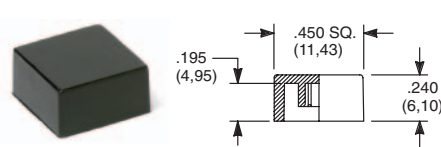
PART NO.
452D01000 WHITE
452D02000 BLACK
452D03000 RED
 Material: Nylon
 Finish: Gloss

Cap, Snap-fitting plunger



PART NO.
894101000 WHITE
894102000 BLACK
894103000 RED
 Material: Nylon
 Finish: Gloss

Cap



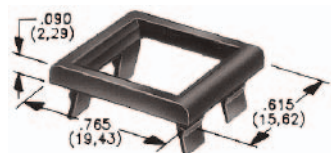
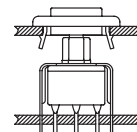
PART NO.
484601000 WHITE
484602000 BLACK
484603000 RED
 Material: Nylon
 Finish: Gloss

PART NO.
798201000 WHITE
798202263 BLACK
798203000 RED
 Material: Nylon
 Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
 Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

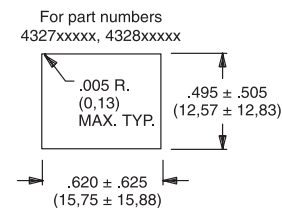
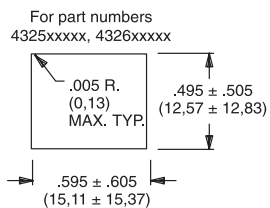
TYPICAL APPLICATION



.047" (1,19) PANEL THK. .062" (1,57) PANEL THK. .090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

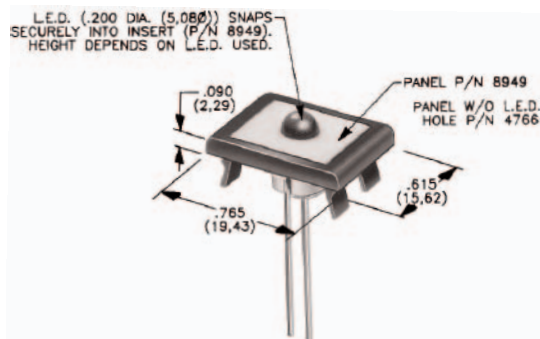
PART NO. **PART NO.** **PART NO.** **PART NO.**
432502263 **432602263** **432702263** **432802263** BLACK

PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

PART NO.
894902000

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.



Third Angle Projection

Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



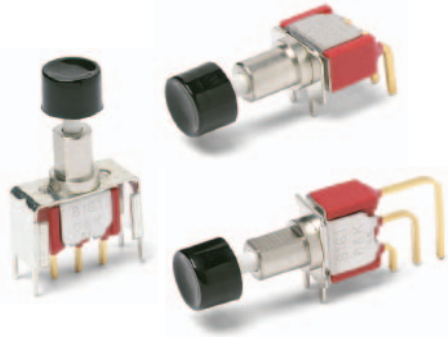
www.ck-components.com



A

Pushbutton

8060 Series Alternate Action and Momentary Pushbutton Switches



Features/Benefits

- Long travel
- Available with LED
- Long life contact design
- Epoxy terminal seal compatible with bottom wash cleaning
- RoHS compliant models available

Typical Applications

- Instrumentation
- Computers and peripherals
- Telecommunications and networking equipment



Specifications

CONTACT RATING: Q contact material: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. See page A-59 for additional ratings.

ELECTRICAL LIFE: 50,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

CAP INSTALLATION FORCE: 10 lbs. maximum permissible.

NOTE: Any models supplied with P, R, S, Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

PLUNGER: S, S1, S2 Options: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0). L, L1 Options: Brass, nickel plated.

CAP & FRAME: Nylon, black standard.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

END CONTACTS: Q contact material: Coin silver, silver plated. See page A-59 for additional contact materials.

CENTER CONTACT & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-59 for additional contact materials.

TERMINAL SEAL: Epoxy. Refer to soldering and cleaning in Technical Data Chapter.

HARDWARE: Nut & Locking Ring: Brass, nickel plated; Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-53 thru A-61. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Switch Function

- 8161** SPDT On-On
- 8168** SPDT On-Mom.
- 8261** DPDT On-On

Actuator or Plunger

- S** .710" high plunger with .375" dia. cap
- J80** Snap-in
- J81** Snap-in with frame
- J82** Snap-in with frame for LED
- J86** Snap-in with frame & LED
- L** .740" high plunger with .395" dia. cap
- L1** .740" high plunger with .590" dia. cap
- S1** .615" high plunger with .200" dia. cap
- S2** .710" high plunger with .310" dia. cap

Bushing

- H** .300" high, flat, hi torque
- H9** .300" high, flat, hi torque
- NONE** No bushing choice required
- Y3** 7.6mm, keyway

Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- A3** Right angle, snap-in, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V21** .555" high, snap-in V-bracket
- V31** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- Z3** Quick connect

Contact Material

- B** Gold
- P** Gold, matte-tin
- Q** Silver
- S** Silver, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

Seal

- E** Epoxy
- I** Epoxy potted base

Cap Color

- 2** Black
- 1** White
- 3** Red
- 4** Orange
- 5** Yellow
- 9** Gray

Frame Color

- 2** Black

LED Color

- 3** Red
- NONE** Models without LED



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8060 Series Alternate Action and Momentary Pushbutton Switches



A
Pushbutton

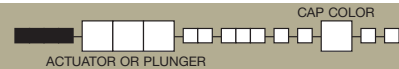
SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	8161 8168	ON ON	ON MOM.	2-3 2-3	2-1 2-1	SPDT
SPDT <p>Part number shown: 8161SHZQE</p>						
DP	8261	ON ON	ON ON	2-3,5-6 2-1,5-4	2-1,5-4 2-1,5-4	DPDT
DPDT <p>Part number shown: 8261SHZQE</p>						

MOM. = Momentary

All models with all options when ordered with G or Q contact material.

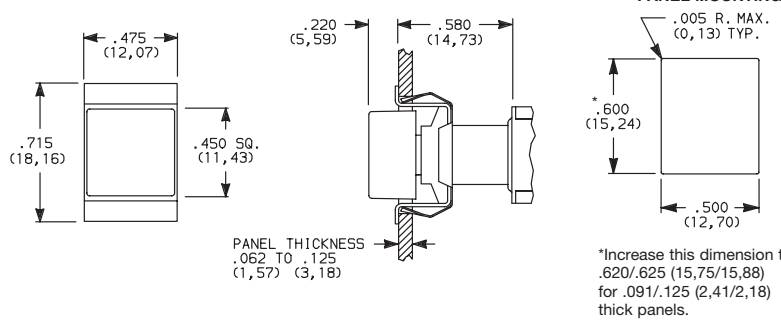
ACTUATOR—SNAP-IN FRONT MOUNT



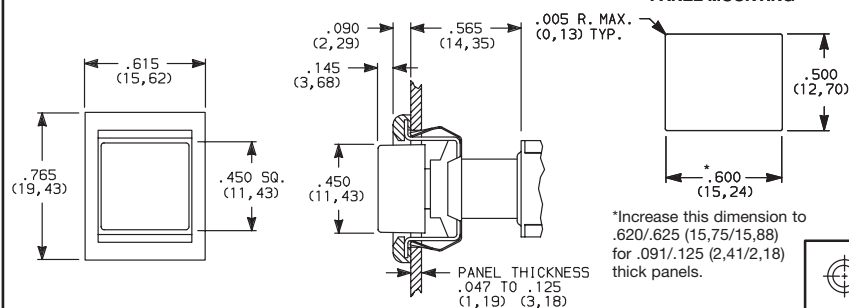
OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

Cap Finish: matte.
Other colors available, consult Customer Service Center.
Available with C, W, Z or Z3 terminations.
NOTE: Caps & frames available separately, see pages A-60 and A-61.

J80 SNAP-IN



J81 SNAP-IN WITH BLACK FRAME



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

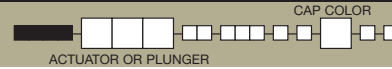


8060 Series Alternate Action and Momentary Pushbutton Switches

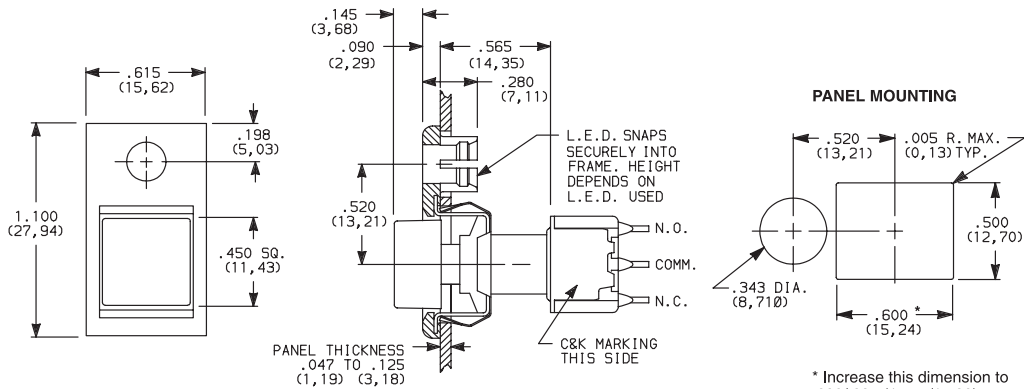
A

Pushbutton

ACTUATOR—SNAP-IN FRONT MOUNT



J82 SNAP-IN WITH BLACK FRAME FOR LED



Available with C, W, Z or Z3 terminations.

LED not included.
For LED information, see page A-61.

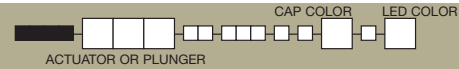
NOTE: Caps & frames available separately, see pages A-60 and A-61.

Other colors available, consult Customer Service Center.

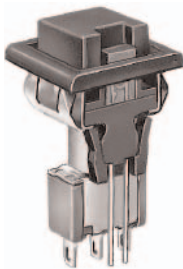
OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

* Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thick panels.

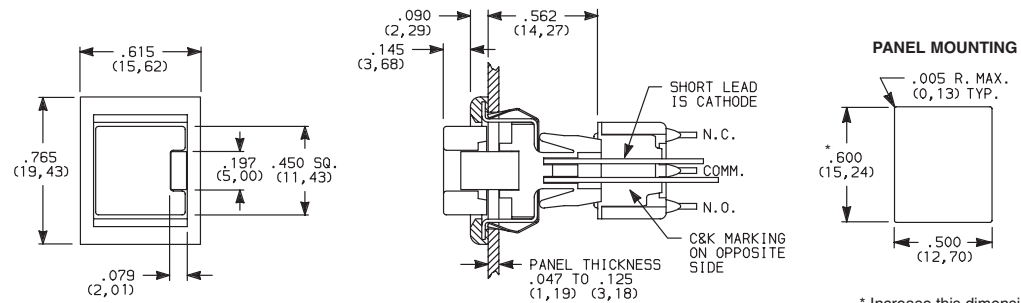
ACTUATOR—SNAP-IN FRONT MOUNT



J86 SNAP-IN WITH BLACK FRAME AND LED



8161J86ZQE223
SPDT



Available with C, W, Z or Z3 terminations and SPDT models only.

NOTE: Caps & frames available separately, see pages A-60 and A-61.

Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

OPTION CODE	LED COLOR
3	RED

For LED information, see page A-61.

* Increase this dimension to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thick panels.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8060 Series Alternate Action and Momentary Pushbutton Switches

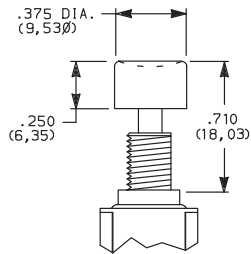


A

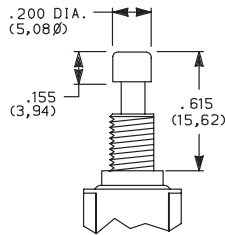
Pushbutton



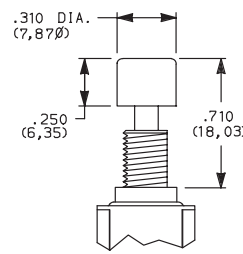
S PLUNGER WITH CAP P/N 7527



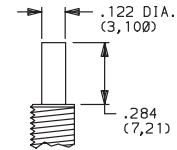
S1 PLUNGER WITH CAP P/N 7089



S2 PLUNGER WITH CAP P/N 8018

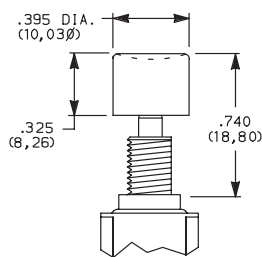


S, S1, S2 plunger dimensions.

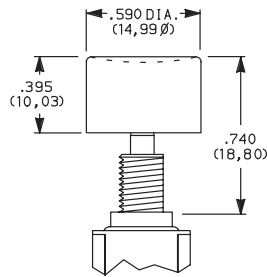


Plunger material: Glass filled nylon or glass filled polyester (UL 94V-0).

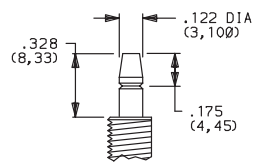
L PLUNGER WITH CAP P/N 8941



L1 PLUNGER WITH CAP P/N 8940



L, L1 plunger dimensions.



Plunger Material: Brass, chrome plated.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

Cap Finish: gloss. Cap supplied not installed. Other colors available, consult Customer Service Center.

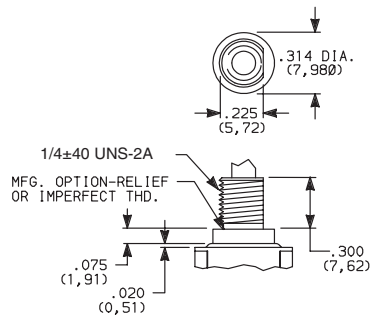
NOTE: When selecting plunger and cap option, bushing selection must also be made, see below.



H .300" HIGH THREADED, FLAT
H9 .300" HIGH UNTHREADED, FLAT

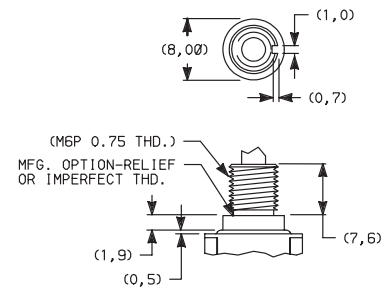
NONE NO BUSHING CHOICE REQUIRED (JXX ACTUATORS)

Y3 7.6mm THREADED, KEYWAY



H bushing standard with C, W, Z or Z3 terminations. H9 bushing standard with A, A3, AV2, AV3, or V3-V31 terminations.

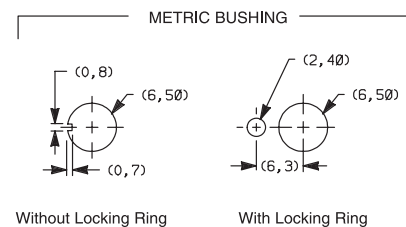
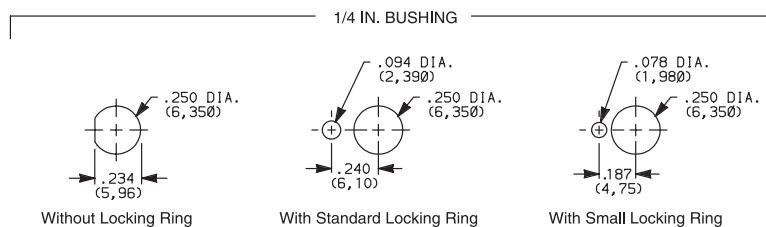
Withstands 12 in./lbs. of torque with no distortion.



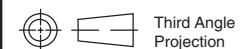
Withstands 12 in./lbs. of torque with no distortion.

NOTE: When selecting bushing option, plunger selection must also be made, see above. No bushing option choice required when any JXX actuator option is selected.

PANEL MOUNTING



NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles and finishes available, see section "Technical Data and Additional Hardware".



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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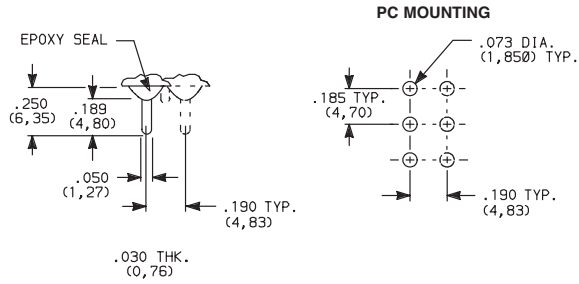


8060 Series Alternate Action and Momentary Pushbutton Switches

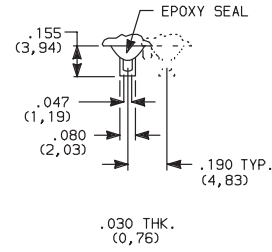
Pushbutton
A

TERMINATIONS

C PC THRU-HOLE



Z SOLDER LUG

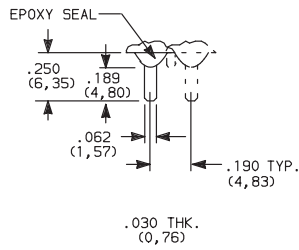


SPDT and DPDT

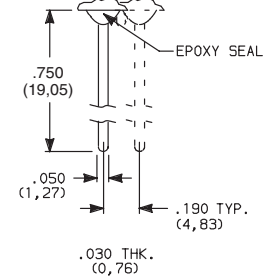
SPDT and DPDT

Not available with P, S or R contact material.

Z3 QUICK CONNECT



W WIRE WRAP



SPDT and DPDT

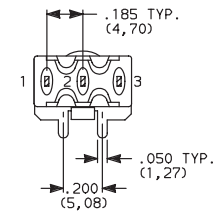
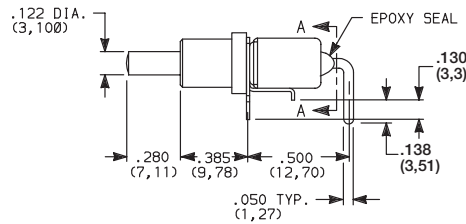
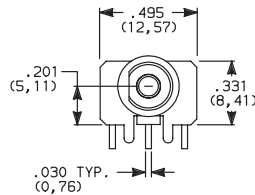
SPDT and DPDT

Not available with P, S or R contact material.
Mating quick connector available;
order part number 530100000, page A-61.

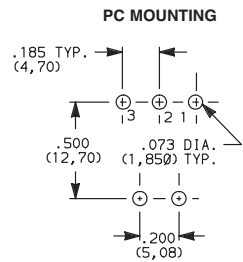
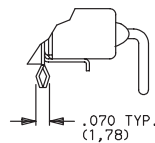
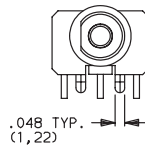
A RIGHT ANGLE, PC THRU-HOLE



8161SH9ABE2
SPDT

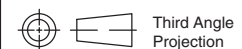


A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



Not available with I seal.
Terminal bend radii and lead-in manufacturing option.

NOTE: PC pattern must clear switch support leg.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8060 Series Alternate Action and Momentary Pushbutton Switches

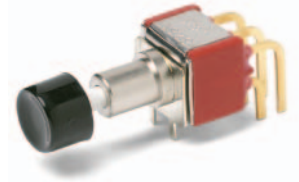
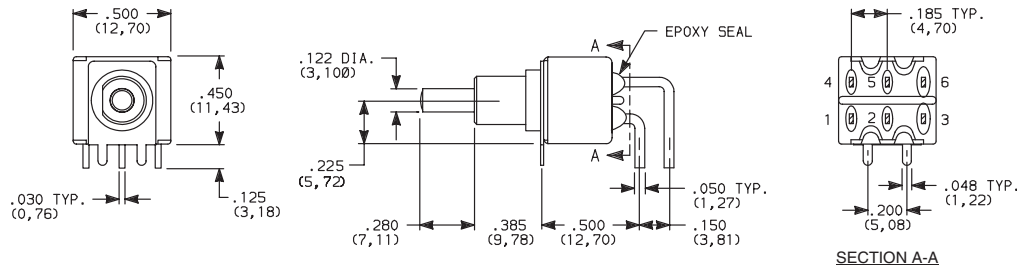


A

Pushbutton

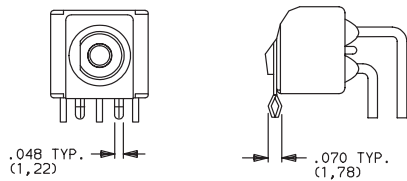
TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE

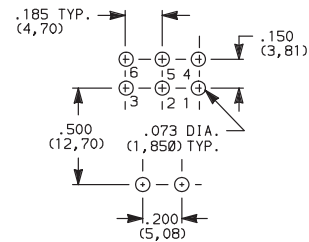


8261SH9ABE2
DPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

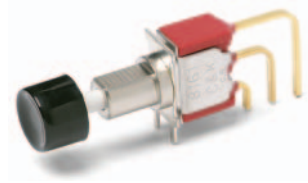
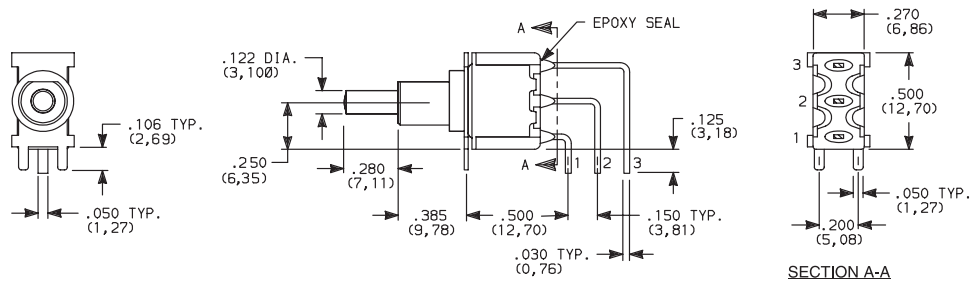


PC MOUNTING



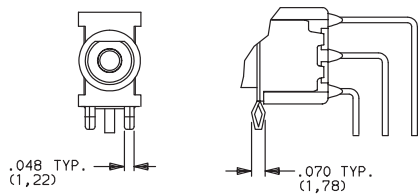
Not available with I seal.
Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150° PITCH

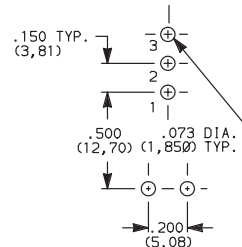


8161SH9AV2BE2
SPDT

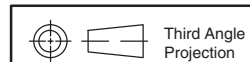
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



PC MOUNTING



Not available with I seal.
Terminal bend radii and lead-in manufacturing option.



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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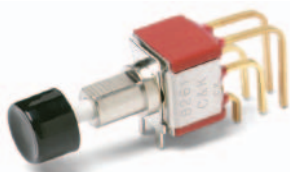
8060 Series Alternate Action and Momentary Pushbutton Switches

TERMINATIONS

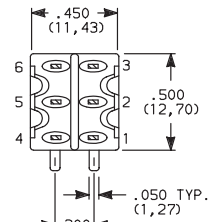
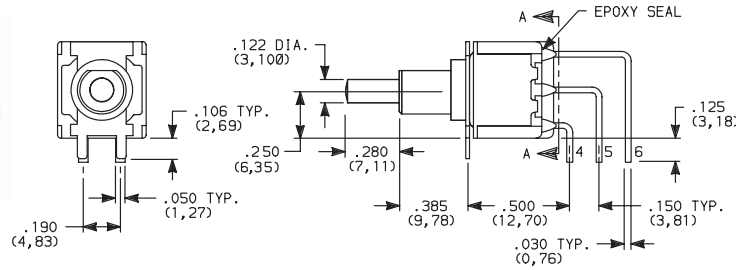
Pushbutton

A

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

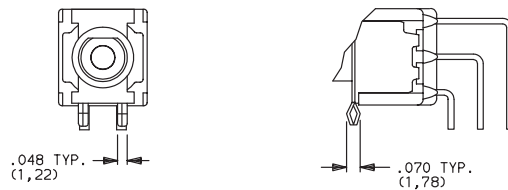


**8261SH9AV2BE2
DPDT**

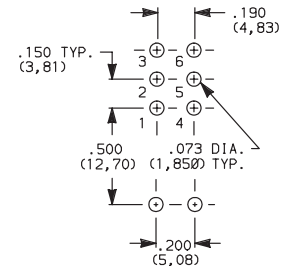


SECTION A-A

AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



PC MOUNTING



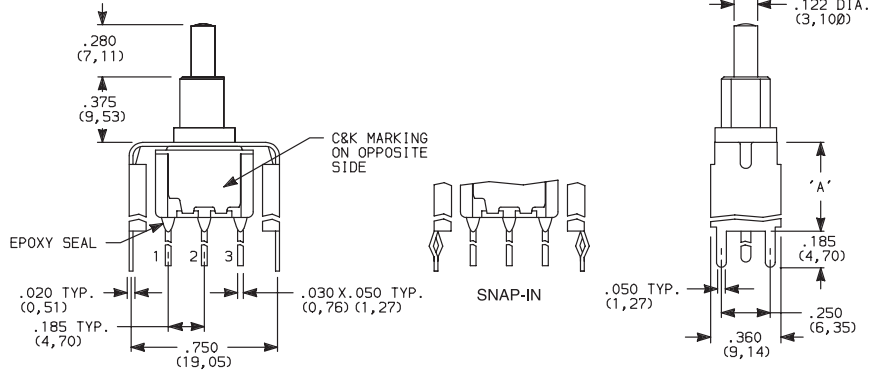
Not available with I seal.
Terminal bend radii and lead-in manufacturing option.

V6 VERTICAL MOUNT, V-BRACKET

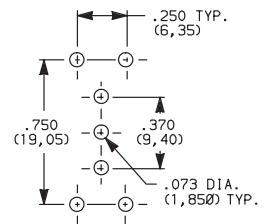
V21 VERTICAL MOUNT, V-BRACKET, SNAP-IN



**8161SH9_BE2
SPDT**



PC MOUNTING



OPTION CODE	DIM 'A'
V21	.555 (14,10)
V6	.460 (11,68)

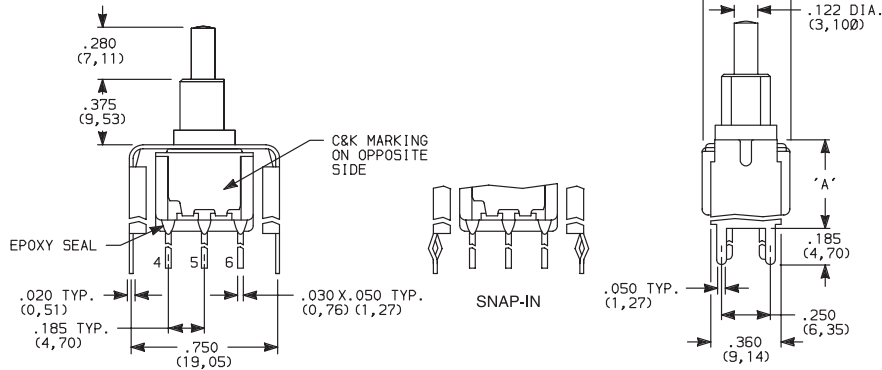
Not available with I seal.

V6 VERTICAL MOUNT, V-BRACKET

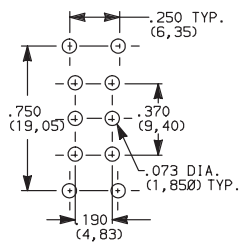
V21 VERTICAL MOUNT, V-BRACKET, SNAP-IN



**8261SH9_BE2
DPDT**



PC MOUNTING



OPTION CODE	DIM 'A'
V21	.555 (14,10)
V6	.460 (11,68)

Not available with I seal.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8060 Series Alternate Action and Momentary Pushbutton Switches



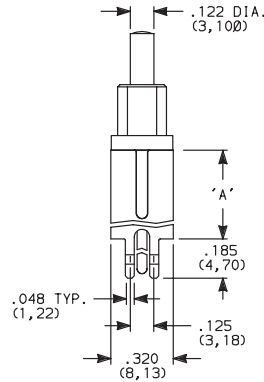
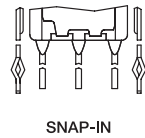
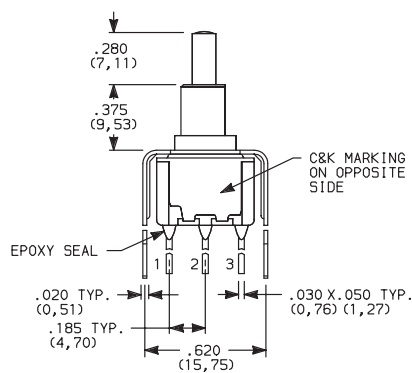
A

Pushbutton

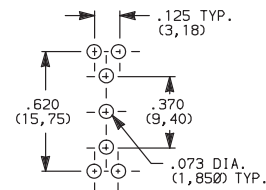
TERMINATIONS

V3, V4 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING



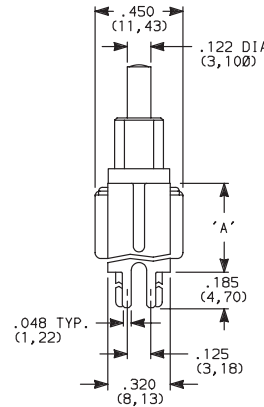
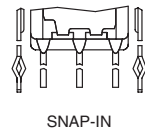
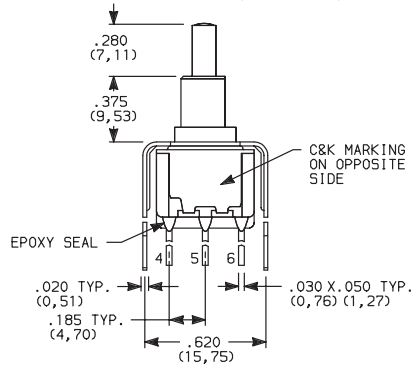
8161SH9_BE2
SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)

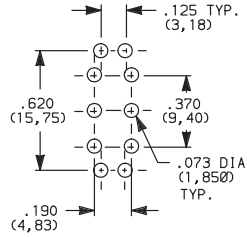
Not available with I seal.

V3, V4 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



PC MOUNTING



8261SH9_BE2
DPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)

Not available with I seal.

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD 1	GOLD 1	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN 6		
Q	SILVER 4,5	SILVER 5	POWER	6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
S		MATTE-TIN 6		
G	GOLD OVER SILVER 2,3	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
R		MATTE-TIN 6		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- END CONTACTS: Coin silver, with gold plate over nickel plate.
- CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- END CONTACTS: Coin silver, silver plated.
- CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- TERMINALS: Copper alloy, with matte-tin over nickel plate.

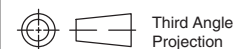
All models with all options when ordered with S, R, G, or Q contact material.

B contact material standard with all terminations except C, Z & Z3.

Q contact material standard with C, Z & Z3 terminations.

P, S & R contact materials not available with Z & Z3 terminations.

NOTE: Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



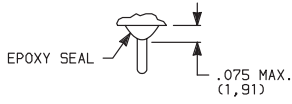


8060 Series Alternate Action and Momentary Pushbutton Switches

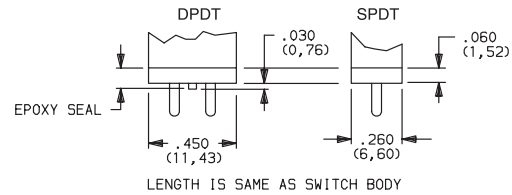
SEAL

Pushbutton
A

E EPOXY SEAL



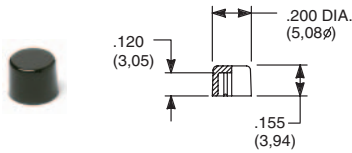
I EPOXY POTTED BASE



NOTE: Available with C, W, Z, Z3 terminations only.

AVAILABLE HARDWARE

Cap

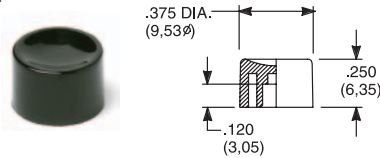


PART NO.

- 708901000 WHITE
- 708902000 BLACK
- 708903000 RED
- 708904000 ORANGE
- 708905000 YELLOW
- 708909000 GRAY

Material: Nylon
Finish: Gloss

Cap

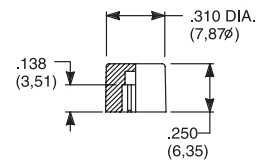


PART NO.

- 752701000 WHITE
- 752702000 BLACK
- 752703000 RED
- 752704000 ORANGE
- 752705000 YELLOW
- 752709000 GRAY

Material: Nylon
Finish: Gloss

Cap

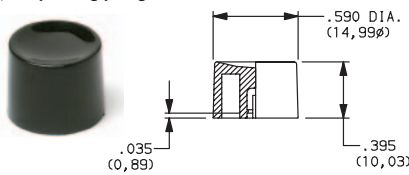


PART NO.

- 801801000 WHITE
- 801802000 BLACK
- 801803000 RED
- 801804000 ORANGE
- 801805000 YELLOW
- 801809000 GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

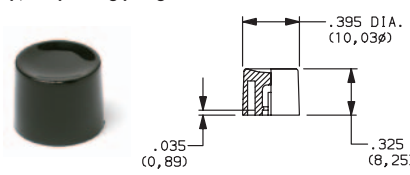


PART NO.

- 452D01000 WHITE
- 452D02000 BLACK
- 452D03000 RED
- 452D04000 ORANGE
- 452D05000 YELLOW
- 452D09000 GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

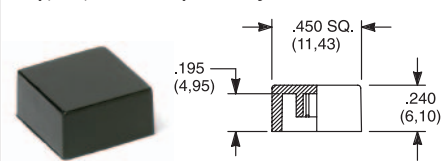


PART NO.

- 894101000 WHITE
- 894102000 BLACK
- 894103000 RED
- 894104000 ORANGE
- 894105000 YELLOW
- 894109000 GRAY

Material: Nylon
Finish: Gloss

Cap, J80, J81 & J82 options only



PART NO.

- 484601000 WHITE
- 484602000 BLACK
- 484603000 RED
- 484604000 ORANGE
- 484605000 YELLOW
- 484609000 GRAY

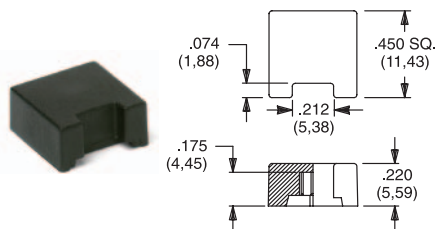
Material: Nylon
Finish: Gloss

PART NO.

- 798201000 WHITE
- 798202263 BLACK
- 798203000 RED
- 798204000 ORANGE
- 798205000 YELLOW
- 798209000 GRAY

Material: Nylon
Finish: Matte

Cap, J86 & J96 options only



PART NO.

- 459701000
- 459702000
- 459703000
- 459704000
- 459705000
- 459709000

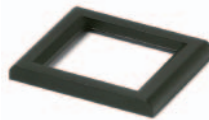
Material: Nylon
Finish: Gloss

PART NO.

- 476801000 WHITE
- 476802000 BLACK
- 476803000 RED
- 476804000 ORANGE
- 476805000 YELLOW
- 476809000 GRAY

Material: Nylon
Finish: Matte

Frame



PART NO.

- 615602263 BLACK

Material: Nylon
Finish: Matte

Frame

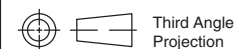


PART NO.

- 613302263 BLACK

Material: Nylon
Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
Other cap & frame colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8060 Series Alternate Action and Momentary Pushbutton Switches



A
Pushbutton

AVAILABLE HARDWARE

Fits Z3 Termination female connector

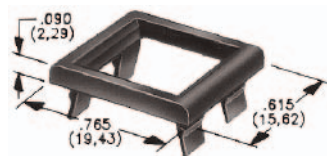
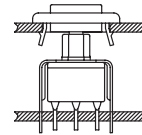


PART NO.
530100000

Available in loose pieces.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

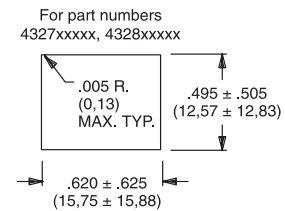
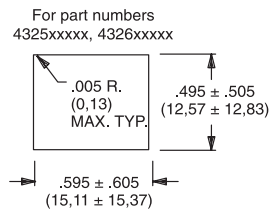
TYPICAL APPLICATION



.047" (1,19) PANEL THK. .062" (1,57) PANEL THK. .090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

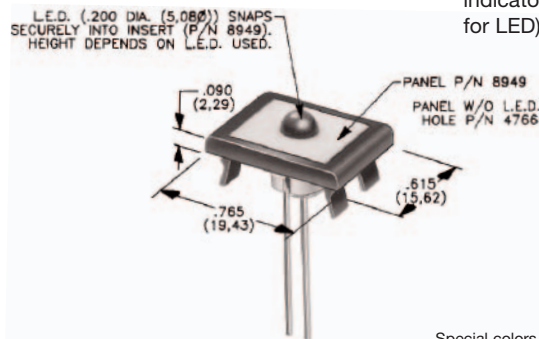
PART NO. 432502263	PART NO. 432602263	PART NO. 432702263	PART NO. 432802263 BLACK
-------------------------------------	-------------------------------------	-------------------------------------	---

PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



PANEL INSERT WITH HOLE FOR LED

PART NO.
894902000

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK

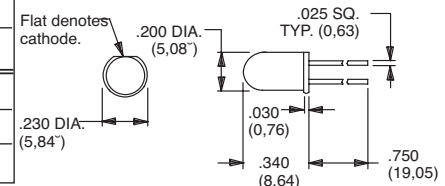
Special colors, custom markings available, consult Customer Service Center.

LED INFORMATION

SWITCHES WITH LED SUPPLIED: J86 OPTION:

Rectangular LEDs are supplied on 8060 Series pushbutton switches with J86 option. These LEDs are factory installed and are not replaceable. The following specifications apply:

OPTION CODE	COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT	MAX RATINGS AT 25°C AMBIENT TEMPERATURE		
					FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd	2.1 V	20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd		10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW



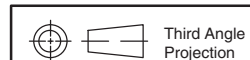
Suggested LED for J82 & J84 options. Dimensions for reference only.

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

Caution: Circuit elements must limit forward current of LED to 50mA max. continuous.

* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center.

LEDs are not supplied with J82 & J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





A

Pushbutton

8500 Series Subminiature Pushbutton Switches



Features/Benefits

- Pre-travel or over-travel models available
- Ratings up to 3 AMPS
- Reliable contact design
- RoHS compliant

Typical Applications

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: Q contact material (853X Models): 1 AMP @ 120 V AC or 28 V DC; (855X Models): 3 AMPS @ 120 V AC or 28 V DC. See page A-65 for additional ratings.

ELECTRICAL LIFE:
853X MODELS: 250,000 actuations at full load.
855X MODELS: 10,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

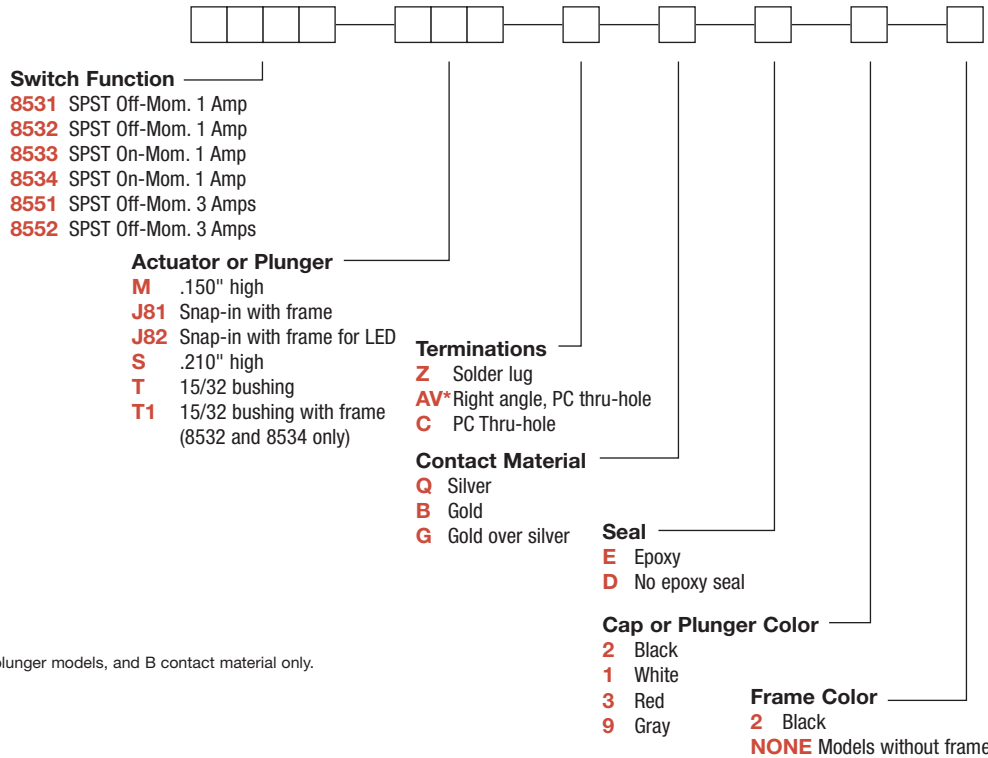
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled phenolic or diallyl phthalate (DAP) (UL 94V-0).
 PLUNGER: Phenolic or glass filled polyester, black standard(UL94V-0).
 CAP & FRAME: Nylon, black, standard.
 BUSHING: Brass, nickel plated.
 CONTACTS: Q contact material: Coin silver, silver plated. See page A-65 for additional contact materials.
 TERMINALS: Q contact material: Copper alloy, silver plated. See page A-65 for additional contact materials.
 TERMINAL SEAL: Epoxy.
 HARDWARE: Nut: Brass, nickel plated; Lockwasher: Steel, bright nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-63 thru A-66. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



* Available with M or S plunger models, and B contact material only.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8500 Series Subminiature Pushbutton Switches



A

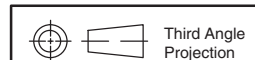
Pushbutton

SWITCH FUNCTION

NO. POLES	MODEL NO.	RATING	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC	
			POS. 1	POS. 2				
SP	8531	1 AMP	OFF	MOM.	.095 (2,41) TYP. with overtravel .042 (1,07) TYP.	7.7 oz (220g) TYP.	N.O. with overtravel	
	8551	3 AMPS						
SPST								
							Part number shown: 8531MZQE2	
SP	8532	1 AMP	OFF	MOM.	.050 (1,27) TYP.	6 oz (170g) TYP.	N.O.	
	8552	3 AMPS						
SPST								
							Part number shown: 8532MZQE2	
SP	8533	1 AMP	ON	MOM.	.080 (2,03) TYP. with pretravel .057 (1,45) TYP.	11.5 oz (456 g) TYP.	N.C. with pretravel	
	8534	1 AMP						.032 (0,81) TYP. with overtravel .028 (0,71) TYP.
SPST								
							Part number shown: 8533MZQE2	

MOM. = Momentary

All models with all options when ordered with G or Q contact material.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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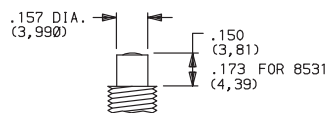
8500 Series Subminiature Pushbutton Switches

Pushbutton
A

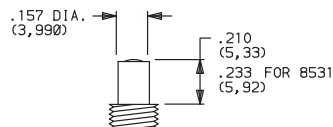
PLUNGER



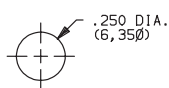
M .150" HIGH PLUNGER



S .210" HIGH PLUNGER



PANEL MOUNTING



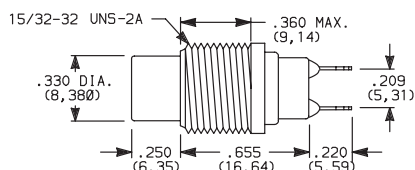
OPTION CODE	PLUNGER COLOR
2	BLACK
3	RED

NOTE: One mounting nut and lockwasher supplied with all actuators (except T actuator: two nuts supplied).

ACTUATOR

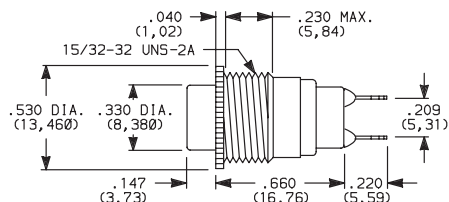


T 15/32 BUSHING



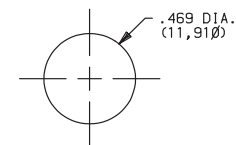
NOTE: No frame color choice required.

T1 15/32 BUSHING WITH FRAME



NOTE: No frame color choice required.
Available with 8532 and 8534 models only.

PANEL MOUNTING



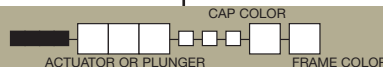
OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
9	GRAY

Cap Finish: gloss. Other colors available, consult Customer Service Center.

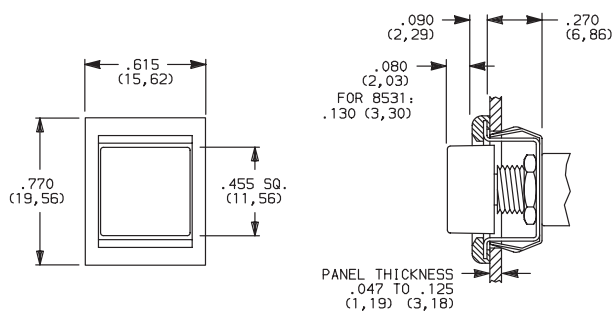
One mounting nut and lockwasher supplied with all actuators (except T actuator: two nuts supplied).

NOTE: Caps available for plunger options, see page A-65.

ACTUATOR—SNAP-IN FRONT MOUNT



J81 SNAP-IN WITH FRAME



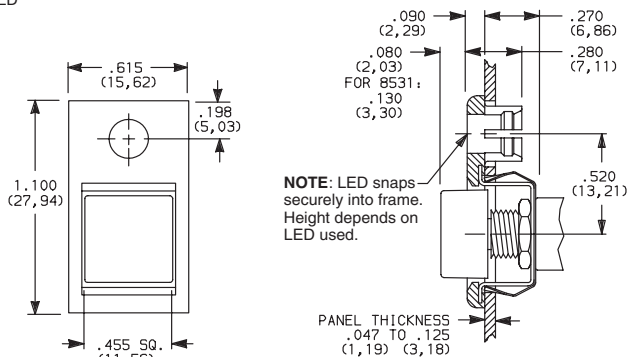
OPTION CODE	CAP AND FRAME COLOR
2	BLACK

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.

One mounting nut and lockwasher supplied with all actuators.

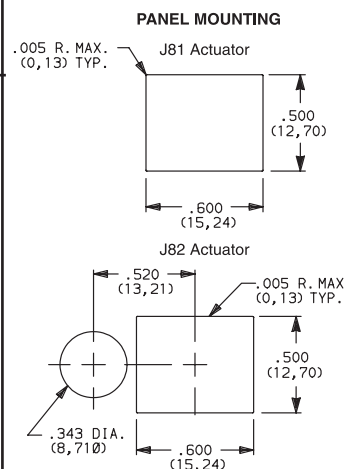
NOTE: Caps & frames available separately, see pages A-65 and A-66.

J82 SNAP-IN WITH FRAME FOR LED



NOTE: LED snaps securely into frame. Height depends on LED used.

LED not included.
For LED information, see page A-66.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8500 Series Subminiature Pushbutton Switches



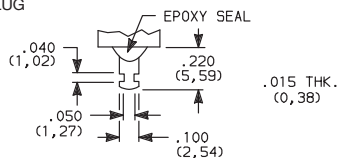
A

Pushbutton

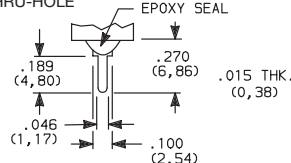
TERMINATIONS



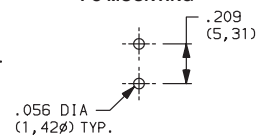
Z SOLDER LUG



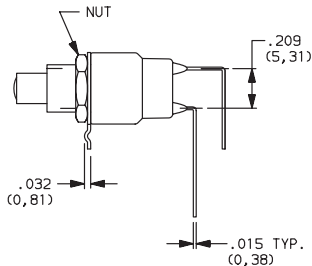
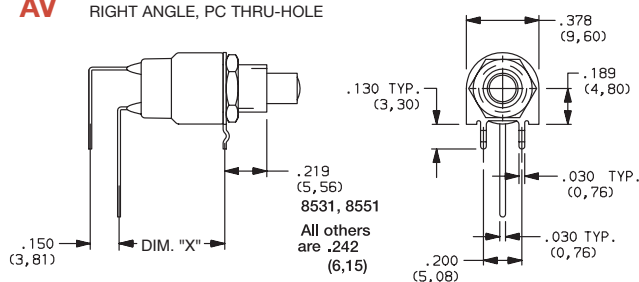
C PC THRU-HOLE



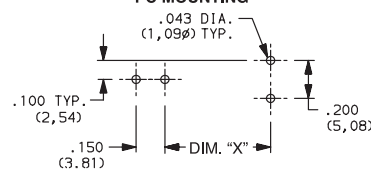
PC MOUNTING



AV RIGHT ANGLE, PC THRU-HOLE



PC MOUNTING



Available with

MODEL NO.	DIM "X"
8531, 8533	0.550
8532, 8534	0.438

NOTE: Available with M or S plunger models, and B contact material only.

CONTACT MATERIAL



OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	TERMINAL PLATING	CONTACT MATERIAL	RATINGS	
B	YES	YES	GOLD ¹	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER ⁴	SILVER ⁵	POWER	853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.
G	YES	YES	GOLD OVER SILVER ²	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 V MAX @ 20 V AC OR DC MAX. OR 853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

² CONTACTS: Coin silver, with gold plate over nickel plate.

³ TERMINALS: Copper alloy, with gold plate over nickel plate.

⁴ CONTACTS: Coin silver, silver plated.

⁵ TERMINALS: Copper alloy, silver plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

All models with all options when ordered with G or Q contact material.

Q contact material standard with C, Z terminations.

8551 & 8552 available with Q contact material only.

SEAL

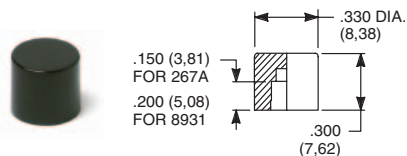


E EPOXY SEAL



REPLACEMENT HARDWARE

Cap for 0.157" dia. plungers



PART NO.

267A01000 WHITE
267A02000 BLACK
267A03000 RED
267A09000 GRAY

PART NO.

893101000 WHITE
893102000 BLACK
893103000 RED
893109000 GRAY

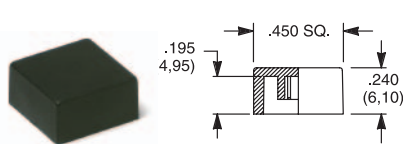
85X2T, 8534T models only

Material: Nylon
Finish: Gloss

85X1T, 8532T1, 8533T, 8534T1 models only

Material: Nylon
Finish: Gloss

Cap, J80, J81 & J 82 options only



PART NO.

448901000 WHITE
448902000 BLACK
448903000 RED
448909000 GRAY

Material: Nylon
Finish: Gloss or matte

Other colors available, consult Customer Service Center.

Frame



PART NO.

613302263 BLACK

Material: Nylon
Finish: Matte



Third Angle Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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8500 Series Subminiature Pushbutton Switches

AVAILABLE HARDWARE

Pushbutton
A

Frame

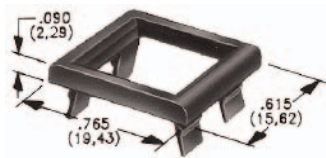
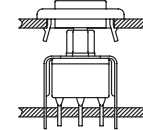


PART NO.
615602263 BLACK
Material: Nylon
Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
Other colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



.047" (1,19) PANEL THK.

PART NO.
432502263

.062" (1,57) PANEL THK.

PART NO.
432602263

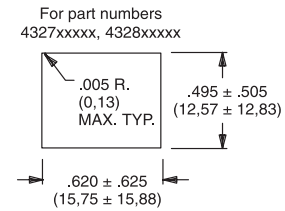
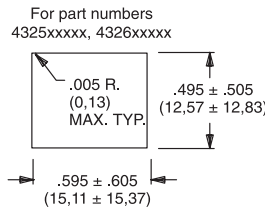
.090" (2,29) PANEL THK.

PART NO.
432702263

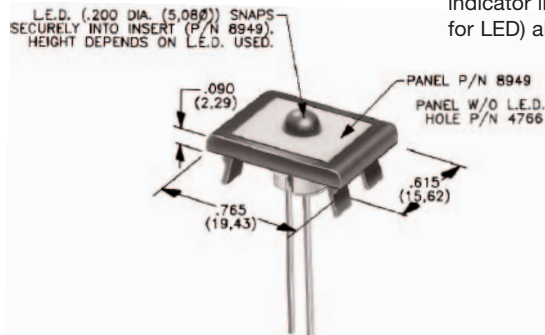
.125" (3,18) PANEL THK.

PART NO.
432802263 BLACK

PANEL MOUNTING



Panel Inserts



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

PANEL INSERT WITH HOLE FOR LED

PART NO.
894902000

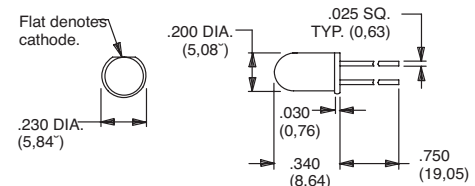
BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.

LED INFORMATION

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum. LEDs are not supplied with J82 option. LED snaps into switch frame surrounding actuator and is wired externally.



Suggested LED for J82 option. Dimensions for reference only.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

KM Series Subminiature Pushbutton Switches



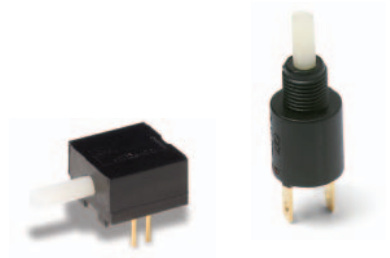
A
Pushbutton

Features/Benefits

- **Reliable contact design**
- **Available with pretravel and overtravel**
- **RoHS compliant**

Typical Applications

- **Alarm systems**
- **Computers**
- **Detector switch application**



Models Available

Specifications

CONTACT RATING: Q contact material (KM11, KM12 Models): 0.25 AMPS @ 125 V AC or DC (UL); (KM33 Model): 1 AMP @ 125 V AC or 28 V DC. See page A-69 for additional ratings.

ELECTRICAL LIFE: 10,000 actuations min. at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

NOTE: Any models supplied with Q or B contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

HOUSING & BUSHING: 6/6 nylon (UL94V-2), black.

ACTUATOR: 6/6 nylon (UL 94V-2), natural. Internal o-ring seal, available on KM11 & KM33 models.

MOVABLE CONTACT: B contact material: Bronze or copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

STATIONARY CONTACTS & TERMINALS: B contact material: Copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

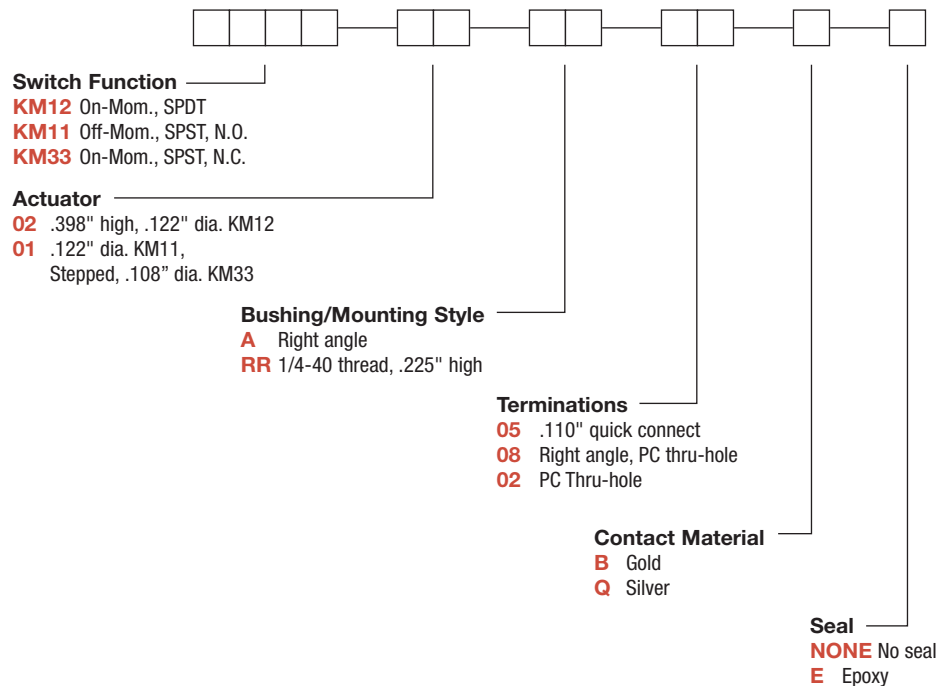
RETURN SPRING: Music wire, phosphor coated.

MOUNTING NUT: Brass, nickel plated.

TERMINAL SEAL: Epoxy.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-68 and A-70. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



KM Series Subminiature Pushbutton Switches

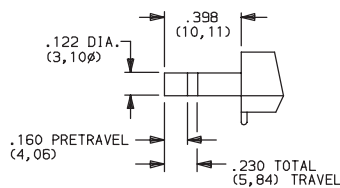
SWITCH FUNCTION

Pushbutton
A

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	KM11	OFF	MOM.	OPEN	2-1	SPST N.O.
	KM33	ON	MOM.	2-1	OPEN	SPST N.C.
SPST <p>Part number shown: KM1101RR05BE</p>						
SP	KM12	ON	MOM.	2-1	4-3	SPDT
SPDT <p>Part number shown: KM1202A08BE</p>						

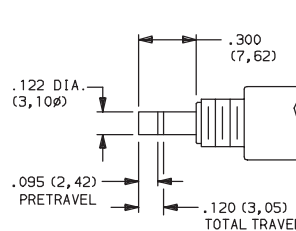
ACTUATOR

02 .398" HIGH, .122" DIA.

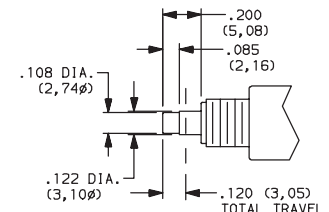


KM12 models only.

01 .122" DIA.

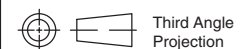


KM11 models only.



KM33 models only.

NOTE: Caps available for plunger options, see page A-70.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

KM Series Subminiature Pushbutton Switches



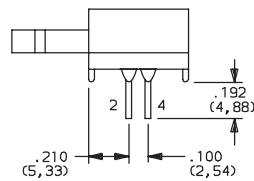
A

Pushbutton

BUSHING/ MOUNTING STYLE

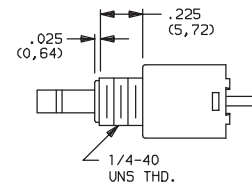


A RIGHT ANGLE



KM12 models only.

RR 1/4-40 THREAD, .225" HIGH



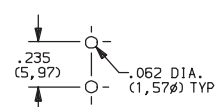
KM11 & KM33 models only.

PANEL MOUNTING

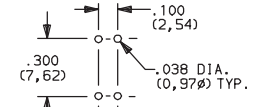


KM11 & KM33 models.

PC MOUNTING



KM11 models only.

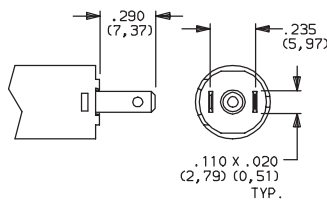


KM12 models only.

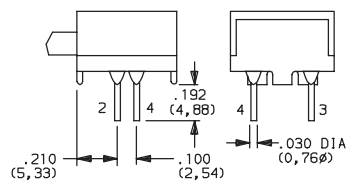
TERMINATIONS



05 .110" QUICK CONNECT

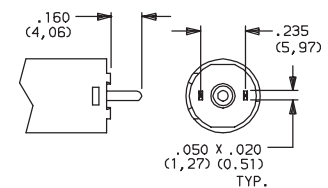


08 RIGHT ANGLE, PC THRU-HOLE



KM12 models only.

02 PC THRU-HOLE



KM11 models only.

CONTACT MATERIAL



OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT AND TERMINAL MATERIAL	RATINGS	
B	YES	YES	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER ²	POWER	0.25 AMPS @ 125 V AC OR DC (KM11, KM12) (UL) 1 AMP @ 125 V AC OR 28 V DC (KM33).


* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate.
MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate.

² STATIONARY CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options).
MOVABLE CONTACT: Phosphor bronze or beryllium copper, silver plated.

³ STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate.
MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate over silver plate.

NOTE: Any models supplied with Q or B contact material are RoHS compliant.

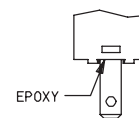
KM11, KM12 models  when ordered with 'Q' contact material.

SEAL



NONE NO SEAL

E EPOXY SEAL



Third Angle
Projection

C&K

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

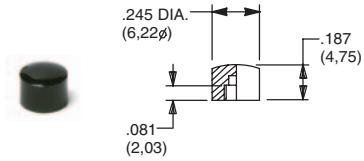


KM Series Subminiature Pushbutton Switches

Pushbutton
A

AVAILABLE HARDWARE

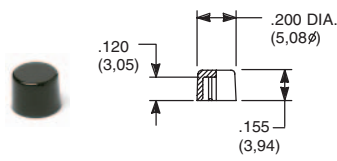
Cap, KM33 models



PART NO.
785101000 WHITE
785102000 BLACK
785103000 RED

Material: Nylon
 Finish: Gloss

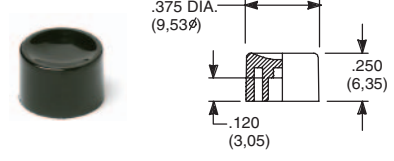
Cap, KM11 models



PART NO.
708901000 WHITE
708902000 BLACK
708903000 RED

Material: Nylon
 Finish: Gloss

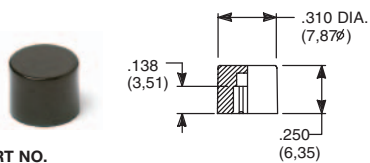
Cap, KM11 models



PART NO.
752701000 WHITE
752702000 BLACK
752703000 RED

Material: Nylon
 Finish: Gloss

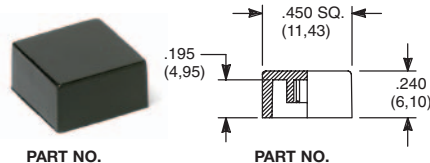
Cap, KM11 models



PART NO.
801801000 WHITE
801802000 BLACK
801803000 RED

Material: Nylon
 Finish: Gloss

Cap, KM11 models



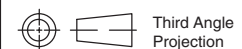
PART NO.
484601000 WHITE
484602000 BLACK
484603000 RED

PART NO.
798201000 WHITE
798202263 BLACK
798203000 RED

Material: Nylon
 Finish: Gloss

Material: Nylon
 Finish: Matte

NOTE: Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

8600 Series Microminiature Pushbutton Switches



A
Pushbutton

Features/Benefits

- Available with overtravel
- Normally closed models available
- Microminiature size ideal for applications where space is limited
- RoHS compliant

Typical Applications

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: Q contact material (8631, 8632 Models):
500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC;
(8633 Model): 250 mA @ 120 V AC or 28 V DC; 125 mA
@ 250 V AC. See page A-73 for additional ratings.

ELECTRICAL LIFE:

8631 and 8633 MODELS: 250,000 actuations at full load.
8632 MODEL: 100,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @
2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 109 Ω min.

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or
EIA RS-186E method 9.

Materials

CASE: Glass filled phenolic or diallyl phthalate (DAP), (UL94V-0).

PLUNGER: Glass filled nylon (UL94V-0), black standard.

BUSHING: Brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated.
See page A-73 for additional contact materials.

TERMINALS:

8631, 8632 MODELS: Copper alloy, silver plated.

8633 MODEL: Q contact material: Coin silver.

See page A-73 for additional contact materials.

TERMINAL SEAL:

8633 MODEL: Epoxy.

8631, 8632 MODELS: Terminals insert molded.

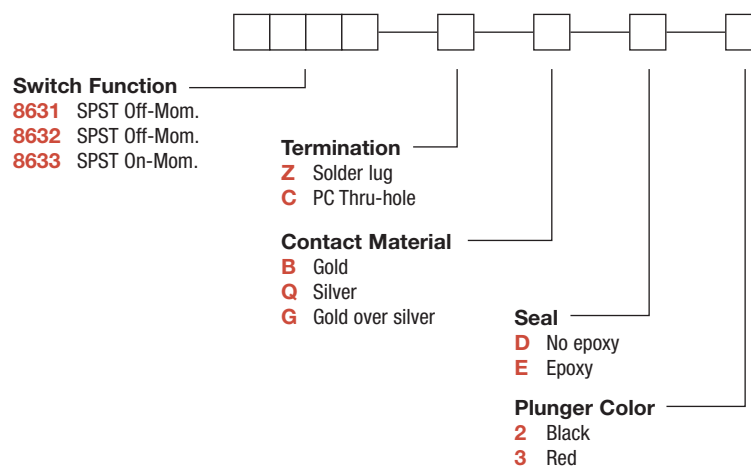
HARDWARE: Nut: Brass, nickel plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options.
For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-72 and A-73. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8600 Series Microminiature Pushbutton Switches

Pushbutton

A

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
		POS. 1	POS. 2			
SP	8631	OFF	MOM.	.040 (1,02) TYP.	5 oz (140g) TYP.	N.O.
SPST						
SP	8632	OFF	MOM.	.106 (2,69) TYP. with overtravel .024 (0,61) TYP.	6.25 oz (177g) TYP.	N.O. with overtravel
SPST						
SP	8633	ON	MOM.	.048 (1,22) TYP.	5 oz (140g) TYP.	N.C.
SPST						

MOM. = Momentary

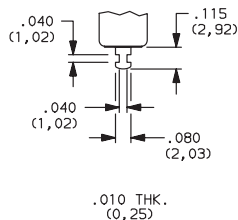
NOTE: Caps available for plunger options, see page A-73.

TERMINATIONS

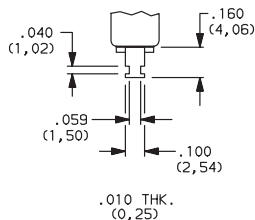
Z SOLDER LUG

C PC THRU-HOLE

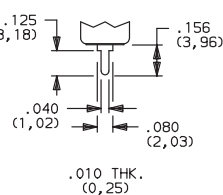
8631, 8632 models only.



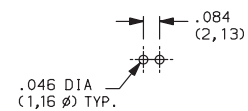
8633 models only.



8631, 8632 models only.



PC MOUNTING



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8600 Series Microminiature Pushbutton Switches



A
Pushbutton

CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	YES	YES	GOLD 1	GOLD 1	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER 4	SILVER 5	POWER	8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.
G	YES	YES	GOLD OVER SILVER 4	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
 2 CONTACTS: Coin silver, with gold plate over nickel plate.
 3 TERMINALS: Copper alloy, with gold plate over nickel plate.
 8633 model only: Coin silver, with gold plate over nickel plate.
 4 CONTACTS: Coin silver, silver plated.
 5 TERMINALS: Copper alloy, silver plated. 8633 model only: coin silver.

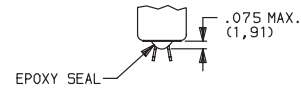
NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

8631, 8632 models with all options when ordered with G or Q contact material.
 Q contact material standard with C, Z terminations.

SEAL

D NO EPOXY SEAL

E EPOXY SEAL



Not available on 8633 model.
 Standard on 8631, 8632 models.

Not available on 8631, 8632 models.
 Standard on 8633 model only.

PLUNGER COLOR

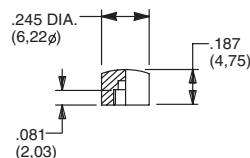
OPTION CODE	COLOR
2	BLACK
3	RED

AVAILABLE HARDWARE

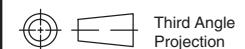
Cap

PART NO.
785101000 WHITE
785102000 BLACK
785103000 RED

Material: Nylon
 Finish: Gloss



NOTE: Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change





A

Pushbutton

8700 Series Overtravel Pushbutton Switches



Features/Benefits

- **Extended pre-travel or over-travel**
- **Heavy-duty brass plunger**
- **Long electrical life – 100K cycles**
- **RoHS compliant**

Typical Applications

- **Telecommunications**
- **High end Instrumentation**
- **Medical & test equipment**
- **Detection**

Specifications

CONTACT RATING: Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-76 for additional ratings.

ELECTRICAL LIFE: 100,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. Initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10³Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

NOTE: Any models supplied with Q, or B contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

PLUNGER:

8731 – .390" brass, nickel plated.

8732 – .390" PBT polyester, black.

BUSHING: brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated. See page A-76 for additional contact materials.

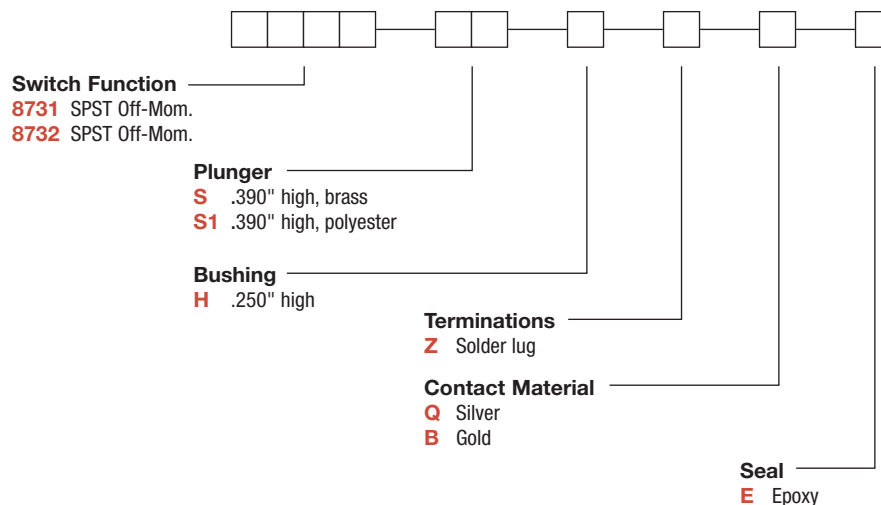
TERMINALS: Q contact material: Copper alloy, silver plated. See page A-76 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut: Brass, nickel plated; lockwasher: Steel, bright nickel plate. One mounting nut & lockwasher supplied with all switches.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-75 and A-76. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8700 Series Overtravel Pushbutton Switches



A

Pushbutton

SWITCH FUNCTION

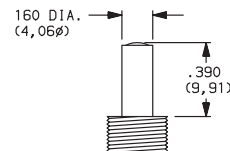
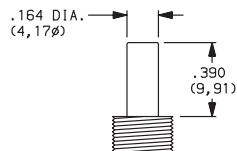
NO. POLES	MODEL NO.	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
		POS. 1	POS. 2			
SP	8731	OFF	MOM.	.390 (9,91) TYP. with overtravel .311 TYP.	4.7 oz TYP.	N.O. with overtravel SPST
SPST <p>Part number shown: 8731SHZQE</p>						
SP	8732	OFF	MOM.	.390 (9,91) TYP. with overtravel .350 TYP.	2.2 oz TYP.	N.O. with overtravel SPST
SPST <p>Part number shown: 8732S1HZQE</p>						

MOM. = Momentary

PLUNGER

S .390" HIGH, BRASS

S1 .390" HIGH, PBT POLYESTER

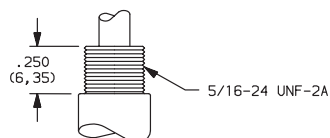


Available with 8731 model only.

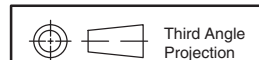
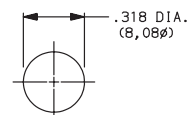
Available with 8732 model only.

BUSHING

H .250" HIGH



PANEL MOUNTING



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



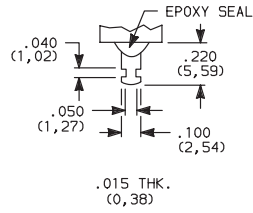
8700 Series Overtravel Pushbutton Switches

A

Pushbutton

TERMINATIONS

Z SOLDER LUG



CONTACT MATERIAL

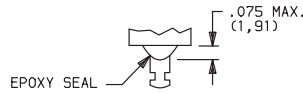
OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
					POWER	
Q	YES	YES	SILVER	SILVER		1 AMP @ 125 V AC OR 28 V DC.
B	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

NOTE: Any models supplied with Q, or B contact material are RoHS compliant.

SEAL

E EPOXY SEAL



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

GP Series Sealed Ultraminiature Pushbutton Switches



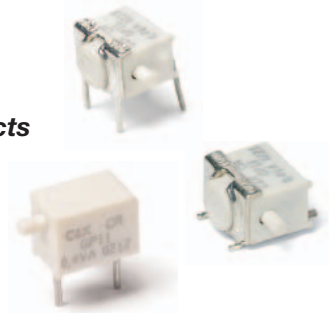
A
Pushbutton

Features/Benefits

- Ultraminiature design saves space
- Process compatible, withstands most soldering and washing processes
- Thru-hole and surface mount models available
- Sealed construction—internal o-ring and epoxy base
- RoHS compliant

Typical Applications

- Telecommunications and network equipment
- Computers and peripheral products
- Instrumentation
- Medical Applications



Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.

MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: $10^9 \Omega$ min.

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°C to 85°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

PACKAGING: Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-80 for drawings and reel information. Thru-Hole parts are shipped in trays.

All models are RoHS compliant and compliant.

Materials

HOUSING & BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).

ACTUATOR: Glass filled nylon 4/6, flame retardant (UL 94V-0) with standard internal o-ring seal.

SWITCH SUPPORT: Brass, tin plated.

MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate.

STATIONARY CONTACTS Copper alloy, with gold plate over nickel plate.

TERMINALS: Copper alloy, with gold flash over nickel plate.

TERMINAL SEAL: Epoxy/Urethane. All terminals insert molded.

NOTE: Any models supplied with B contact material are RoHS compliant and compatible.

NOTE: Materials listed above are general specifications. Specifications available for specific and custom switches, consult Customer Service Center.

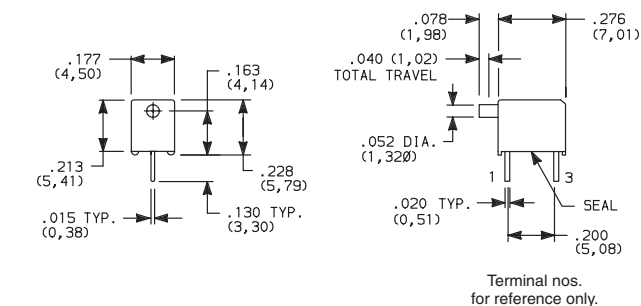
CAUTION: PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

How To Order

Complete part numbers for GP Series Sealed Ultraminiature Pushbutton Switches are shown on pages A-78 thru A-80.

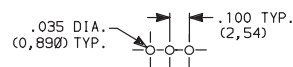
PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MCBE	OFF	MOM.	
Conn. Terms.	OPEN	1-3	SPST
GP12MCBE	ON	MOM.	
Conn. Terms.	2-1	2-3	SPDT

MOM. = Momentary

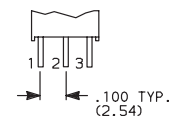


GP11MCBE
SPST

PC MOUNTING



GP11—omit center hole.



GP12 Model



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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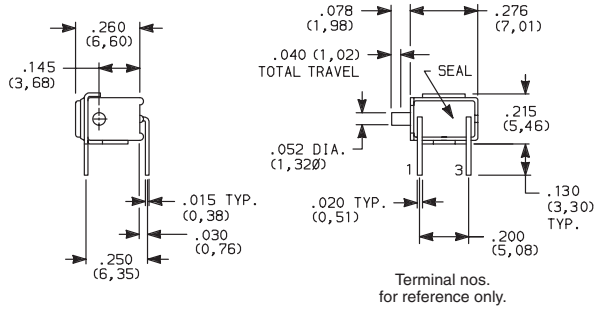
GP Series Sealed Ultraminiature Pushbutton Switches

A

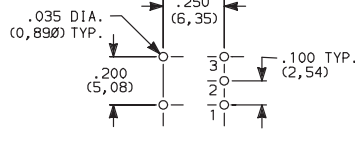
Pushbutton



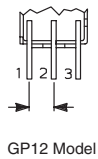
GP11MABE
SPST



PC MOUNTING



GP11- omit hole 2.



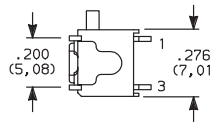
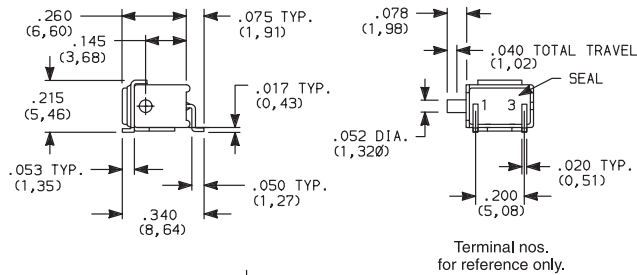
GP12 Model

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MABE	OFF	MOM.	 SPST
Conn. Terms.	OPEN	1-3	
GP12MABE	ON	MOM.	 SPDT
Conn. Terms.	2-1	2-3	

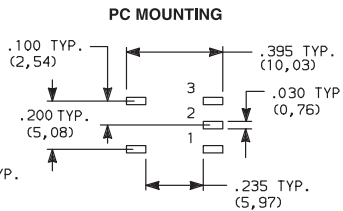
MOM. = Momentary



GP11MSABE
SPST



GP12 Model



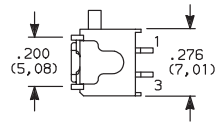
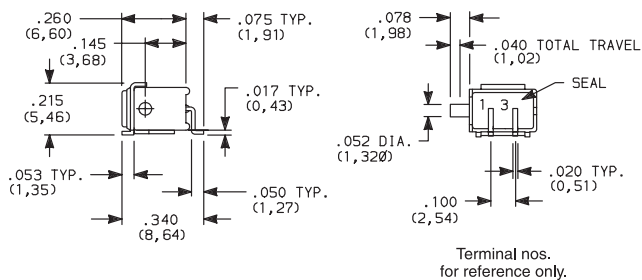
GP11- omit pad 2.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MSABE	OFF	MOM.	 SPST
Conn. Terms.	OPEN	1-3	
GP12MSABE	ON	MOM.	 SPDT
Conn. Terms.	2-1	2-3	

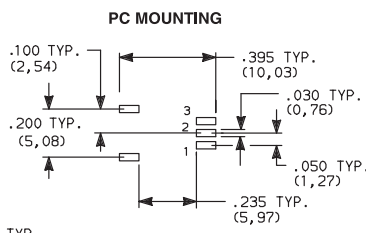
MOM. = Momentary



GP11MSA1BE
SPST



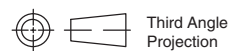
GP12 Model



GP11- omit pad 2.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MSA1BE	OFF	MOM.	 SPST
Conn. Terms.	OPEN	1-3	
GP12MSA1BE	ON	MOM.	 SPDT
Conn. Terms.	2-1	2-3	

MOM. = Momentary



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



GP Series Sealed Ultraminiature Pushbutton Switches

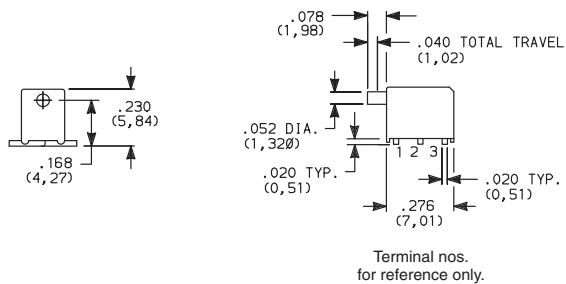


A

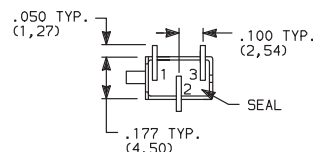
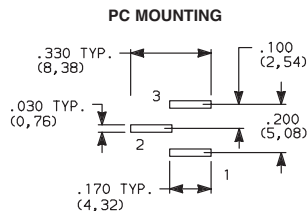
Pushbutton

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
GP12MSCBE	ON	MOM.	 NC 1 2 (COMM) 3 NO
Conn. Terms.	2-1	2-3	
SPDT			

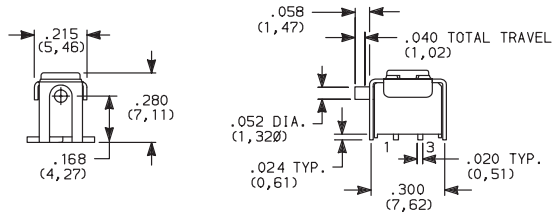
MOM. = Momentary



**GP12MSCBE
SPDT**



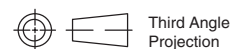
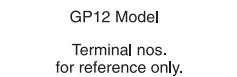
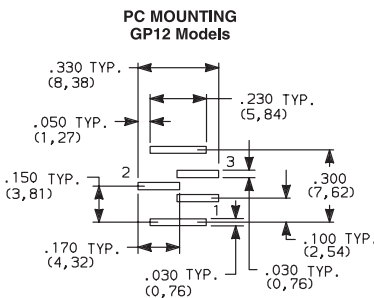
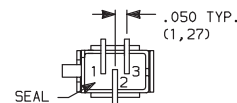
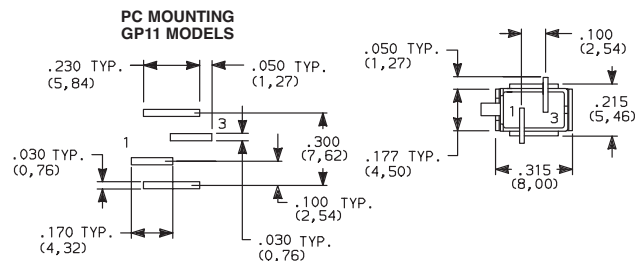
NOTE: Recommended for infrequent use applications only
For increased switch mounting strength, order, SV1 termination style with support bracket (see below).



**GP11MSV1BE
SPST**

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
GP11MSV1BE	OFF	MOM.	 1 3
Conn. Terms.	OPEN	1-3	
GP12MSV1BE	ON	MOM.	 NC 1 2 (COMM) 3 NO
Conn. Terms.	2-1	2-3	
SPDT			

MOM. = Momentary



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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GP Series Sealed Ultraminiature Pushbutton Switches

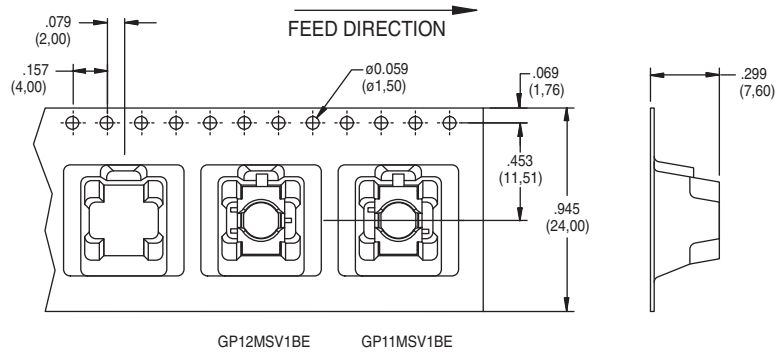
TAPE & REEL

Pushbutton

A

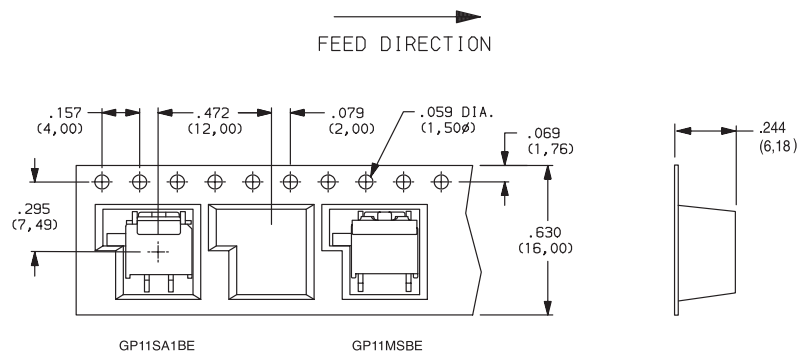
For part numbers GP11MSV1BE, GP12MSV1BE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



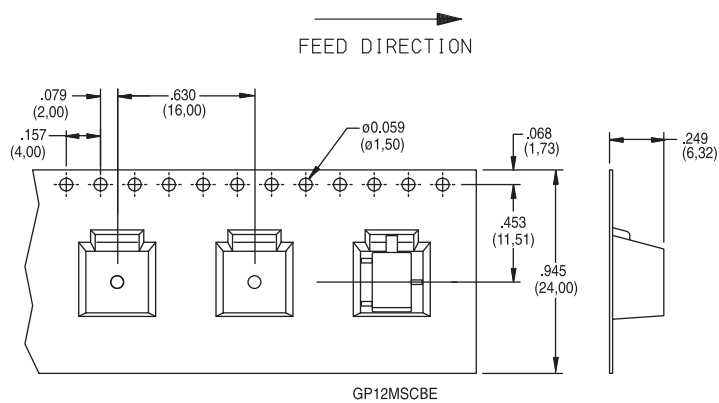
For part numbers GPXXSA1BE, GPXXMSABE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



For part numbers GP12MSCBE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



PN Series Alternate & Momentary Action Pushbutton Switches



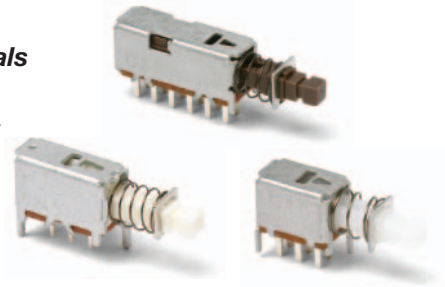
A
Pushbutton

Features/Benefits

- Momentary or locking action
- 3 actuation forces for customized feel
- Low cost, reliable contact design
- 1-4 poles available
- RoHS compliant

Typical Applications

- Computers and peripherals
- Instrumentation and measurement equipment
- Non-power, on-off switch applications



Specifications

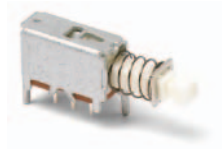
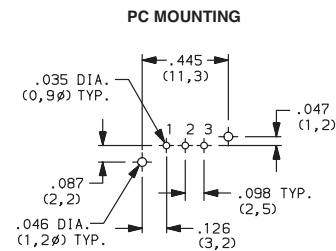
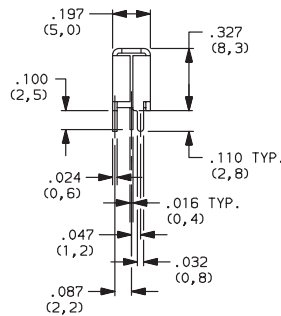
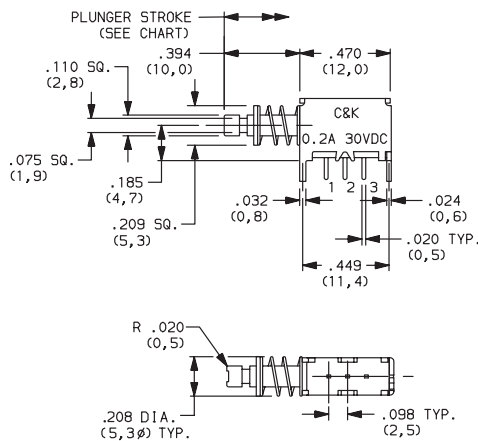
CONTACT RATING: 0.2 AMP @ 30 V DC max.
ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
MECHANICAL LIFE: 10,000 on/off cycles.
CONTACT RESISTANCE: 50 mΩ max. initial,
100 milliohms max. at end of life.
INSULATION RESISTANCE: 100 MΩ min. at 500 V DC.
DIELECTRIC STRENGTH: 500 V AC min.
OPERATING/STORAGE TEMPERATURES: -10°C to 60°C.
PACKAGING: Switches are supplied in anti-static bags
or anti-static trays.

Materials

FRAME: Tin plated steel.
ACTUATOR: Polyacetal. Color: Manufacturing option.
BASE: Laminated phenolic.
TERMINALS: Silver plated brass.
MOVABLE CONTACTS: Silver plated (or clad) phosphor bronze.
RETURN SPRING: Music wire.
DETENT SPRING: Phosphor bronze.
DETENT SPRING PLATE: Phosphor bronze.
RETURN SPRING RETAINER RING: Nickel (or tin) plated steel.
TERMINAL SEAL: Epoxy.

How To Order

Complete part numbers for PN Series Alternate & Momentary Action Pushbutton Switches are shown on pages A-82 thru A-83.



PN11SBSA03QE
SPDT

PART NUMBER	SWITCH FUNCTION	OPERATING FORCE (typ.)	STROKE		SHORTING/ NON-SHORTING	SCHEMATIC
			LOCK STROKE	FULL STROKE		
PN11SBNA03QE	SPDT Momentary	120g max.	—	.140 (3,5)	Non-Shorting	
PN11SCNA03QE	SPDT Momentary	150g	—			
PN11SHNA03QE	SPDT Momentary	230g	—			
PN11SJNA03QE	SPDT Momentary	330g	—			
PN12SHNA03QE	SPDT Locking	230g	.100g (2,5)	.140 (3,5)	Shorting	
PN12SJNA03QE	SPDT Locking	330g	.100g (2,5)			
PN11SBSA03QE	SPDT Momentary	120g max.	—	.140 (3,5)	Shorting	
PN11SCSA03QE	SPDT Momentary	150g	—			
PN11SHSA03QE	SPDT Momentary	230g	—			
PN11SJSA03QE	SPDT Momentary	330g	—			
PN12SHSA03QE	SPDT Locking	230g	.100g (2,5)			
PN12JSJA03QE	SPDT Locking	330g	.100 (2,5)			



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



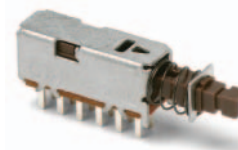
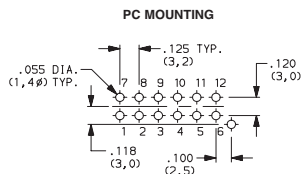
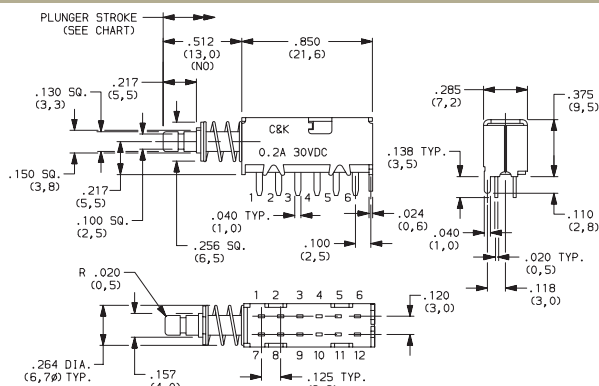
www.ck-components.com

PN Series Alternate & Momentary Action Pushbutton Switches



A

Pushbutton

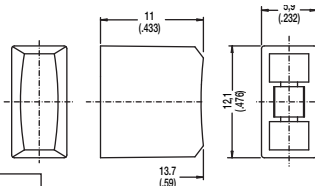


PN41LGA02QE
4PDT

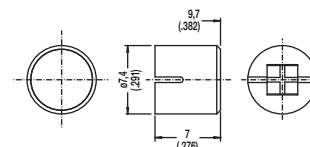
PART NUMBER	SWITCH FUNCTION	OPERATING FORCE (typ.)	STROKE		SHORTING/ NON-SHORTING	SCHEMATIC
			LOCK STROKE	FULL STROKE		
PN41LGNA02QE	4PDT Momentary	175g	-	.140 (3,5)	Non-Shorting	
PN41LENA02QE	4PDT Momentary	300g				
PN42LENA02QE	4PDT Locking	300g	.100 (2,5)			
PN41LGSA02QE	4PDT Momentary	175g	-	.140 (3,5)	Shorting	
PN41LESA02QE	4PDT Momentary	300g				
PN42LESA02QE	4PDT Locking	300g	.100 (2,5)			

BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

PE



PV

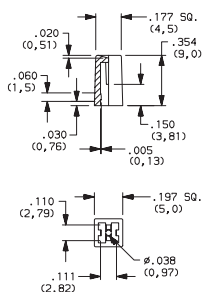


OPTION CODE	COLOR
RD	Red
GY	Gray
BK	Black
WH	White

PE and PV buttons fit .130" square plungers

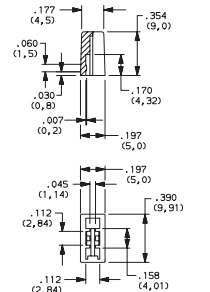
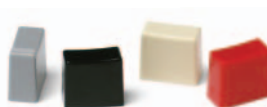
Indexed

- G001A Black
- G001G Gray
- G001I Ivory
- G001R Red



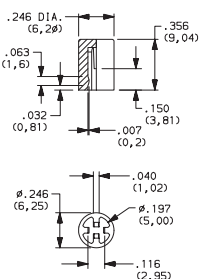
Rectangular

- G002A Black
- G002G Gray
- G002I Ivory
- G002R Red



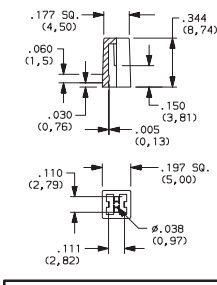
Round

- G003A Black
- G003G Gray
- G003I Ivory
- G003R Red



Square

- G004A Black
- G004G Gray
- G004I Ivory
- G004R Red



G001, G002, G003 and G004 buttons fit .110" square plungers.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



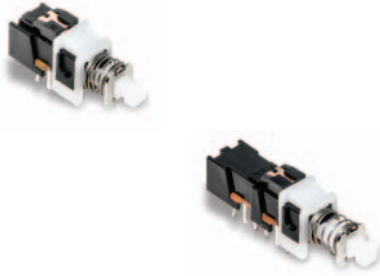


A

Pushbutton

PHB Series Short Stroke Pushbutton Switches

NEW!



Features/Benefits

- Momentary or latching action
- Low cost, reliable contact design
- 2 & 4 pole configurations
- Sealed contacts
- Optional buttons
- RoHS compliant

Typical Applications

- Computers and peripherals
- Instrumentation and measurement equipment
- Non-power, on-off switch applications

Specifications

RATING: 1 A @ 15 V DC
 DIELECTRIC STRENGTH (50 Hz/1 min.): 500 V DC between terminals or between terminals and frame for 1 minute
 OPERATING LIFE: 10,000 cycles at rated load
 CONTACT RESISTANCE: 20 m Ωohms initial
 INSULATION RESISTANCE: 100 M Ωohms
 TOTAL TRAVEL/LATCHING TRAVEL: 2.5mm (± 0.5 mm) / 1.5mm (± 0.5 mm) to latch EE option (push-push)
 OPERATING FORCE:
 2U option: 170 grams ± 100 grams (1.67 ± 0.98N)
 4U option: 230 grams ± 100 grams (2.26 ± 0.98N)
 OPERATING TEMPERATURE: -10°C to 60°C
 BOUNCE TIME: ≤10 ms
 SEALING: Sealed contacts.
 PACKAGING: Switches; Tray pack - 100 switches per tray;
 Optional Caps; Bulk bag - 100 caps per bag

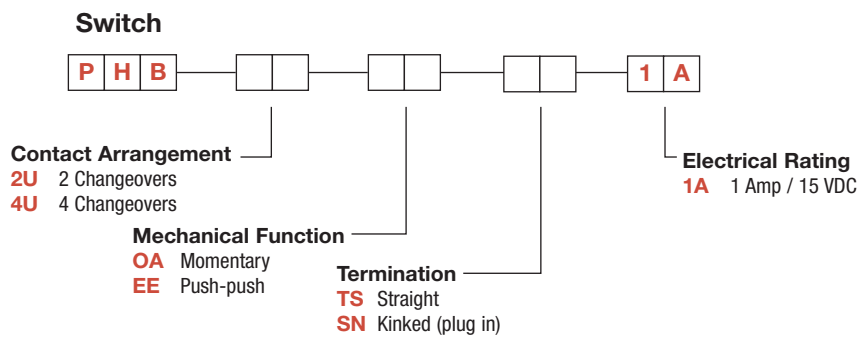
Materials

FIXED TERMINAL: Brass, silver plated
 MOVABLE CONTACT: Phosphor bronze, silver plated
 COVER: PA 66 Black
 COVER TO BASE RETAINING CLIP: POM
 ACTUATOR: POM
 RETURN SPRING: Stainless steel
 SPRING RETAINING RING: Steel, nickel plate
 BASE: Phenolic resin
 TERMINAL SEAL: Epoxy.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



Caps (order separately)



INDEXED	COLOR	RECTANGULAR	COLOR	ROUND	COLOR	SQUARE	COLOR
G001A	BLACK	G002A	BLACK	G003A	BLACK	G004A	BLACK
G001G	GRAY	G002G	GRAY	G003G	GRAY	G004G	GRAY
G001I	IVORY	G002I	IVORY	G003I	IVORY	G004I	IVORY
G001R	RED	G002R	RED	G003R	RED	G004R	RED



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

NEW!

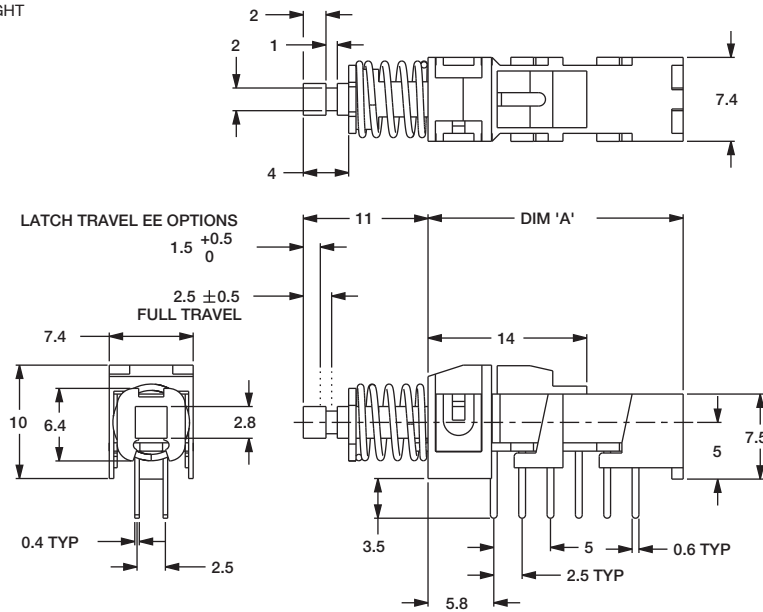
PHB Series Short Stroke Pushbutton Switches



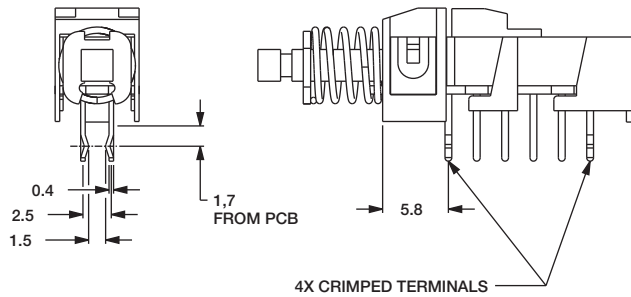
A

Pushbutton

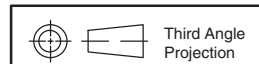
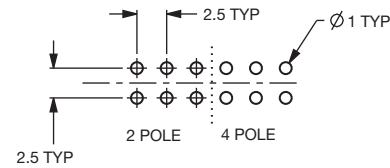
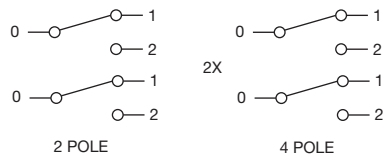
TS STRAIGHT



SN KINKED (PLUG IN)



POLES	MODEL NO.	DIM 'A'	ACTION
4	PHB4UEE1A	22,5	PUSH/PUSH
	PHB4U0A1A	22,5	MOMENTARY
2	PHB2UEE1A	15,0	PUSH/PUSH
	PHB2U0A1A	15,0	MOMENTARY



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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PHB Series Short Stroke Pushbutton Switches

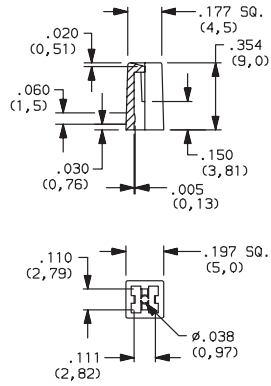
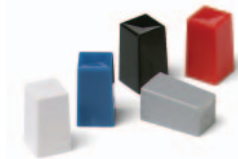
NEW!

CAPS

Pushbutton
A

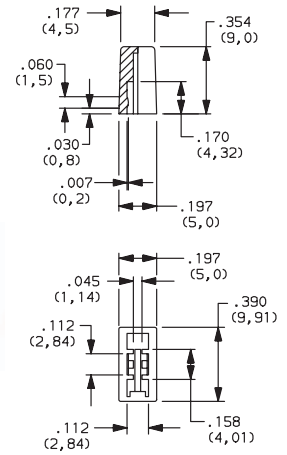
Indexed

- G001A** Black
- G001G** Gray
- G001I** Ivory
- G001R** Red



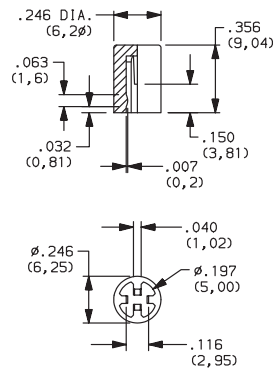
Rectangular

- G002A** Black
- G002G** Gray
- G002I** Ivory
- G002R** Red



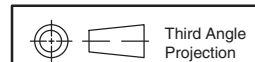
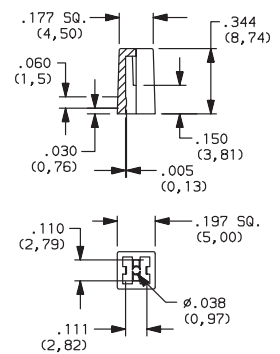
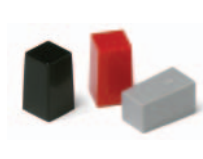
Round

- G003A** Black
- G003G** Gray
- G003I** Ivory
- G003R** Red



Square

- G004A** Black
- G004G** Gray
- G004I** Ivory
- G004R** Red



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



A

Pushbutton



*Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change*



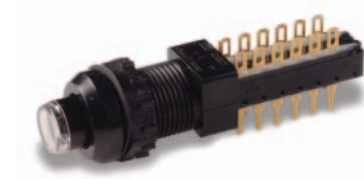
F Series Pushbutton Switches

Features/Benefits

- Up to 10 poles per module
- Various contact terminals
- Various mounting & switch ganging configurations
- Mechanical indicator buttons
- RoHS compliant

Typical Applications

- Audio selection
- Digital equipment interface
- Medical equipment interface



Specifications

SWITCHING POWER: F module max. AC/DC: Silver: 50 VA/15W, Gold: 1 VA/300 mW.

SWITCHING VOLTAGE: F module max. AC/DC: Silver: 125/30V, Gold: 50/30 V.

SWITCHING CURRENT: F module max. AC/DC: Silver: 0.5A/0.5A, Gold: 0.04A/0.01A.

CARRYING CURRENT: Max at du = 20C: Silver: < 2A, Gold: <0.5A.

DIELECTRIC STRENGTH (50 Hz, 1 min.): Chassis/contact: ^1500V Between contacts: ^1500V.

OPERATING LIFE "OA/EE" (24V/200mA): >10⁵ operations "GR": >3.5 x 10⁴ operations.

CONTACT RESISTANCE: Initial: Typical %10 mΩ, max. 20 mΩ After operating life: %100 mΩ

INSULATION RESISTANCE: ^10⁹ Ω between open contacts, ^10⁹ Ω between chassis and contacts.

CAPACITANCE (at f = 10 kHz): %0.7 pF between 2 contacts.

TOTAL TRAVEL/LATCHING TRAVEL: 4.7mm/3.3mm (.185 inch/.130 inch).

All models and options are RoHS compliant and compatible.

NOTE: All models and options are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

TYPICAL F OPERATING FORCE: 2U: 6.5N (650 grams); 4U: 6.5N (650 grams); 6U: 7.5N (750 grams); 8U: 9.0N (900 grams); 10U: 9.0N (900 grams).

EUROPEAN TYPICAL SF OPERATING FORCE: 2U: 3.5N±0.5N (350 grams±100 grams); 4U: 5N±1N (500 grams±100 grams); 6U: 6.5N±1N (650 grams±100 grams); 8U: 9.0N±1N (900 grams±100 grams).

OPERATING TEMPERATURE RANGE: -40°C to 70°C.

Materials

HOUSING: Polycarbonate UL 94V-0 or polyester UL 94V-0.

ACTUATOR: Polyester UL 94V-0.

MOVABLE CONTACTS: Bimetal brass, silver plated, gold plate over nickel.

STATIONARY CONTACTS & TERMINALS: Brass, silver plated, gold plated.

TERMINAL BOARD: Polyester UL 94V-0.

RETURN SPRING: Music wire.

TERMINAL SEAL: RTV adhesive sealant.

CHASSIS: Steel.

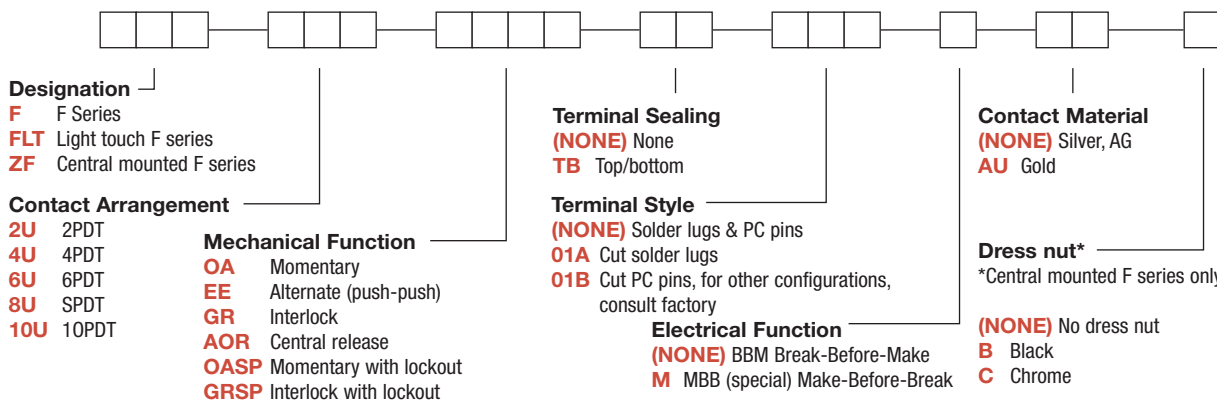
LOCKOUT PIN: Steel.

BLOCKERS: Steel.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-89 thru A-97. For additional options not shown in catalog, consult Customer Service Center. If requesting only a switch, select either a North American or European switch as noted below. Chassis and buttons are sold separately. If multiple stations are selected, we will assume all switches are the same unless noted otherwise.

North American Order Code - Switch Only



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

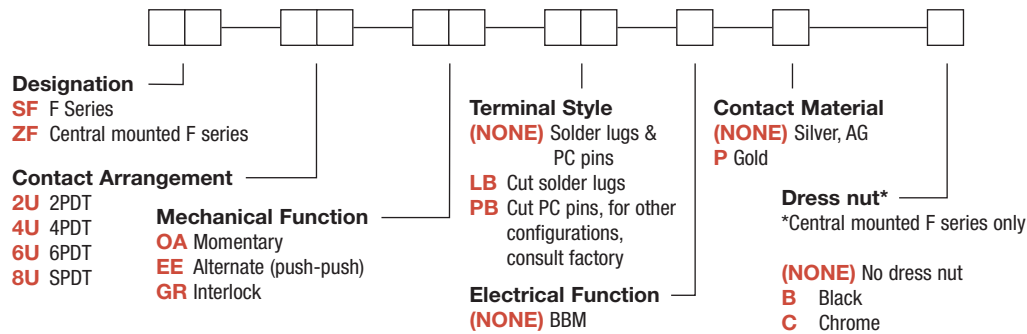
F Series Pushbutton Switches



A

Pushbutton

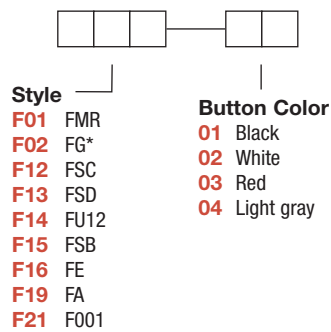
European Order Code - Switch Only



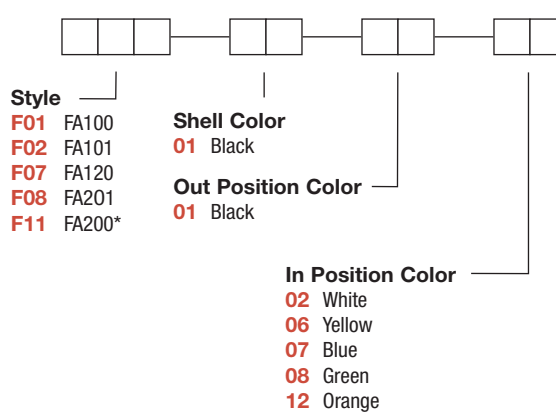
*Minimum order quantities apply.

Order Code - Buttons

Solid Buttons



Mechanical Indicator Buttons



*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

F Series Pushbutton Switches



A

Pushbutton

DESIGNATION



Designation, North America

- F** F Series
- FLT** Light touch F series
- ZF** Central mounted F series

Designation, Europe

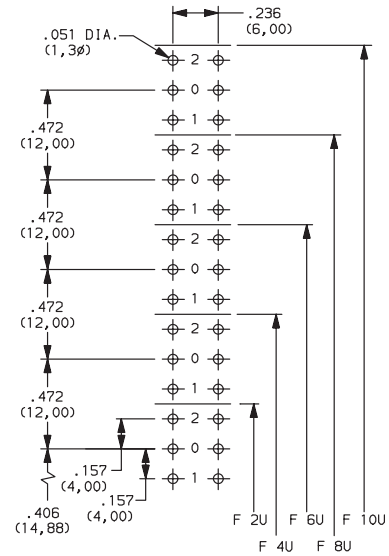
- SF** F Series
- ZF** Central mounted F series

CONTACT ARRANGEMENT



OPTION CODE	NO. OF POLES	SCHEMATIC
2U	2PDT	
4U	4PDT	2X
6U	6PDT	3X
8U	8PDT	4X
10U	10PDT	5X

PC MOUNTING



MECHANICAL FUNCTION



North America

OPTION CODE	FUNCTION
OA	Momentary
EE	Alternate (push-push)
GR	Interlock
AOR	Central release
OASP	Momentary with lockout
GRSP	Interlock with lockout

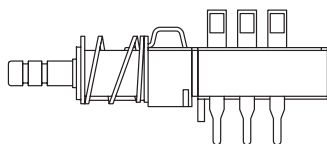
Europe

OPTION CODE	FUNCTION
OA	Momentary
EE	Alternate (push-push)
GR	Interlock

TERMINAL SEALING

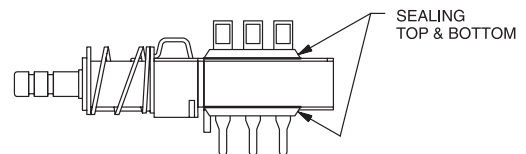


(NONE) NO SEAL



F2UEE shown in example above.

TB TOP & BOTTOM



NOTE: Available for North America only



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

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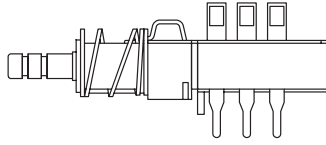
F Series Pushbutton Switches

Pushbutton

A

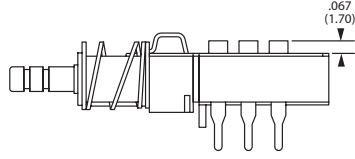
TERMINAL STYLE

(NONE) SOLDER LUGS & PC PINS



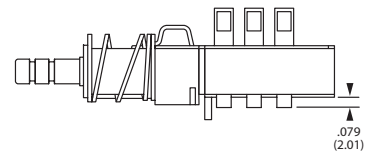
01A CUT SOLDER LUGS (North America)

LB CUT SOLDER LUGS (Europe)



01B CUT PC PINS (North America)

PB CUT PC PINS (Europe)



ELECTRICAL FUNCTION

OPTION CODE	FUNCTION
(NONE)	BBM Non-shorting
M	MBB Shorting (North America only)

CONTACT MATERIAL

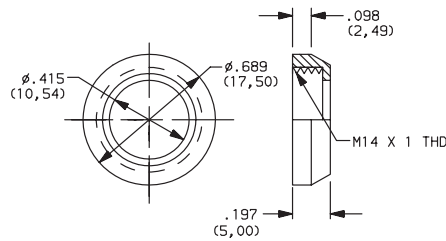
NORTH AMERICA OPTION CODE	EUROPE OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	MATERIAL	RATING
(NONE)	(NONE)	YES	YES	SILVER, AG	50 VA/15 W; 125/30 V; 0.5/0.5 A
AU	P	YES	YES	GOLD	1 VA/300mW; 50/30 V; 0.04 A/0.01 A

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

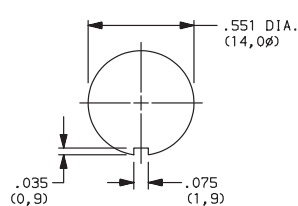
DRESS NUT

(NONE) NO DRESS NUT FOR F & F/LT DESIGNATIONS

B BLACK

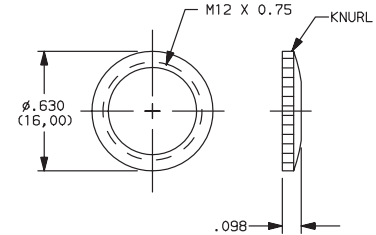


PANEL CUTOUT

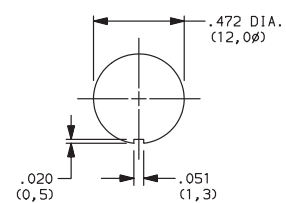


NOTE: Available with ZF designation and FA200 buttons.

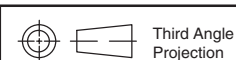
C CHROME



PANEL CUTOUT



NOTE: Available with ZF designation and FG button.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



F Series Pushbutton Switches



A

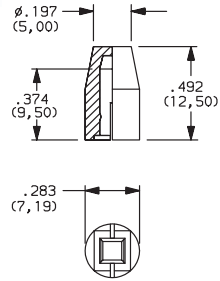
Pushbutton

SOLID BUTTON

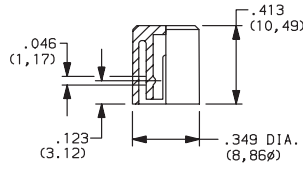
		COLOR
STYLE		

STYLE

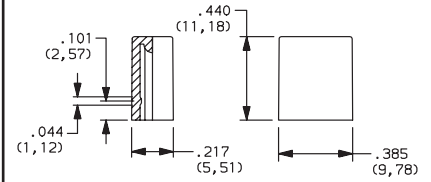
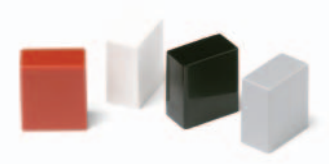
F01 FMR



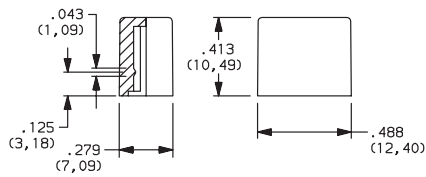
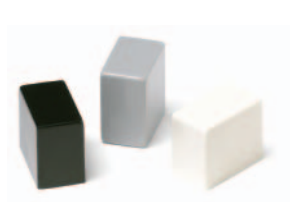
F02 FG



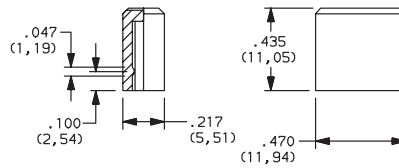
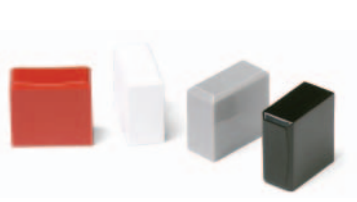
F12 FSC



F13 FSD



F14 FU12



OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

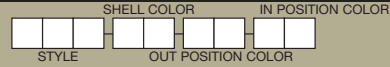
F Series Pushbutton Switches



A

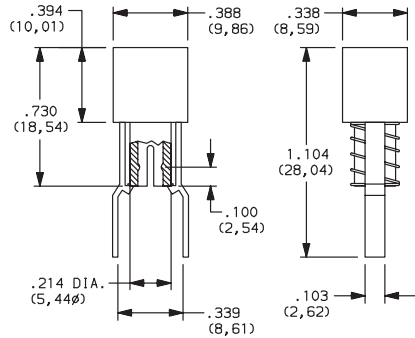
Pushbutton

MECHANICAL BUTTON

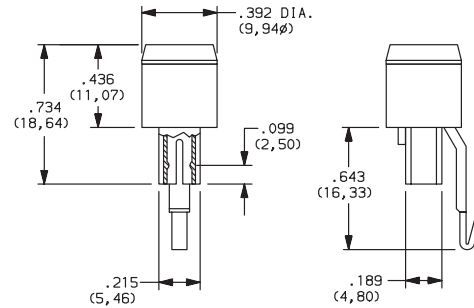


STYLE

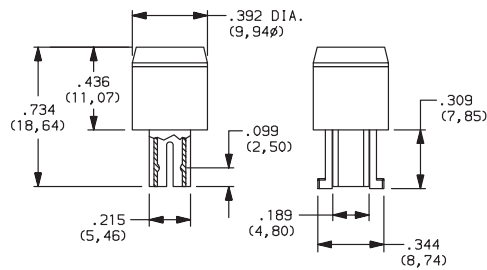
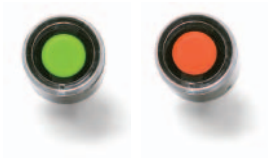
F07 FA120



F08 FA201



F11 FA200



SHELL COLOR

01 BLACK

OUT POSITION COLOR

01 BLACK

IN POSITION COLOR

OPTION CODE	COLOR
02	WHITE
06	YELLOW
07	BLUE
08	GREEN
12	ORANGE



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

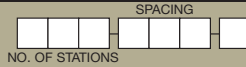
www.ck-components.com



F Series Pushbutton Switches

Pushbutton A

CHASSIS



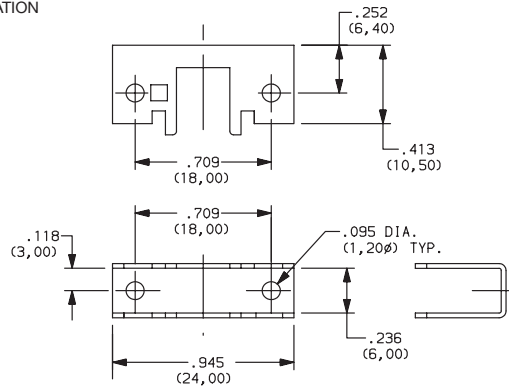
NUMBER OF STATIONS

C00 Thru C10 Comes with standard 0.094 (2,44mm) mounting holes

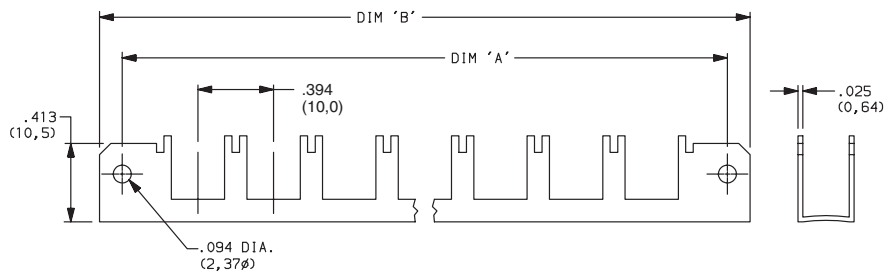
NOTE: Single station chassis available with mounting configurations, consult factory.

SPACING

00 SINGLE STATION

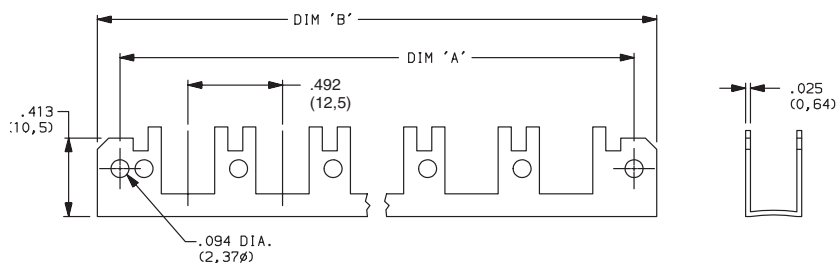


10 10mm



No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.182 (30,02)	1.418 (36,02)	0.005
3	1.575 (40,01)	1.811 (46,00)	0.010
4	1.969 (50,01)	2.205 (56,01)	0.010
5	2.363 (60,02)	2.599 (66,01)	0.010
6	2.757 (70,03)	2.993 (76,02)	0.015
7	3.150 (80,01)	3.386 (86,00)	0.015
8	3.544 (90,02)	3.780 (96,01)	0.015
9	3.938 (100,03)	4.174 (106,02)	0.015
10	4.331 (110,01)	4.567 (116,00)	0.015

12.5 12.5mm



No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.200 (30,48)	1.436 (36,47)	0.005
3	1.692 (42,98)	1.928 (48,97)	0.010
4	2.184 (55,47)	2.420 (61,47)	0.010
5	2.676 (67,97)	2.912 (73,96)	0.010
6	3.169 (80,49)	3.405 (86,49)	0.015
7	3.661 (92,99)	3.897 (98,98)	0.015
8	4.153 (105,49)	4.389 (111,48)	0.015
9	4.645 (117,98)	4.881 (123,98)	0.015
10	5.137 (130,48)	5.373 (136,47)	0.015



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



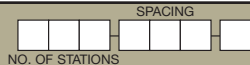
F Series Pushbutton Switches



A

Pushbutton

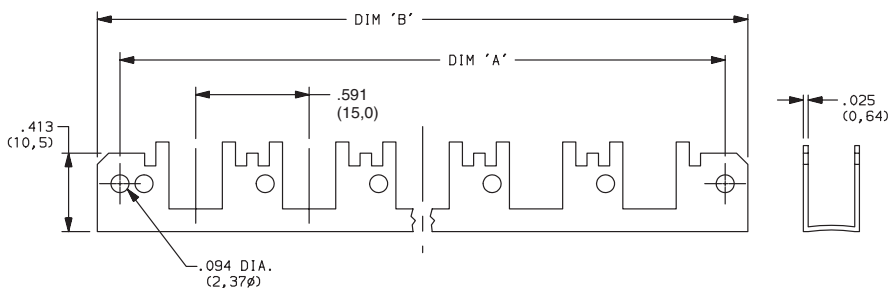
CHASSIS



SPACING

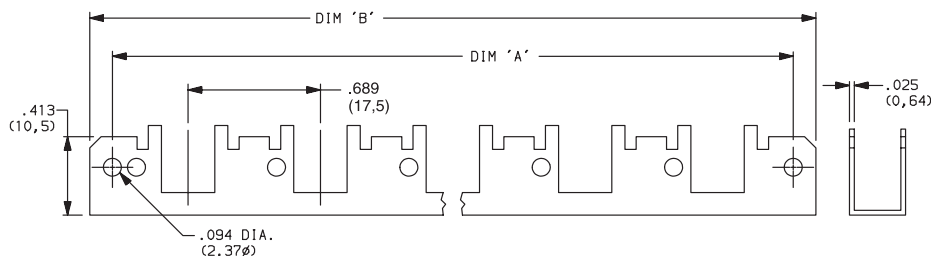
15 15mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.374 (34,90)	1.615 (41,02)	0.005
3	1.969 (50,01)	2.205 (56,01)	0.010
4	2.560 (65,02)	2.796 (71,02)	0.010
5	3.150 (80,01)	3.386 (86,00)	0.010
6	3.741 (95,02)	3.977 (101,02)	0.015
7	4.332 (110,03)	4.568 (116,03)	0.015
8	4.922 (125,02)	5.158 (131,01)	0.015
9	5.513 (140,03)	5.749 (146,02)	0.015
10	6.103 (155,02)	6.339 (161,01)	0.015



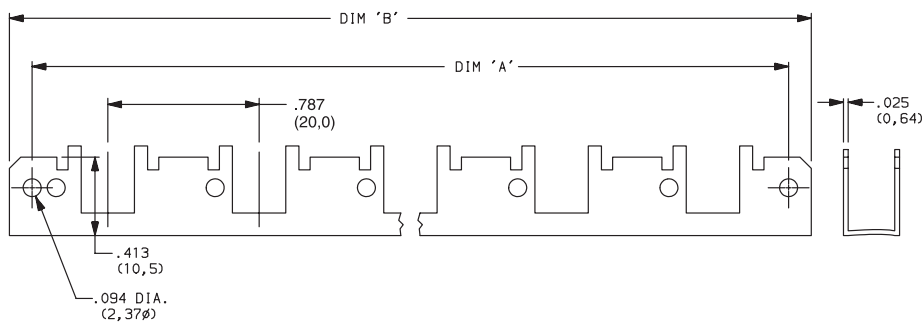
17.5 17.5mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.477 (37,52)	1.713 (43,51)	0.005
3	2.166 (55,02)	2.402 (61,01)	0.010
4	2.855 (75,52)	3.091 (78,51)	0.010
5	3.544 (90,02)	3.780 (96,01)	0.010
6	4.233 (107,52)	4.469 (113,51)	0.015
7	4.922 (125,02)	5.158 (131,01)	0.015
8	5.611 (142,52)	5.847 (148,51)	0.015
9	6.300 (160,02)	6.536 (166,01)	0.015
10	6.989 (177,52)	7.225 (183,52)	0.015



20 20mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.575 (40,01)	1.811 (46,00)	0.005
3	2.363 (60,02)	2.599 (66,01)	0.010
4	3.150 (80,01)	3.386 (86,00)	0.010
5	3.938 (100,03)	4.174 (106,02)	0.010
6	4.725 (120,02)	4.961 (126,01)	0.015
7	5.512 (140,00)	5.748 (146,00)	0.015
8	6.300 (160,02)	6.536 (166,01)	0.015
9	7.087 (180,01)	7.323 (186,00)	0.015
10	7.875 (200,03)	8.111 (206,02)	0.015



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





A

Pushbutton

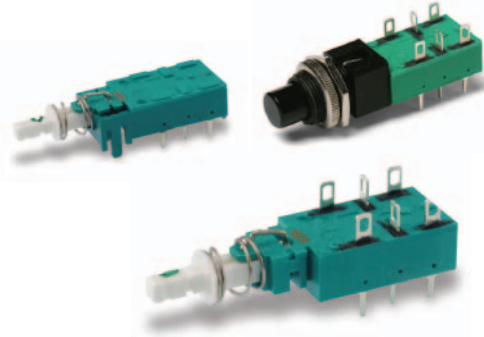
NE-18 Series Mains / Power Switches

Features/Benefits

- Chassis or panel mount
- Various buttons
- Various contact configurations
- RoHS compliant

Typical Applications

- Mains/power switching
- Consumer electronics
- Audio equipment
- Digital products



Specifications

POWER CONTACT:

SWITCHING POWER MAX. AC/DC: NE18: 1500/100 W, NE18CTII: 1000/100 W; AC (Inductive $\cos \phi = 0.6$): NE18: 900W, NE18CTII: 600W.

SWITCHING VOLTAGE MAX. AC/DC: 250/100V

SWITCHING CURRENT MAX. AC/DC

AC (Inductive $\cos \phi = 0.6$): NE18: 6 A²/1 A, NE18CTII: 4 A²/1 A

INRUSH CURRENT MAX. AC¹: NE18: 36 A, NE18CTII: 64 A

DIELECTRIC STRENGTH (50 Hz, 1 min.): 2000 V

OPERATING LIFE AT MAX. LOAD AND AT MAX. INRUSH CURRENT: 10^4 operations⁵

CONTACT RESISTANCE: Initial: 50m Ω ; After 10^4 operations: 70m Ω .

INSULATION RESISTANCE: 10^{12} Ω chassis – nearest contact; 10^{12} Ω mains contact – mains contact; 10^{12} Ω mains contact – mains contact after 10^4 operations.

LOW VOLTAGE CONTACT:

SWITCHING POWER MAX.: 12W

SWITCHING VOLTAGE MAX.: 24V

SWITCHING CURRENT MAX.: 0.5A

TOTAL TRAVEL: 4.7mm (.185 inch)

LATCHING TRAVEL: 3.3mm (.130 inch)

OPERATING FORCE: Without auxiliary low voltage contacts:

NE18: 7N (700 grams); NE18CTII: 9.5N (950 grams).

With auxiliary low voltage contacts: NE18: 8N (800 grams);

NE18CTII: 11N (1100 grams).

SEALING: Dust proof.

Materials

HOUSING, ACTUATOR & TERMINAL BOARD: Thermoplastic polyester (UL 94V-0).

MOVABLE CONTACT: Silver nickel alloy, silver plated.

FIXED CONTACTS: Silver nickel alloy, silver plated.

COMMON CONTACTS & TERMINALS: Copper alloy, silver plated.

RETURN SPRING: Music wire.

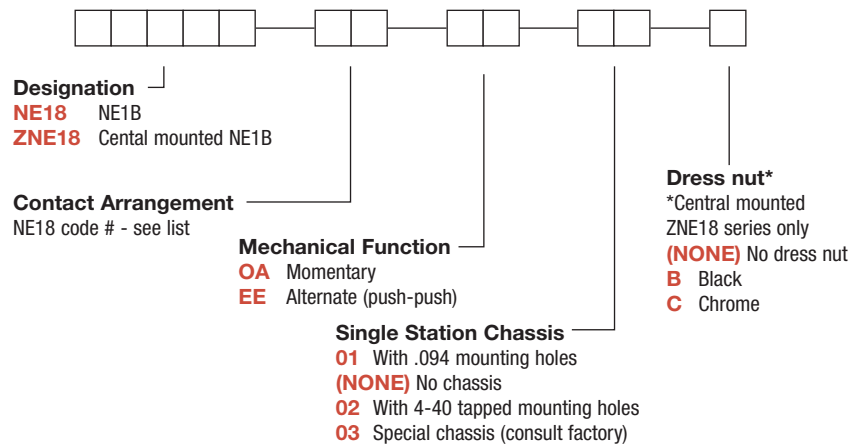
NOTE: All models are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-99 thru A-106. For additional options not shown in catalog, consult Customer Service Center.

If requesting only a switch, select the switch as noted below. Buttons are sold separately.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

NE-18 Series Mains / Power Switches



A

Pushbutton

Order Code - Buttons

Solid Buttons

<p>Style</p> <p>F01 FMR</p> <p>F02 FG*</p> <p>F12 FSC</p> <p>F13 FSD</p> <p>F14 FU12</p> <p>F15 FSB</p> <p>F16 FE</p> <p>F19 FA</p> <p>F21 F001</p>	<p>Button Color</p> <p>01 Black</p> <p>02 White</p> <p>03 Red</p> <p>04 Light gray</p>

Mechanical Indicator Buttons

<p>Style</p> <p>F01 FA100</p> <p>F02 FA101</p> <p>F07 FA120</p> <p>F08 FA201</p> <p>F11 FA200*</p>	<p>Shell Color</p> <p>01 Black</p>	<p>Out Position Color</p> <p>01 Black</p>	<p>In Position Color</p> <p>02 White</p> <p>06 Yellow</p> <p>07 Blue</p> <p>08 Green</p> <p>12 Orange</p>

*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

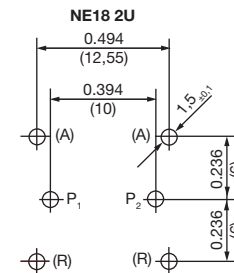
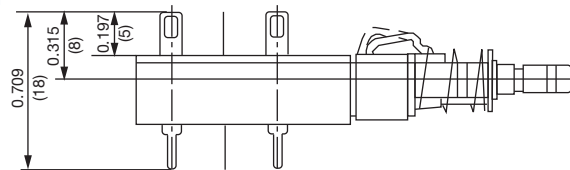
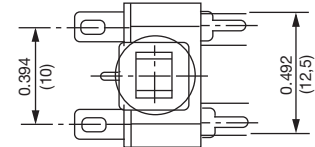
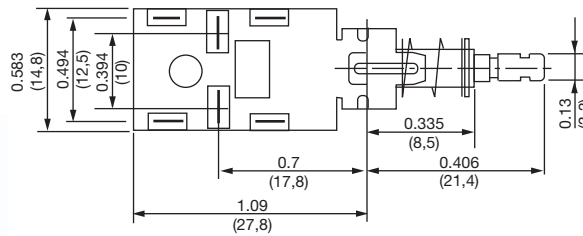
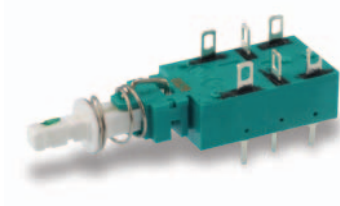
BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.

DESIGNATION & SWITCHES WITH STANDARD OPTIONS



NE1838EE



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



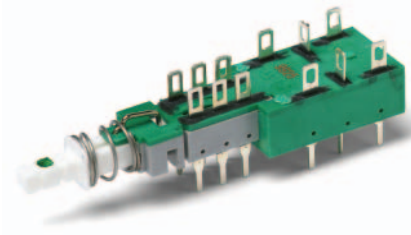
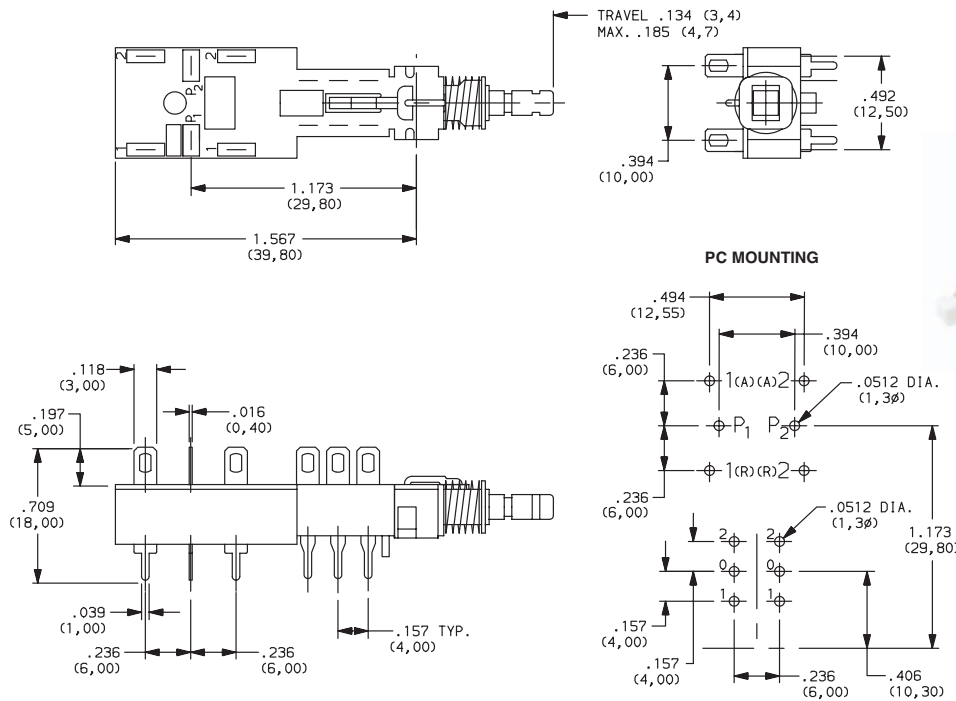
NE-18 Series Mains / Power Switches

DESIGNATION & SWITCHES WITH STANDARD OPTIONS

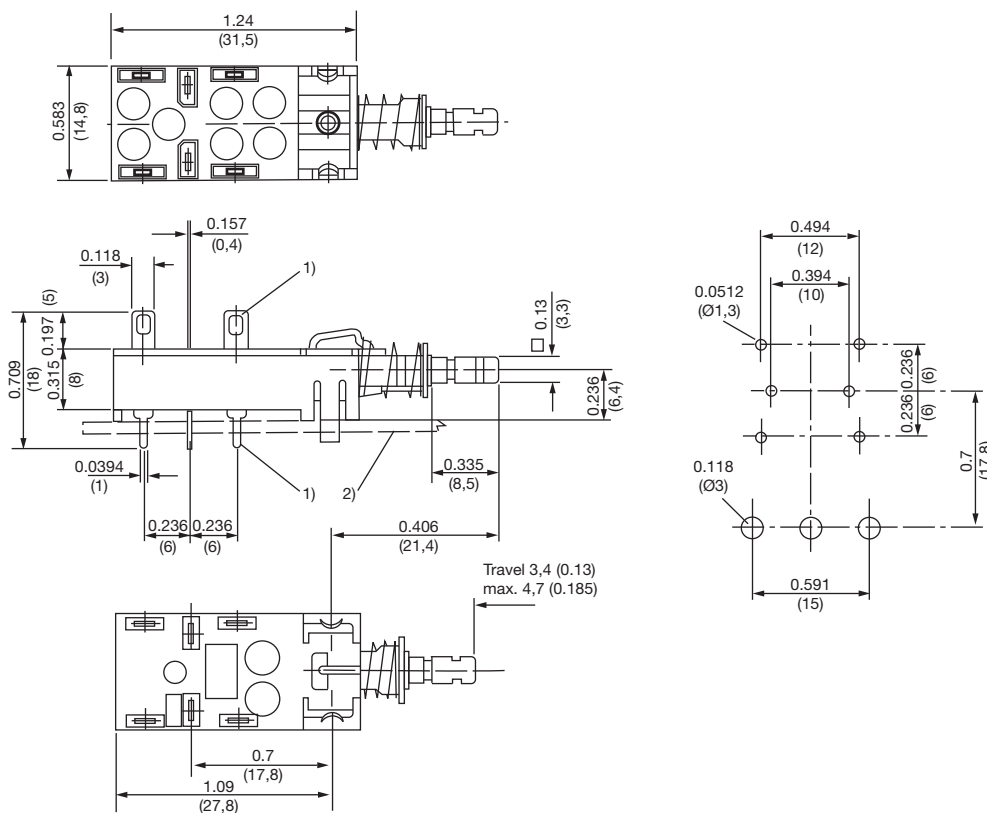


Pushbutton

NE1839EE



NE1848EE



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

NE-18 Series Mains / Power Switches



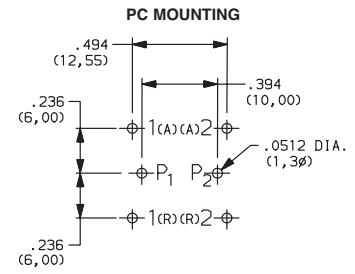
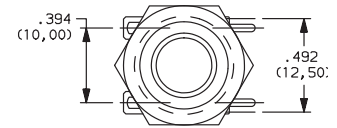
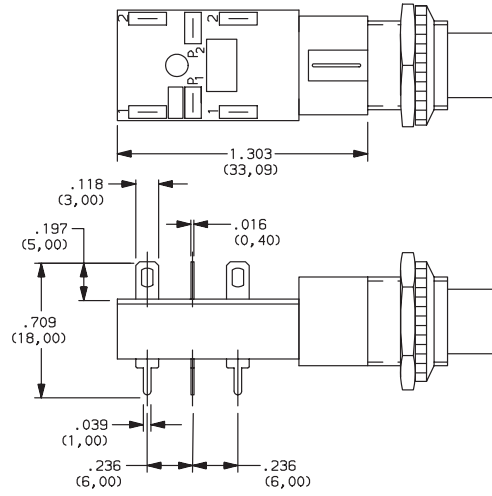
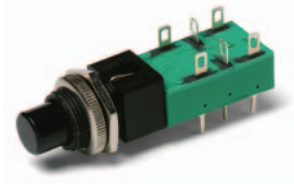
A

Pushbutton

DESIGNATION & SWITCHES WITH STANDARD OPTIONS



ZNE1838EECF0201



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches

CONTACT ARRANGEMENT



Pushbutton
A

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
37	NE18 – 2AX	DPST
38	NE18 – 2UX	DPDT
51	2U + NE18 – 2AX	DPST*
52 (4A/64)	NE18CTII – 2AX	DPST
39	2U + NE18 – 2UX	DPDT*
41	NE18 – 2AP	DPST
42	NE18 – 2UP	DPDT
43	NE18 – 2AW	DPST
44	NE18 – 2UW	DPDT
45	NE18 – 2ASX	DPST

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
46	NE18 – 2USX	DPDT
47	NE18 – 2ASP	DPST
48	NE18 – 2USP	DPDT
49	NE18 – 2ASW	DPST
50	NE18 – 2USW	DPDT
53 (4A/64)	2U + NE18CTII – 2AX	DPST
54	2U + NE18 – 2AW	DPST
55	2U + NE18 – 2AP	DPST
56	2U + NE18 – 2UW	DPDT
57	2U + NE18 – 2UP	DPDT

* 2U + Denotes auxiliary set of low current contacts DPDT
 2A = DPST
 2U = DPDT
 S = Snap-in mounting
 X = Solder lug/PC pins
 W = Solder lugs only
 P = PC pins only

NOTES
 1. Contact plating is silver on all Power Switches.
 2. The electrical function is Break Before Make (BBM) on all Power Switches.
 3. The terminals will be epoxy sealed.

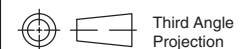
TYPE	POSSIBLE CONTACT ARRANGEMENT		CONTACT SPACING	PROTECTION CLASS (CEE 24)	APPROVALS
	POWER CONTACTS ¹	AUXILIARY CONTACTS			
NE18	2A ²	2U	> 3mm (.118 inch)	II	VDE, UL
NE18	2A ² 2U	2U	> 3mm (m) (.118 inch)	I	VDE, UL
NE18CTII	2A ²	2U	> 3mm (.118 inch)	II	VDE, UL

1) A = make contact, R = break contact, U = changeover contact, m = VDE sign for switches with a contact spacing (air gap) < 3mm (.118 inch) according to VDE 0630/CEE 24.
 2) With 2A mains contacts: Mounting only by PC pins is not sufficient.
 3) BSI only for 2U mains contacts.

MECHANICAL FUNCTION



OPTION CODE	FUNCTION
OA	Momentary
EE	Alternate (push-push)



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

NE-18 Series Mains / Power Switches



A

Pushbutton

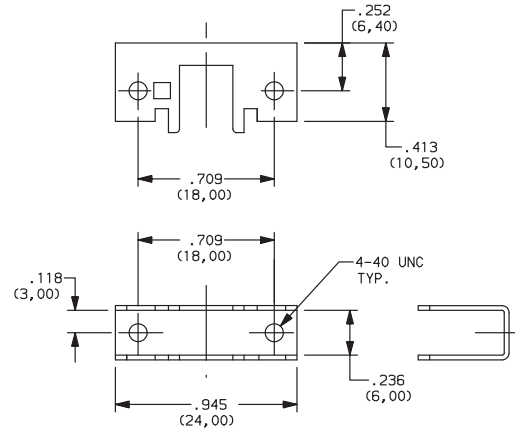
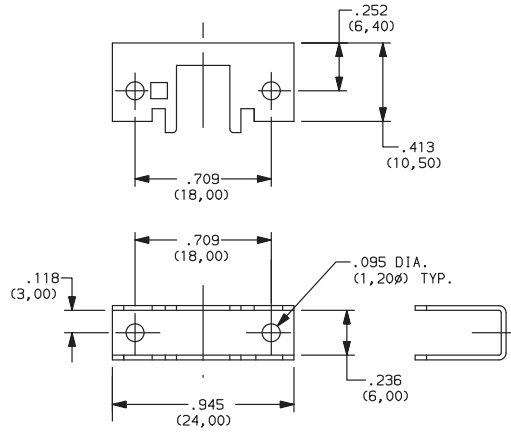
SINGLE STATION CHASSIS



01 WITH .094 MOUNTING HOLES

(NONE) NO CHASSIS

02 WITH 4-40 TAPPED MOUNTING HOLES



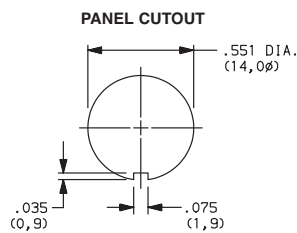
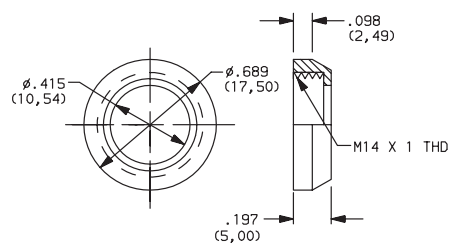
03 SPECIAL CHASSIS (CONSULT FACTORY)

DRESS NUT



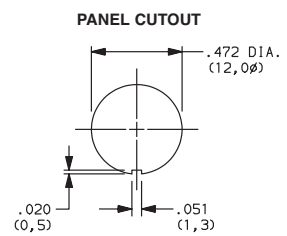
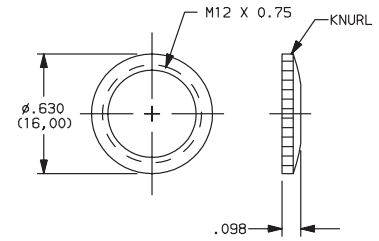
(NONE) NO DRESS NUT

B BLACK

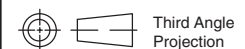


NOTE: Available with ZNE18 designation and FA200 buttons.

C CHROME



NOTE: Available with ZNE18 designation and FG button.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



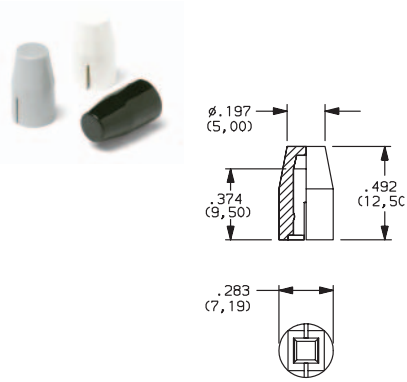
NE-18 Series Mains / Power Switches

SOLID BUTTON

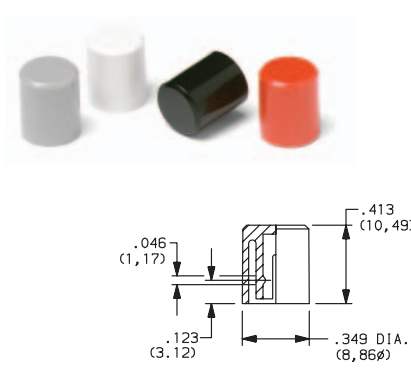
Pushbutton
A

STYLE

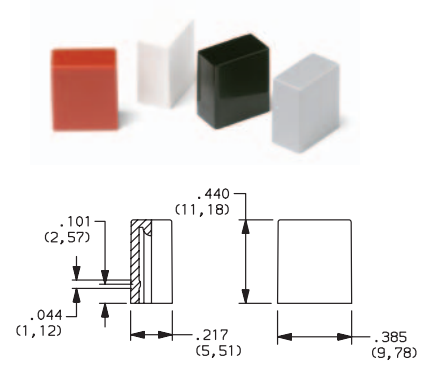
F01 FMR



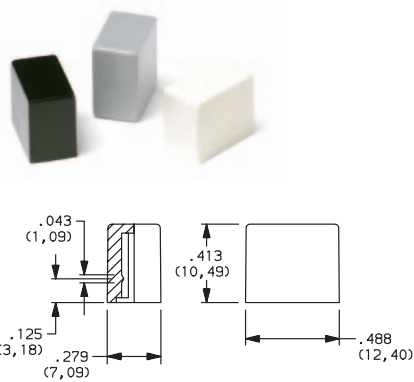
F02 FG



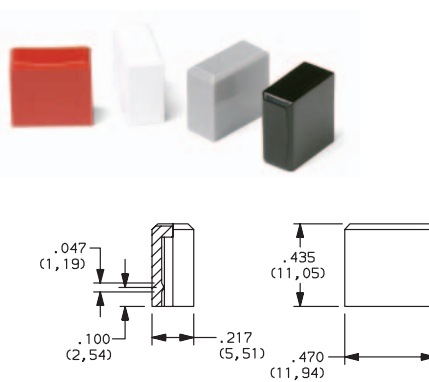
F12 FSC



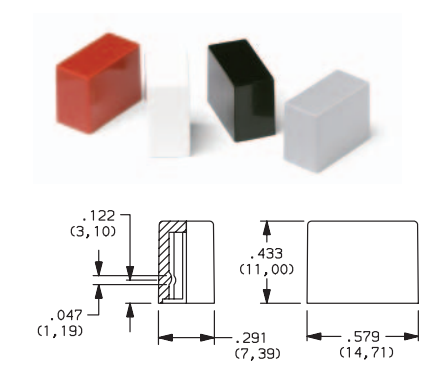
F13 FSD



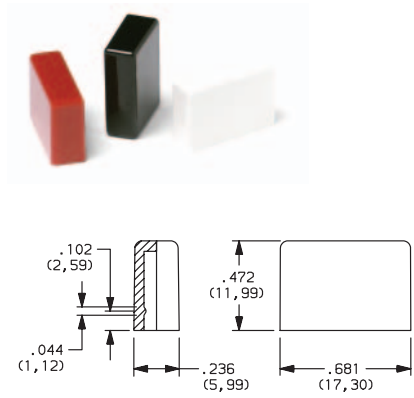
F14 FU12



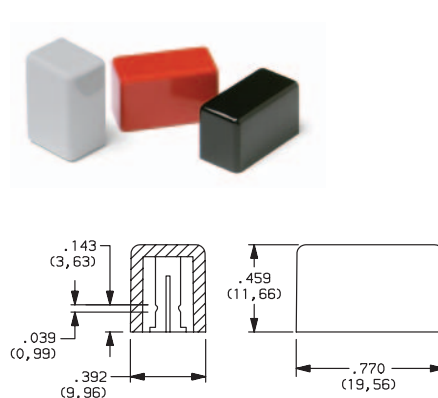
F15 FSB



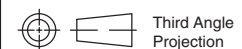
F16 FE



F19 FA



OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches



A

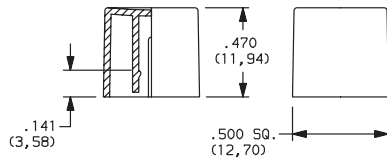
Pushbutton

SOLID BUTTON



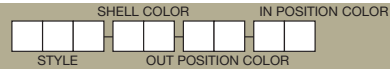
STYLE

F21 F001



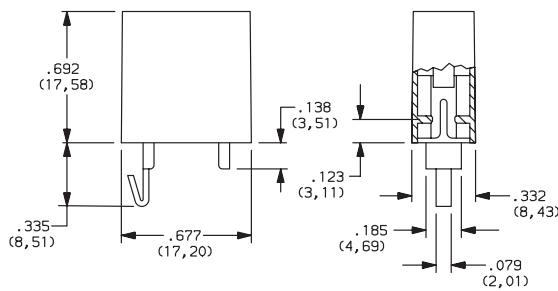
OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY
09	BLACK/CHROME (F03, F06 & F07 buttons only)

MECHANICAL BUTTON

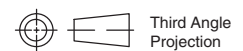
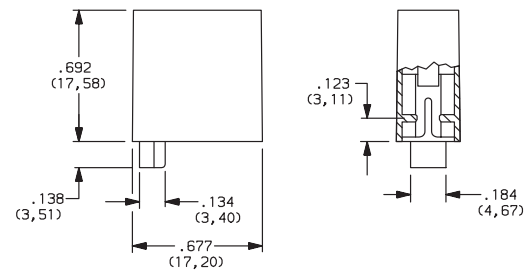


STYLE

F01 FA100



F02 FA101



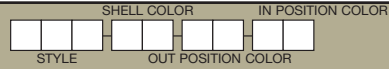
Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches

MECHANICAL BUTTON

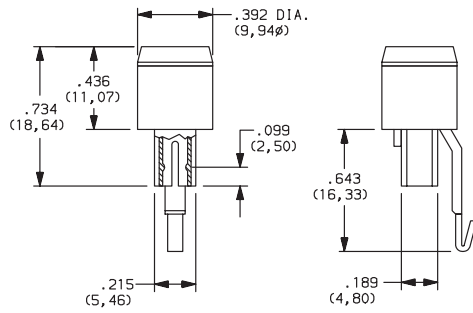


Pushbutton

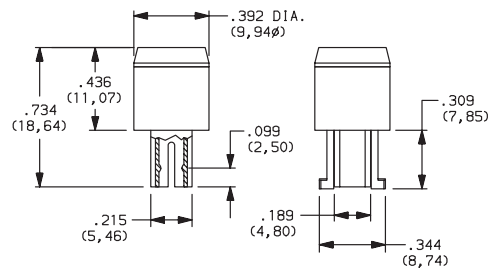
A

STYLE

F08 FA201



F11 FA200



SHELL COLOR

01 BLACK

OUT POSITION COLOR

01 BLACK

IN POSITION COLOR

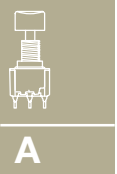
OPTION CODE	COLOR
02	WHITE
06	YELLOW
07	BLUE
08	GREEN
12	ORANGE



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

NEW!

FP Series Sealed Ultra Miniature Pushbutton Switches



A

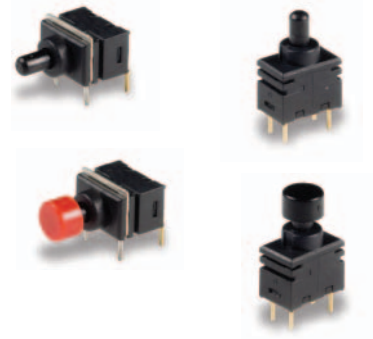
Pushbutton

Features/Benefits

- Vertical and right angle mount
- Extended operating life 50,000 cycles
- Optional caps
- Sealed against soldering and cleaning processes
- RoHS compliant

Typical Applications

- Networking equipment
- Modems
- Reset functions
- Instrumentation



Specifications

CONTACT RATING: Max. 0.4 VA (28 V DC or V AC).
 ELECTRICAL LIFE: 50,000 cycles.
 CONTACT RESISTANCE: (10mA @ 2 V DC) 80 mΩ max. initial.
 INSULATION RESISTANCE: 500MΩ min. @ 500 V DC - 1 minute.
 OPERATING TEMPERATURE: -20°C to 80°C.
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9.
 PACKAGING:
 Tray pack - 100 switches per tray.
 Caps (optional) - Bulk bag; 100 caps per bag.

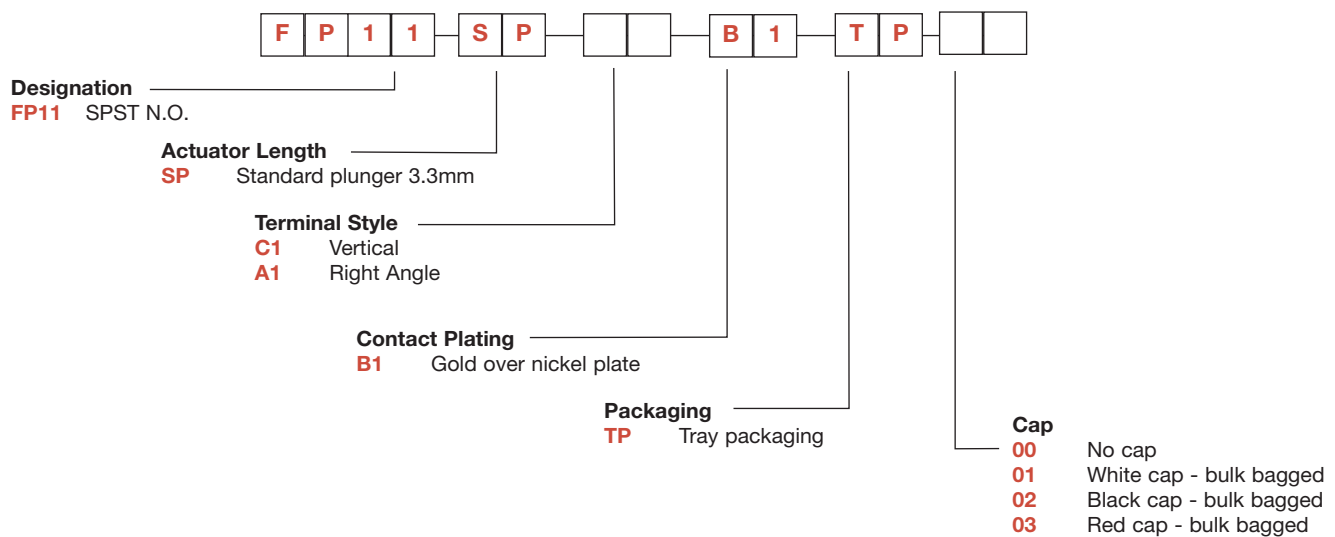
Materials

MOVABLE CONTACTS:
 Base metal: Phosphor bronze
 Plating: Gold over nickel plate
 FIXED CONTACTS:
 Base metal: Brass
 Plating: Gold over nickel plate
 COVER: PA66 - Black
 ACTUATOR: PPS - Black
 BASE: PPS - Black
 SUPPORT BRACKET (A1 Terminal Style only): Steel with tin plate

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-108 thru A-109. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

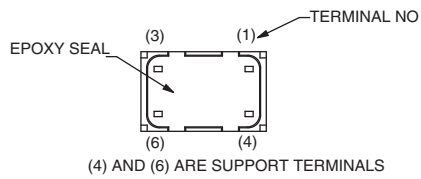
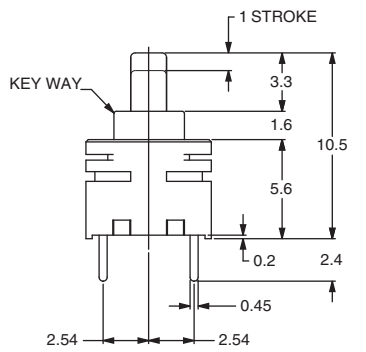
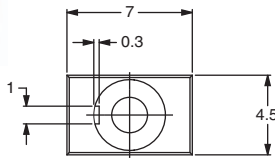


FP Series Sealed Ultra Miniature Pushbutton Switches **NEW!**

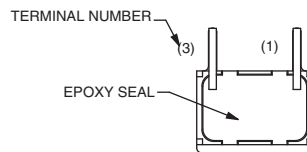
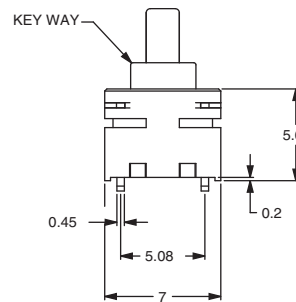
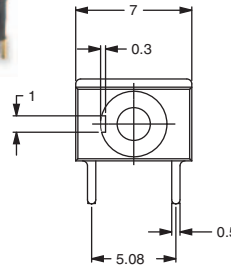
Pushbutton
A

SWITCH FUNCTION

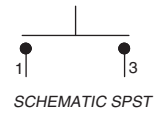
C1 VERTICAL



A1 RIGHT ANGLE

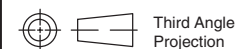
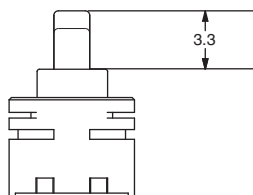


MODEL NO.	SWITCH FUNCTION	
	POS. 1	POS. 2
FP11		
	CONNECTED TERMINALS	
	OPEN	1-3



ACTUATOR LENGTH

SP STANDARD PLUNGER 3.3MM



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

NEW!

FP Series Sealed Ultra Miniature Pushbutton Switches

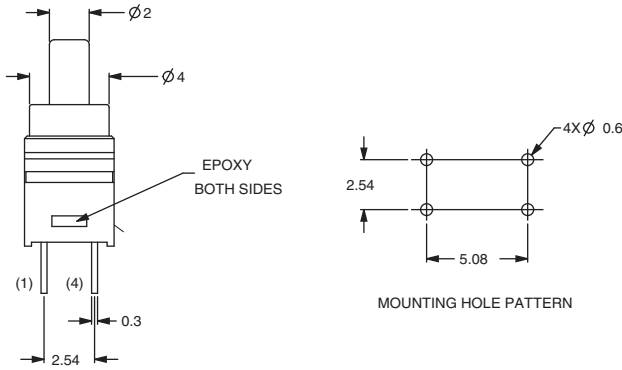


A

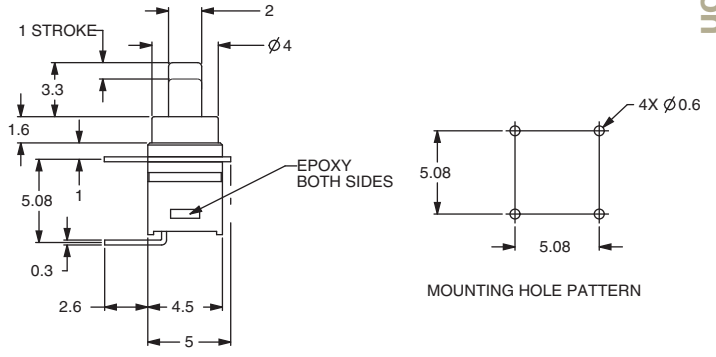
Pushbutton

TERMINAL STYLE

C1 VERTICAL



A1 RIGHT ANGLE



CONTACT PLATING

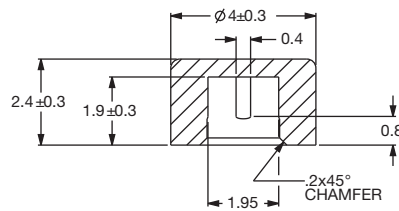
B1 GOLD OVER NICKEL PLATE

PACKAGING

TP TRAY PACKAGING

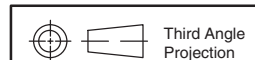
CAPS

OPTION CODE	DESCRIPTION
00	NO CAP
01	WHITE CAP, BULK BAGGED
02	BLACK CAP, BULK BAGGED
03	RED CAP, BULK BAGGED



To purchase Caps separately without switch, please use these part numbers

PART #	COLOR
798D01000	WHITE
798D02000	BLACK
798D03000	RED



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com



A
Pushbutton

AP Series Industrial Pushbutton Switch

Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination / non-illumination
- Multiple colored caps
- Threaded or snap-in mounting
- Caps available separately
- RoHS compliant

Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



Specifications

FUNCTION: SPST Momentary
 CONTACT ARRANGEMENT: N.O.
 MOUNTING TYPE:
 Snap-in (no panel seal)
 Threaded body (hex nut, lock washer, and panel seal gasket provided)
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

Mechanical

OPERATING LIFE: 1,000,000 cycles
 TOTAL TRAVEL: 2.1 ± 0.2 mm
 OPERATING POINT 1.55 ± 0.25 mm
 OVER TRAVEL: 0.6 min.
 OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N
 VIBRATION: 10-500 Hz 10g Max
 SHOCK: 60g 11ms sawtooth wave

Electrical

CONTACT RATING:
 200mA @ 24 V DC resistive (500,000 cycles)
 100mA @ 50 V DC resistive (500,000 cycles)
 400mA @ 32 V AC resistive (500,000 cycles)
 125mA @ 125 V AC resistive (1,000,000 cycles)
 DIELECTRIC STRENGTH: 1000 V AC min.
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)
 BOUNCE TIME: <5 ms

Materials

HOUSING: PBT
 BASE: PBT
 CAP: PBT
 ACTUATOR:
 Illuminated: Clear polycarbonate
 Non-illuminated: PBT
 INTERNAL SEAL: Silicone rubber
 TERMINALS: Copper alloy, gold over silver plating
 MOVABLE CONTACT: Copper alloy, gold over silver plating
 TERMINAL SEAL: Epoxy
 WIRE LEADS: UL1569 Black 22 AWG

Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C (+105°C non-illuminated)
 ESD PROTECTION: 20 KV min.

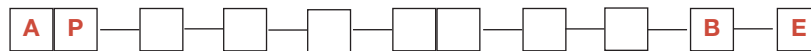
Process Environment

SEALING: IP67 for threaded body
 IP65 for snap-in version (no panel seal)

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation

AP AP Series

Operating Force

2 2 Newtons
4 4 Newtons

Actuator Style

D Dome / Convex
C Concave
E Extended Dome
N None

Actuator Color

0 No Cap
2 Black
3 Red
4 Orange
5 Yellow
6 Green
7 Blue
9 Gray

Illumination

00 No LED*
01 Super White
02 Bi-color; Red (Green)
03 Red
05 Amber
06 Green
07 Super Blue
08 Bi-color; Amber (Green)

Bushing Style**

S** Snap-in plastic
T Threaded plastic

** No panel seal option

*** PC terminals not available with illumination

Contact Customer Service for additional hardware options.

Terminal Seal

E Epoxy
 All models are epoxy sealed

Contact Material

B Gold

Termination

Z Solder Lug
W 12" Wire Leads 22 AWG
C*** PC Terminals

Please contact Customer Service for additional colors and paint / laser etched button options.

* No LED available in short body only



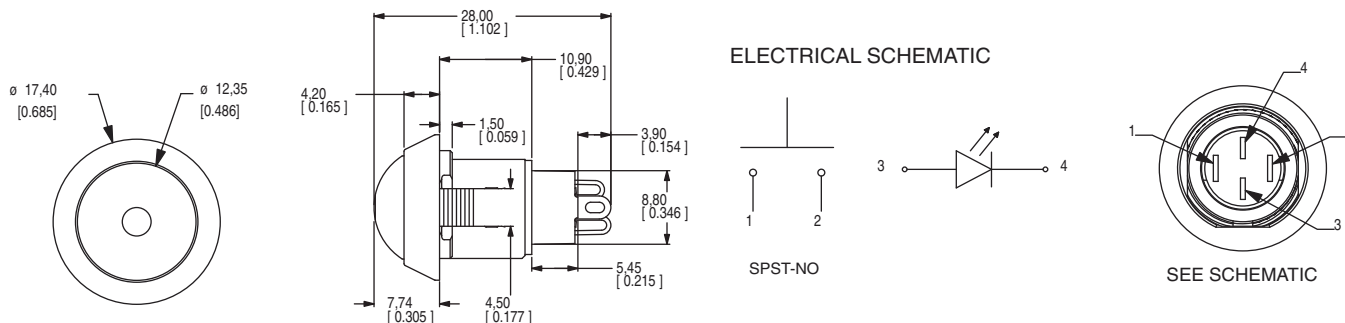
AP Series Industrial Pushbutton Switch



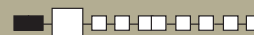
A

Pushbutton

STANDARD VIEW

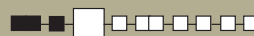


OPERATING FORCE

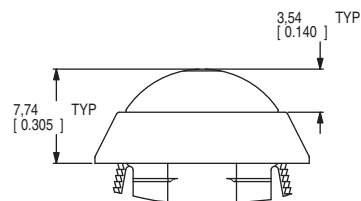


OPTION CODE	OPERATING FORCE
2	2 N, 200 g
4	4 N, 400 g

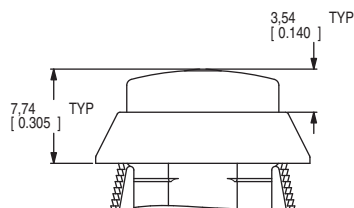
ACTUATOR STYLE



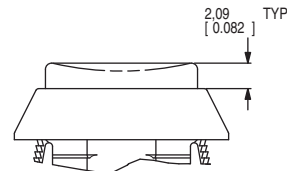
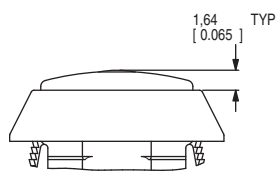
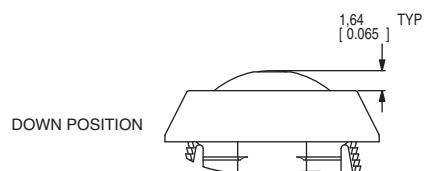
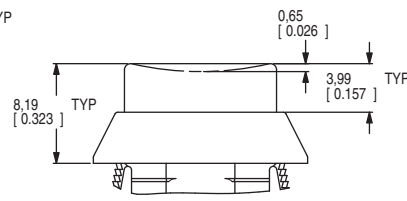
D DOME / CONVEX



E EXTENDED DOME



C CONCAVE

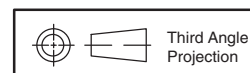


ACTUATOR COLOR



OPTION CODE	ACTUATOR COLOR
0	No Cap
2	Black
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

For additional colors please contact Customer Service.



12 Feb 14

A-111

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

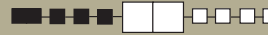
www.ck-components.com



AP Series Industrial Pushbutton Switch

Pushbutton
A

ILLUMINATION

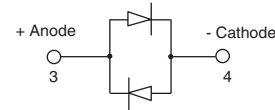


OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY*		PEAK WAVELENGTH	Vf Forward Voltage
		MIN	MAX		
		(mcd)		(nm)	
00	Model without illumination	N/A		N/A	
01	LED Super White	4,000	5,000	N/A	3.5
02	LED Bi-Color – Red (Green)	10	20	635/565	2.0
03	LED Red	4	8	700	2.0
05	LED Amber	35	50	610	2.0
06	LED Green	35	50	565	2.0
07	LED Super Blue	800	1,500	470	3.8
08	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

*LED FORWARD CURRENT: 20 mA
LED FORWARD VOLTAGE: see chart above
LED REVERSE VOLTAGE: 5.0 V MAX

* For information on specific and custom LED, please contact Customer Service.

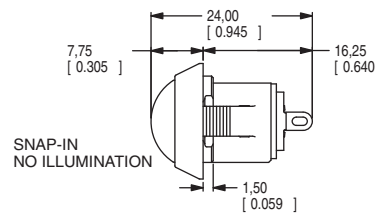
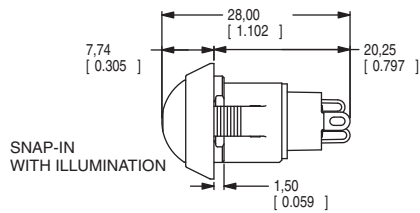
NOTE:
For bi-color LED's the polarity must be reversed to alternate the color



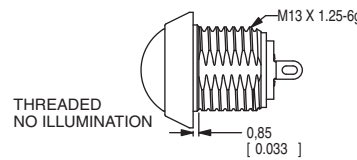
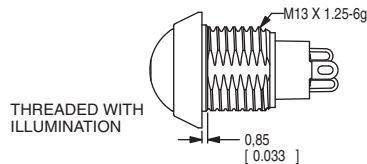
BUSHING STYLE



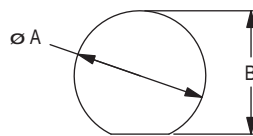
S SNAP-IN



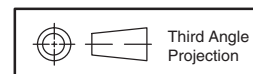
T THREADED PLASTIC



PANEL CUTOUT



PANEL THICKNESS	DIM A (± 0.05 mm)	DIM B (± 0.05 mm)
1 mm [0.039 in]	13.70 mm [0.539 in]	13.00 mm [0.512 in]
2 mm [0.079 in]	13.80 mm [0.539 in]	13.00 mm [0.512 in]
3 mm [0.118 in]	13.90 mm [0.547 in]	13.10 mm [0.516 in]
THREADED BODY MIN PANEL THICKNESS 1 mm	13.70 mm [0.539 in]	13.00 mm [0.512 in]



A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version.

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change



AP Series Industrial Pushbutton Switch



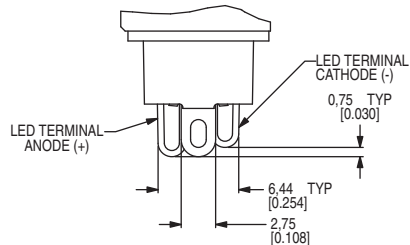
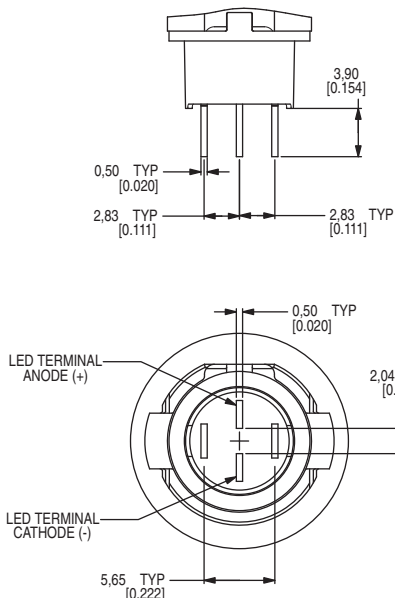
A

Pushbutton

TERMINATION



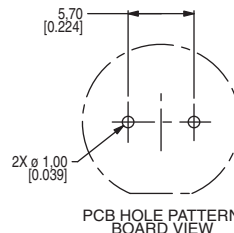
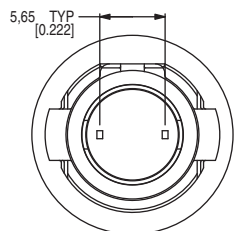
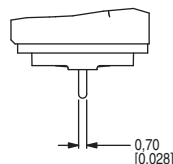
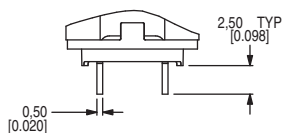
Z SOLDER LUG



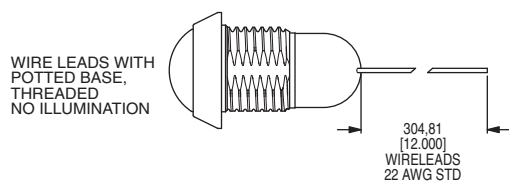
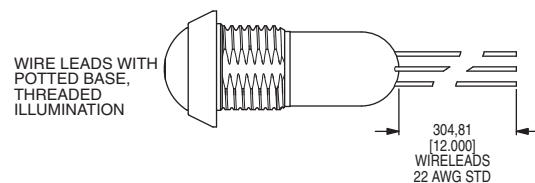
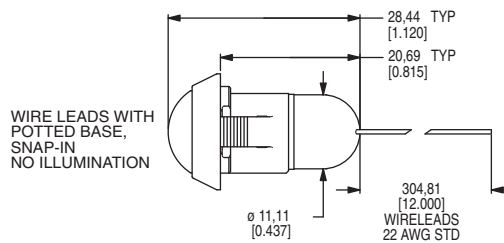
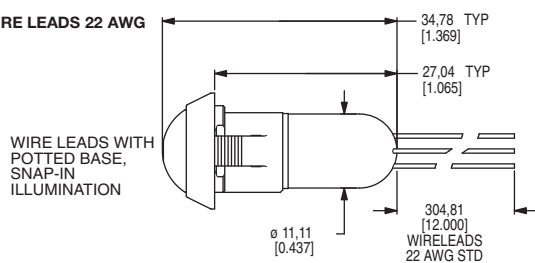
* Switching terminals are gold and LED terminals are silver

C PC TERMINALS

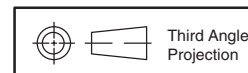
*** Illumination not available with PC Terminals



W 12" WIRE LEADS 22 AWG



Wires: Black wires - Terminals
Red wires - LED (+) Positive
White wire - LED (-) Negative





AP Series Industrial Pushbutton Switch

A

Pushbutton

CONTACT MATERIAL



B GOLD

OPTION CODE	CONTACT MATERIAL
B	Gold

TERMINAL SEAL



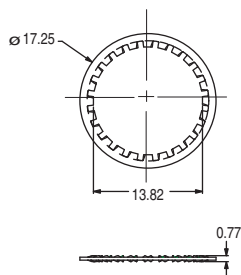
E EPOXY

All models are epoxy sealed

HARDWARE

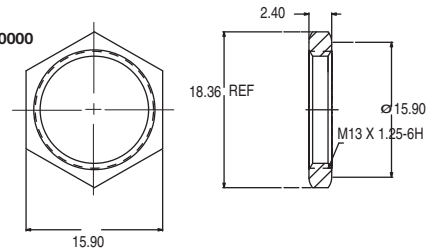
LOCK WASHER

Part Number 647D00000



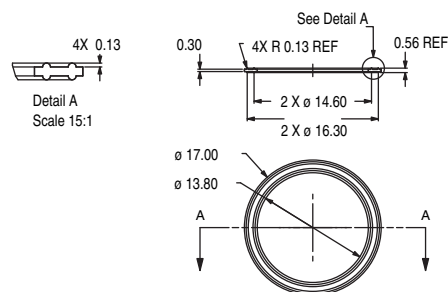
HEX NUT

Part number 515D00000



PANEL SEAL

Part Number 655D00000

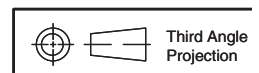


Caps available on next page



12 Feb 14

A-114



Third Angle Projection

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

www.ck-components.com



A

Pushbutton

AVAILABLE CAPS



481D XX XXX

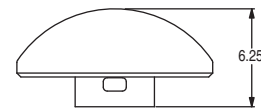
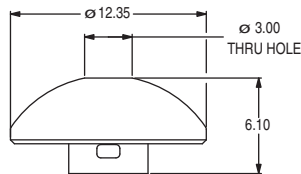
Cap Color —
Style —

OPTION	CAP COLOR
01	WHITE
02	BLACK
03	RED
04	ORANGE
05	YELLOW
06	GREEN
07	BLUE
08	BROWN
09	GRAY

PART NUMBER	HOLE	STYLE
481DXX000	NO	DOME
481DXX001	YES	DOME
481DXX002	NO	EXTENDED DOME
481DXX003	YES	EXTENDED DOME
481DXX004	NO	CONCAVE
481DXX005	YES	CONCAVE

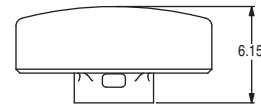
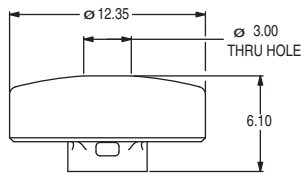
DOME

481DXX000 = NO HOLE
481DXX001 = HOLE



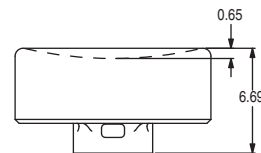
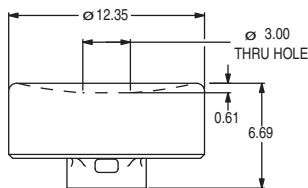
EXTENDED DOME

481DXX002 = NO HOLE
481DXX003 = HOLE



CONCAVE

481DXX004 = NO HOLE
481DXX005 = HOLE





HP Series Hall Effect Pushbutton Switch

Pushbutton
A

Features/Benefits

- IP68 sealed
- 10,000,000 life cycle
- Multiple colored caps
- Redundant output available

Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



Specifications

FUNCTION: Linear output (See chart on next page)
MOUNTING TYPE: Front mount, Rear mount

Mechanical

MECHANICAL TRAVEL: 0.150 (3.81mm)
SHOCK: 60g 11ms sawtooth wave
VIBRATION: 10-500Hz 10g max.

Electrical

SUPPLY VOLTAGE: 5 ± 0.5 VDC
SUPPLY CURRENT: 10mA max.
OUTPUT CURRENT: 1mA max.
OUTPUT VOLTAGE: Programable from 0.5 -4.5V
ESD PROTECTION: 16kV per EIA-545

Materials

CASE / BUSHING: Anodized Aluminum
INSIDE HOUSING: PBT
CAP: PBT
ACTUATOR: PBT

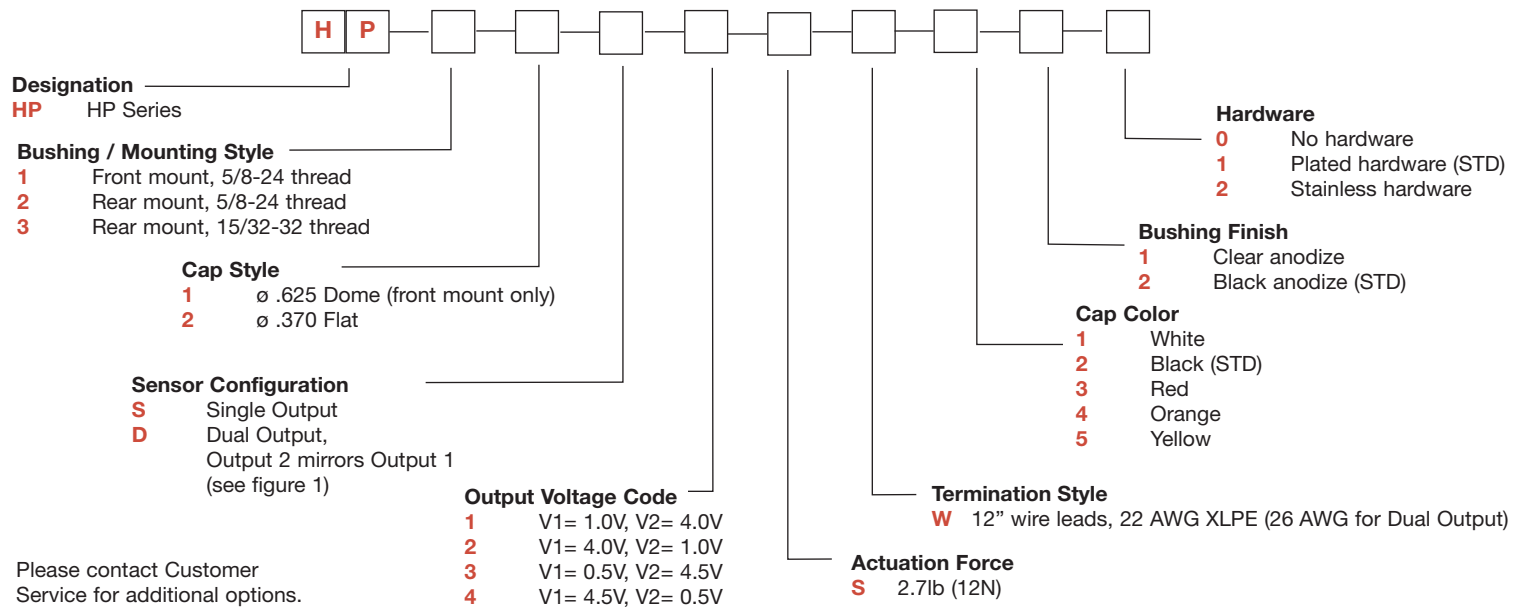
Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C
OPERATING LIFE: 10,000,000 cycles
SEALING: IP68S

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Specifications and dimensions subject to change

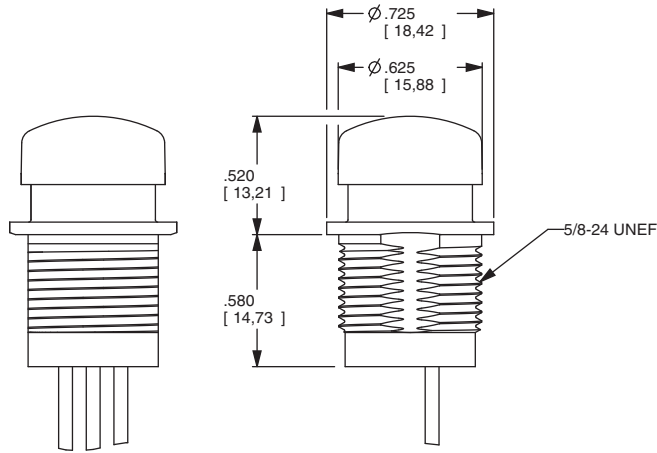
HP Series Hall Effect Pushbutton Switch



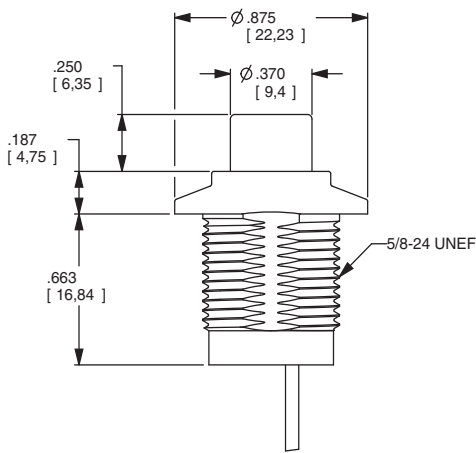
A

Pushbutton

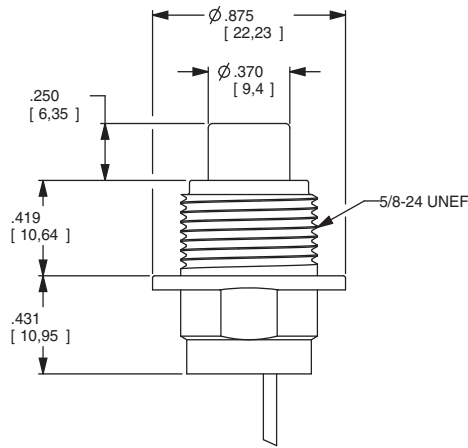
STANDARD VIEW



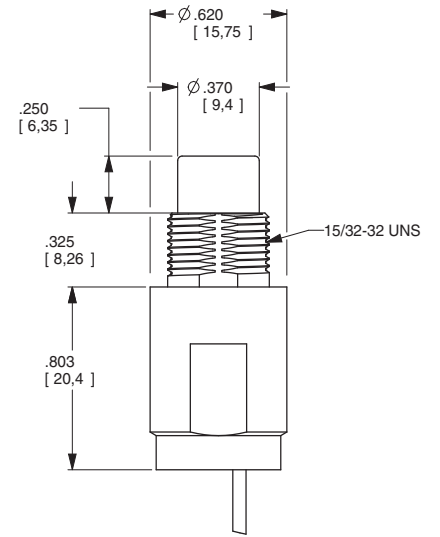
HP11



HP12



HP22



HP32

FIGURE 1: OUTPUT VOLTAGE

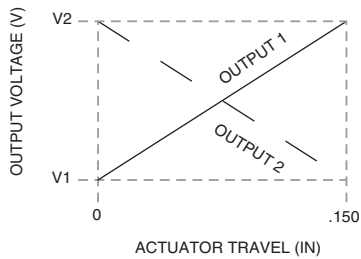
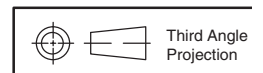
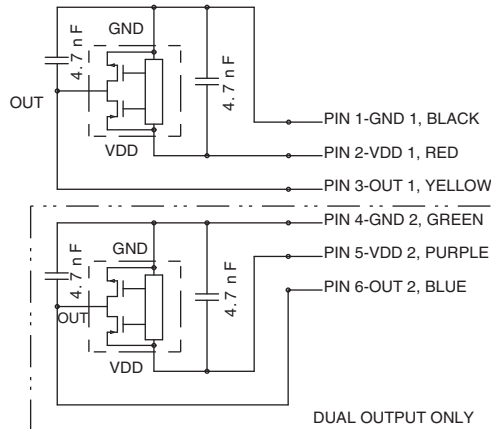


FIGURE 2- SCHEMATIC



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

www.ck-components.com



NP Series Sealed Industrial Pushbutton Switch

Pushbutton
A

Features/Benefits

- IP68 sealed
- 1,000,000 life cycle
- Multiple housing styles
- Capable of up to 5A resistive load
- Wirelead options available
- RoHS compliant

Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Transportation
- Military



Specifications

FUNCTION: SPDT Double Break (Form Z) Momentary
CONTACT ARRANGEMENT: N.O. and N.C.
MOUNTING TYPE: Threaded front or rear mount and slot mount
TORQUE SPEC FOR THREADED BODY: Do not exceed 50 in-lbs (5.65 N-m)

Mechanical

OPERATING LIFE: 1,000,000 cycles
TOTAL TRAVEL: 1.6 ± 0.15 mm
OPERATING POINT 0.9 ± 0.25 mm
OVER TRAVEL: 0.45 min.
OPERATING FORCE: 8N ± 1.5N
VIBRATION: 10-500 Hz 10g Max
SHOCK: 50g 11ms sawtooth wave

Electrical

CONTACT RATING:
Option G - Gold over Silver
10mA/5 VDC (1,000,000 cycles)
Option Q - Silver
1A/32 VDC resistive (100,000 cycles)
5A/32 VDC resistive (25,000 cycles)
3A/32 VDC resistive (25,000 cycles)

Electrical (cont.)

DIELECTRIC STRENGTH: 1000 V AC for 1 min.
INSULATION RESISTANCE: 1 G Ω @ 500 VDC
INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)
BOUNCE TIME: <5 ms

Materials

HOUSING: 6061-T6 Aluminum, black or clear anodized
BASE: PBT
CAP: PBT
ACTUATOR: PBT
INTERNAL SEAL: Silicone rubber
TERMINALS: Copper with silver nickel inlay, silver plating
MOVABLE CONTACT: Copper alloy, gold over silver plating
TERMINAL SEAL: Epoxy

Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C
ESD PROTECTION: 15KV min.

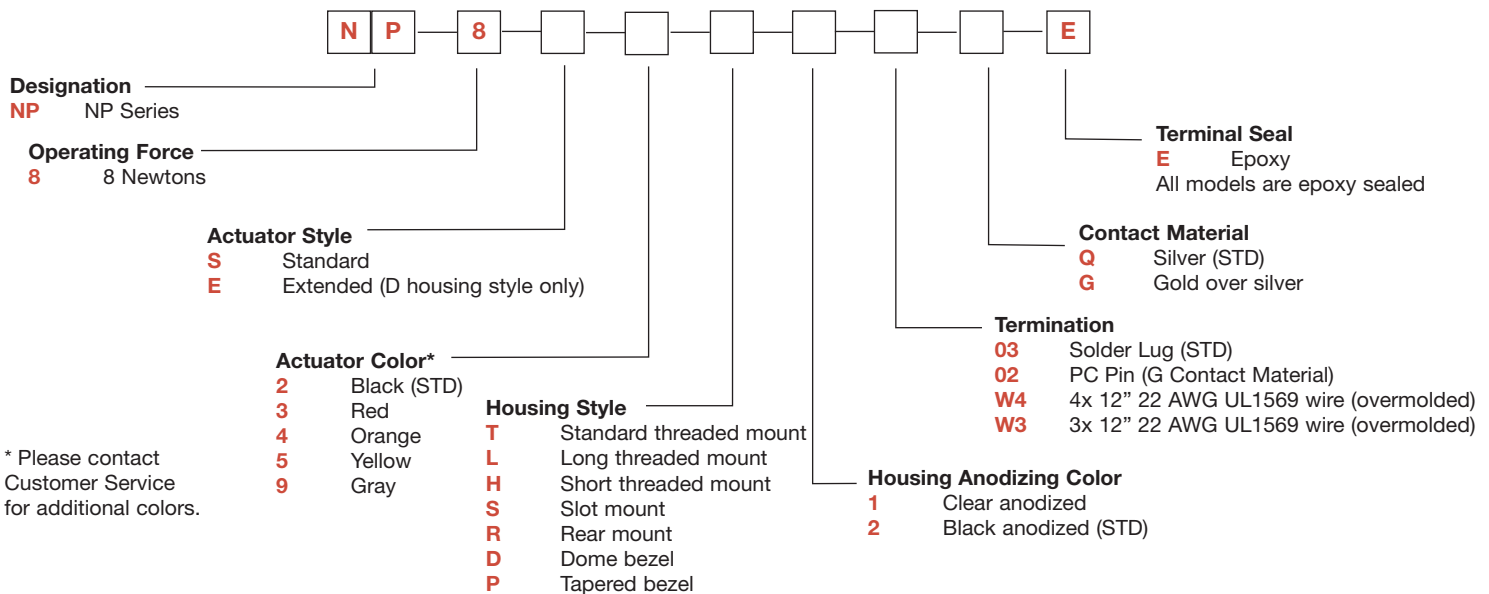
Process Environment

SEALING: IP68

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Specifications and dimensions subject to change

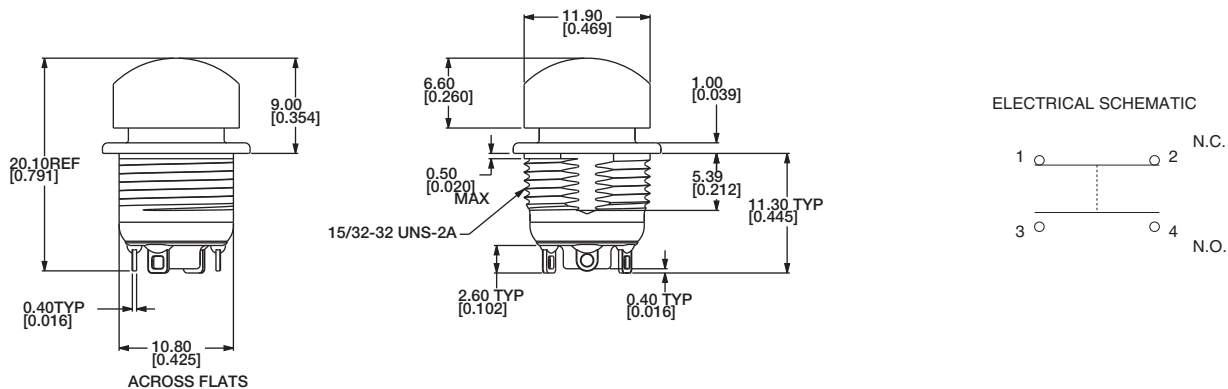
NP Series Sealed Industrial Pushbutton Switch



A

Pushbutton

STANDARD VIEW



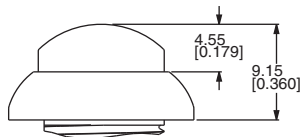
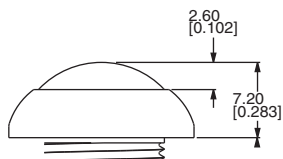
OPERATING FORCE

OPTION CODE	OPERATING FORCE
8	8 N

ACTUATOR STYLE

S STANDARD

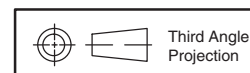
E EXTENDED (D HOUSING STYLE ONLY)



ACTUATOR COLOR

OPTION CODE	ACTUATOR COLOR
2	Black
3	Red
4	Orange
5	Yellow
9	Gray

For additional colors please contact Customer Service.



Dimensions are shown: mm (inches)
Specifications and dimensions subject to change





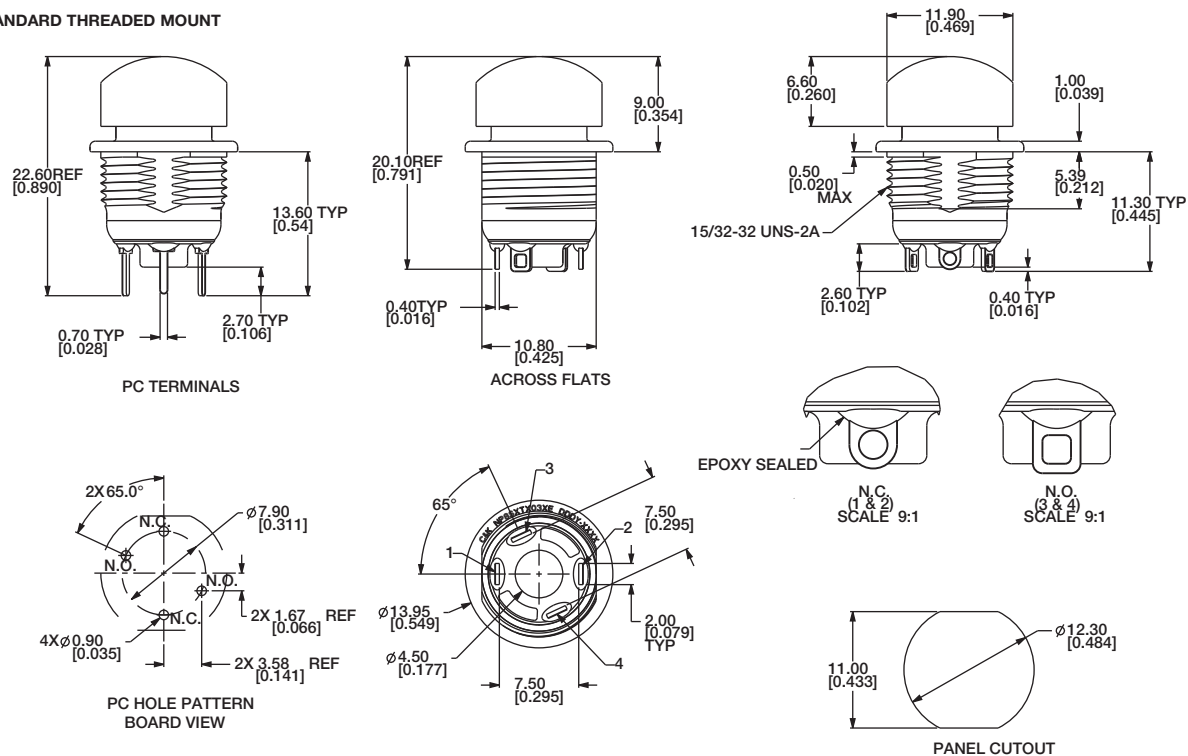
NP Series Sealed Industrial Pushbutton Switch

HOUSING STYLE

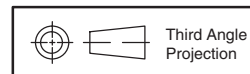
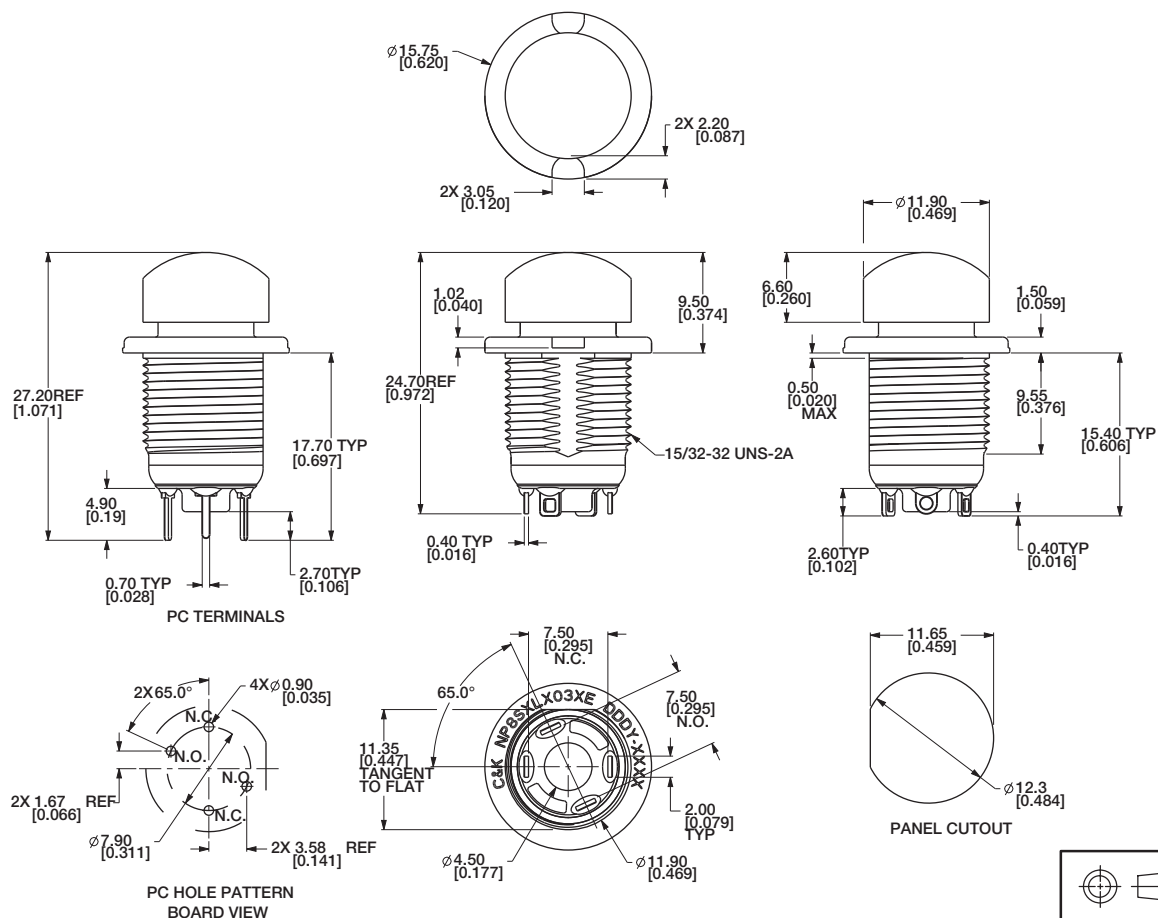
Pushbutton

A

T STANDARD THREADED MOUNT



L LONG THREADED MOUNT



Dimensions are shown: mm (inches)
 Specifications and dimensions subject to change

NP Series Sealed Industrial Pushbutton Switch

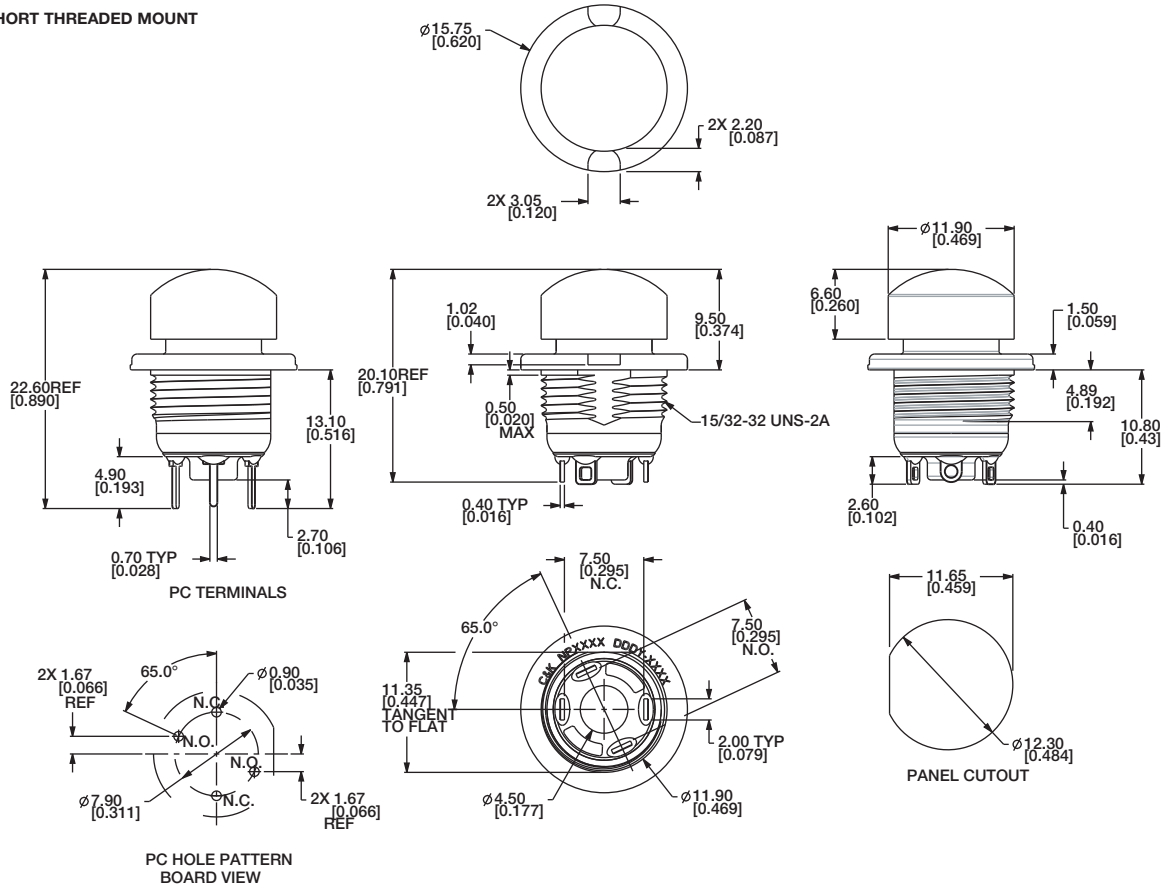


A

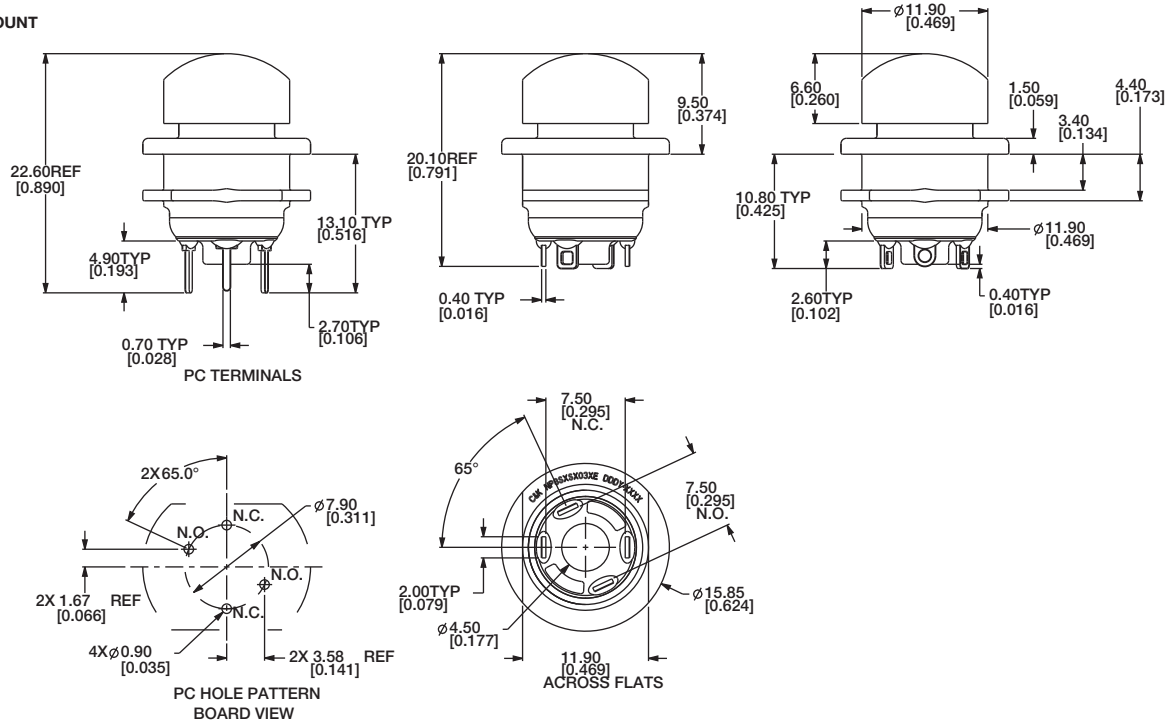
Pushbutton

HOUSING STYLE

H SHORT THREADED MOUNT



S SLOT MOUNT



Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

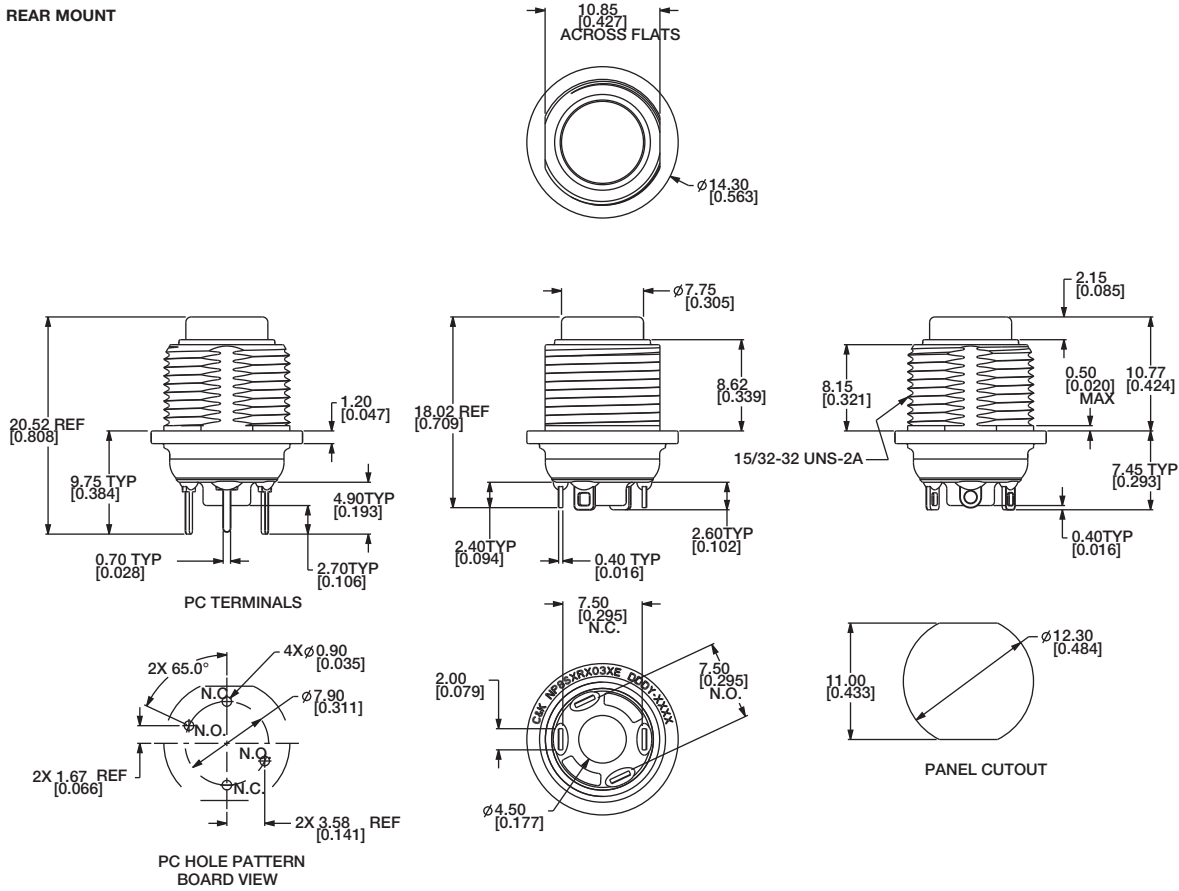


NP Series Sealed Industrial Pushbutton Switch

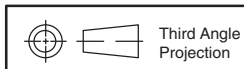
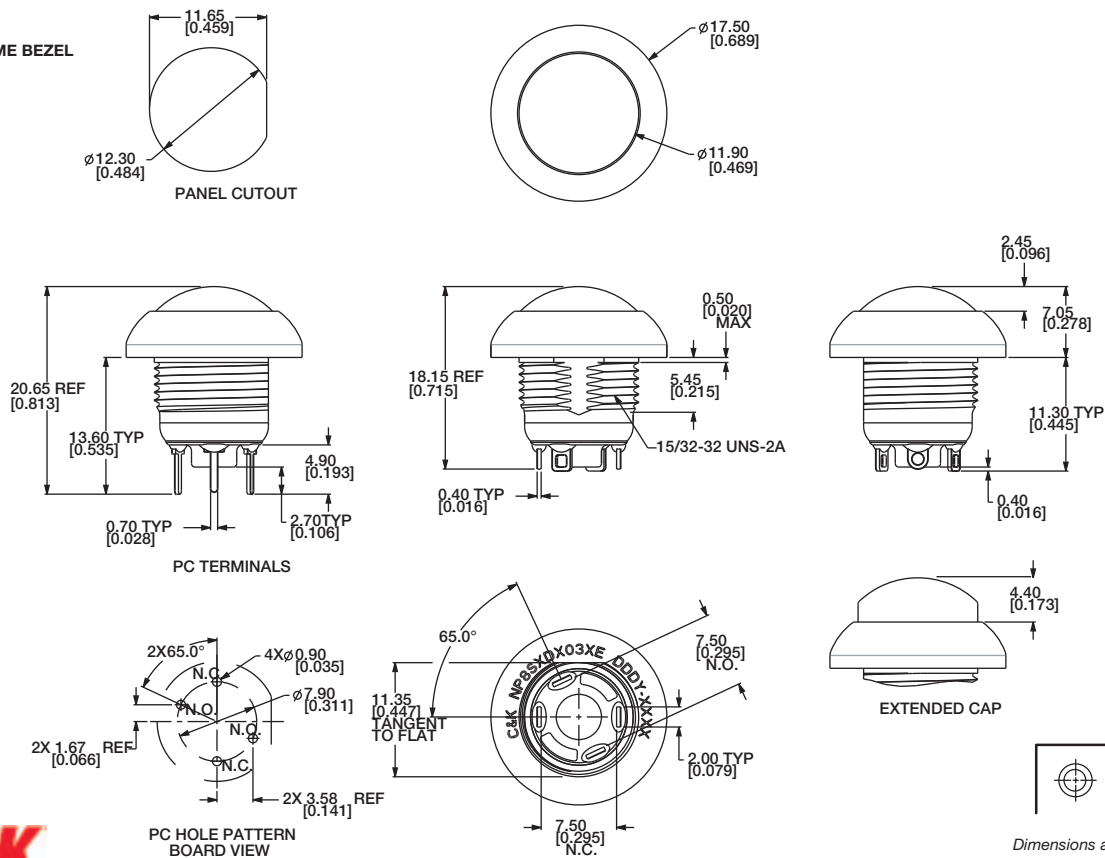
HOUSING STYLE

Pushbutton
A

R REAR MOUNT



D DOME BEZEL



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

NP Series Sealed Industrial Pushbutton Switch

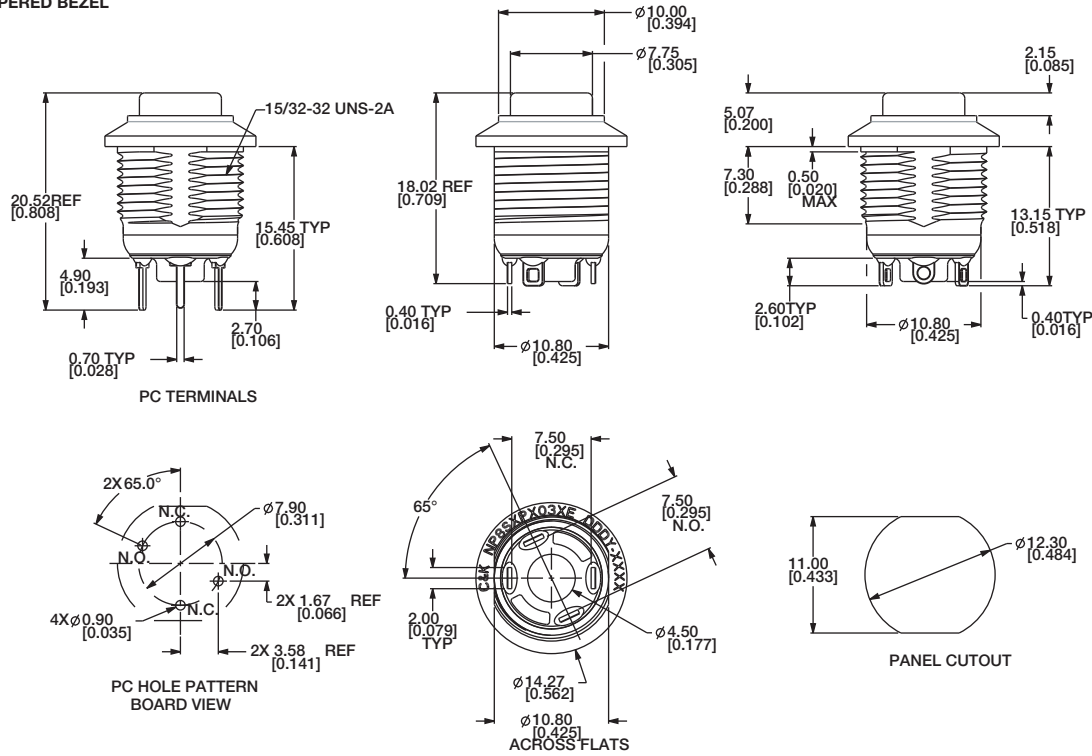


A

Pushbutton

HOUSING STYLE

P TAPERED BEZEL

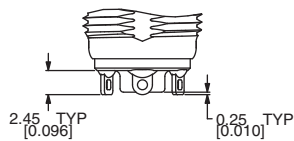


HOUSING ANODIZING COLOR

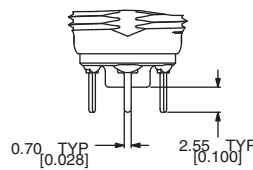
OPTION CODE	ANODIZING COLOR
1	Clear anodized
2	Black anodized (STD)

TERMINATION

03 SOLDER LUG (STD)



02 PC PIN (G CONTACT MATERIAL)



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

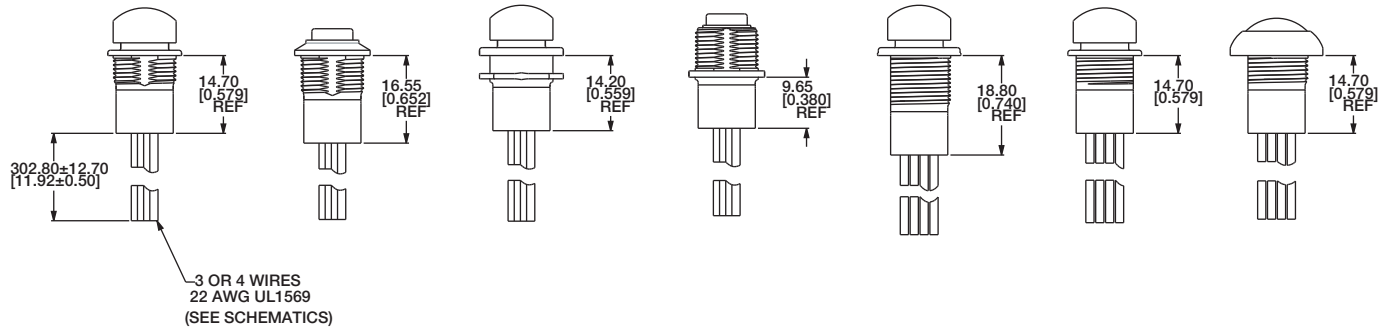


NP Series Sealed Industrial Pushbutton Switch

A

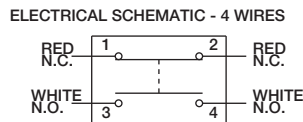
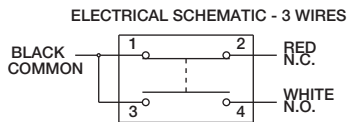
Pushbutton

TERMINATION



W3 3X 12" 22 AWG UL1569 WIRE (OVERMOLDED)

W4 4X 12" 22 AWG UL1569 WIRE (OVERMOLDED)



CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL
Q	Silver (STD)
G	Gold over Silver

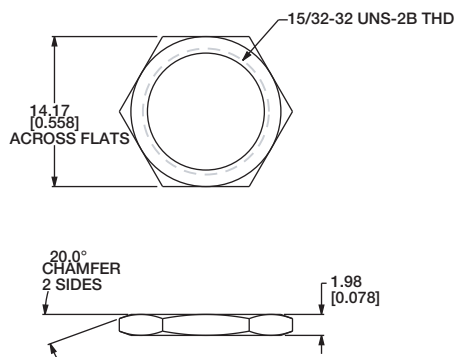
TERMINAL SEAL

E EPOXY

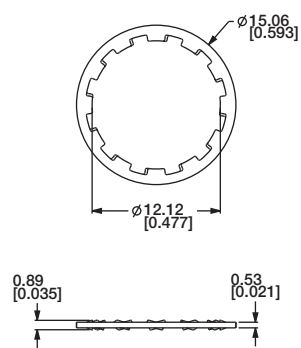
All models are epoxy sealed

HARDWARE

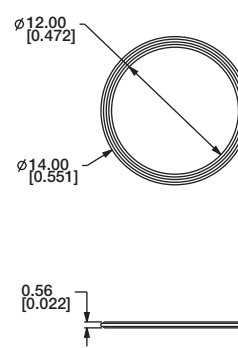
HEX NUT
707100201 Nickel-plated



LOCKWASHER
700302202



PANEL GASKET
851D02000



Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

PBA Series Illuminated Pushbutton



A

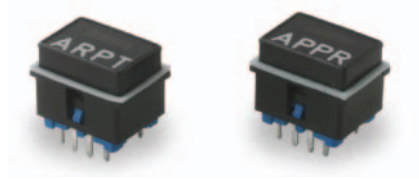
Pushbutton

Features/Benefits

- Illuminated display
- Small size
- Cold lighting
- Tactile feed back

Typical Applications

- Avionic



Mechanical

ACTUATION FORCE: 5,5 N ± 0,5 N
 MAXIMUM FORCE: 80 N
 TRAVEL TO CONTACT: 1,2 ± 0,1 mm
 OVERTRAVEL: >0,3 mm
 TOTAL TRAVEL: 1,5 ± 0,1 mm
 LIFE EXPECTANCY: 10⁸ operations 28 V - 10 mA
 WEIGHT: 2 grams
 VIBRATION: ± 0,45mm from 33 Hz to 75 Hz
 ACCELERATION: 10 g max

Electrical

CONTACTS: Gold plated
 VOLTAGE: Max 100 V - Min 20 mV DC
 CARRYING CURRENT: Max 250 mA - Min 50 µA
 SWITCHING CURRENT: Max 50 mA - Min 50 µA
 MAX SWITCHING POWER: 1 W
 CONTACT RESISTANCE: < 50 Ω
 DIELECTRIC STRENGTH: 500 V rms
 INSULATION RESISTANCE (100 V): > 5000 M Ω
 BOUNCE: < 3 ms
 SWITCHING OF 2 POLES MATCHING: < 10 ms

Environmental Data

STORAGE TEMPERATURE: -55°C TO 85°C
 OPERATING TEMPERATURE: -30°C TO 85°C
 TEMPERATURE OF KEY TO CAP: < Ambient +25°C
 HUMIDITY TEST: 21 days (-40°C - 93% HR)
 ALTITUDE PRESSURE: From 20 hPa to 1070 hPa

Soldering Data

WAVE SOLDERING: 260°C / 5s
 MANUAL SOLDERING: 350°C / 2s
 SEALING: According to IP64

Plastic Material

Housing and Cap: UL-94 VO

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

Designation **PBA** PBA Series

Size

1	9,5 x 14
2	11,5 x 14
3	14 x 14

Marking Location

H	High
M	Middle
L	Low

Type of Marking

T	Text / Legend
S	Status Indicator

LED Color

0	White	λ
1	Green	λ 560 nm
2	Yellow Green	λ 568 nm
3	Amber	λ 590 nm
4	Red	λ 660 nm
5	Other	λ

LED Supply or Type

AC	Alternative
DC	Direct
XX	for each marking
	1:6 LEDs in parallel
	for direct current

Display Type

		LED Non-Illuminated	LED Illuminated
N	Text Marking	White	LED Color
	Background	Black	Black
S	Text Marking	Not visible	LED Color
	Background	Black	Black
R	Text Marking	White	LED Color
	Background	Red	Red
G	Text Marking	Green	Green
	Background	Black	Black

Repeat sequence for 2nd Marking

Third Angle Projection



Dimensions are shown: mm (inches)
 Specifications and dimensions subject to change



PBA Series Illuminated Pushbutton

A

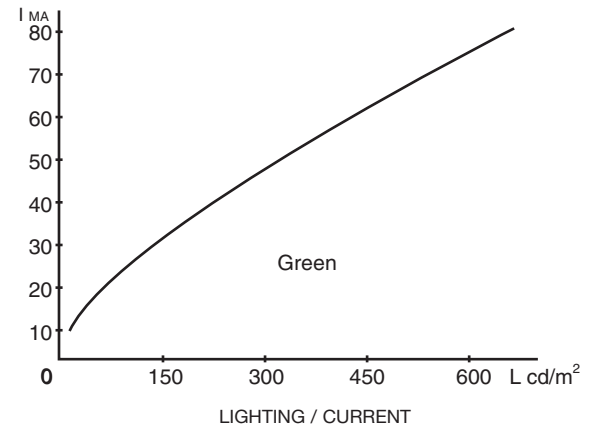
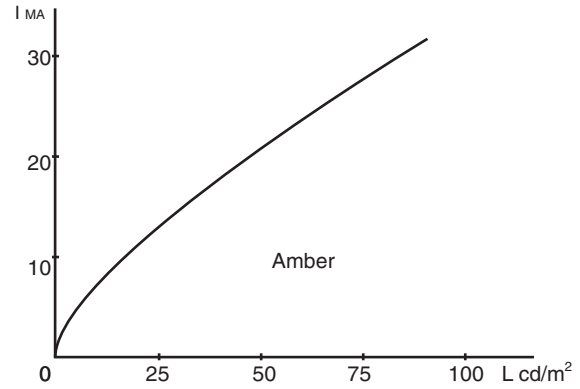
Pushbutton

LIGHTING DATA

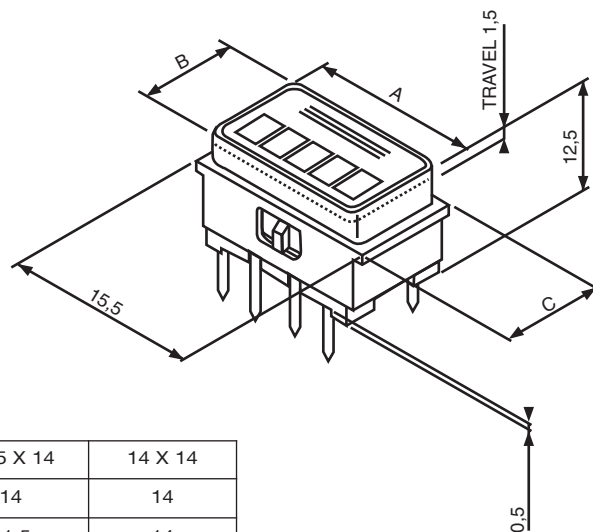
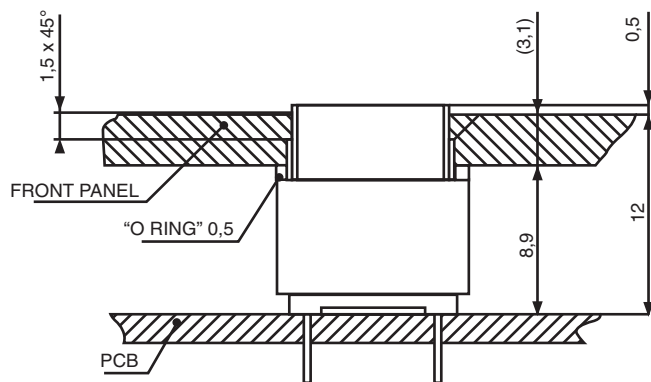
The legends of function and the status indicator can be illuminated separately.

Color	Amber	Green
Wave Length	$586 < \lambda < 592$	$555 < \lambda < 560$
Current Max	80 mA	80 mA
Chromaticity	X $0,54 < X < 0,58$ Y $0,40 < Y < 0,44$	$0,30 < X < 0,40$ $0,6 < Y$
Contrast Min.	1,2	0,85

For other colors and displays, please contact Customer Service.



DIMENSIONS (applicable for any size)



	9,5 X 14	11,5 X 14	14 X 14
A	14	14	14
B	9,5	11,5	14
C	11	11,5	15,5

Tolerance: $\pm 0,1$ mm



Dimensions are shown: mm
Specifications and dimensions subject to change

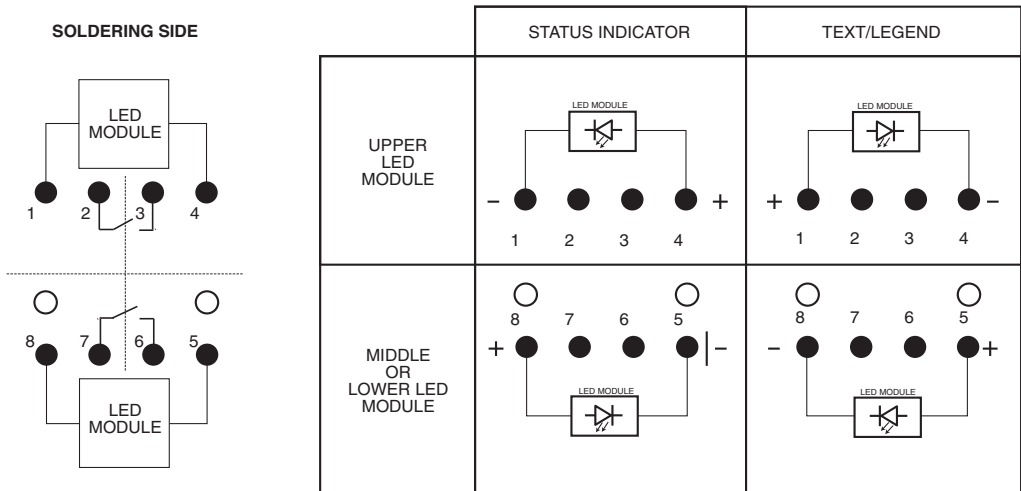
PBA Series Illuminated Pushbutton



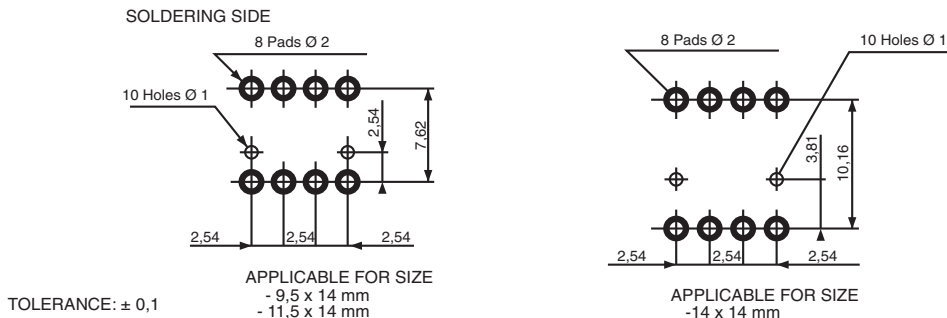
A

Pushbutton

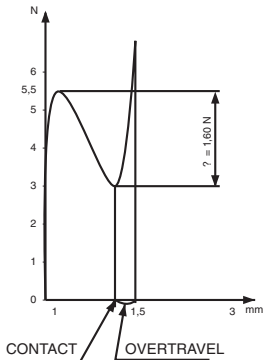
LED MODULE LAYOUT



PCB Layout



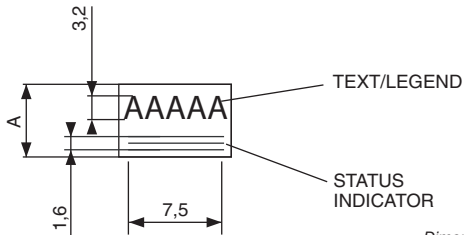
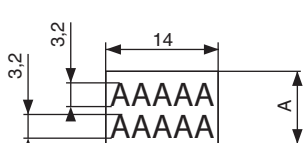
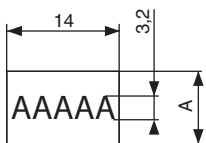
TACTILE EFFECT



- TRAVEL**
- TRAVEL TO CONTACT: 1,2 ± 0,1 mm
 - OVERTRAVEL: > 0,3 mm
 - TOTAL TRAVEL: 1,5 ± 0,1 mm

- FORCE**
- ACTUATOR FORCE: 5,5 N ± 0,5 N
 - TACTILE FEELING: 1,6 N

1 or 2 markings are available in any combination of text / legend or status indicator.



A = 9,5 or 11,5 or 14mm

Dimensions are shown: mm
Specifications and dimensions subject to change

www.ck-components.com



PWR Series Power Pushbutton

NEW!

Patent Pending

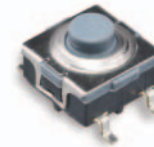
Pushbutton
A

Features/Benefits

- Movable contact with redundant high power contact points to form a momentary, SPST, double break switch
- Rubber actuator provides sealing and tactile feel.
- Small SMT packaging allows applications to integrate power and signal switch on same PCB
- RoHS compliant and compatible
- IP65

Typical Applications

- Computers and peripherals
- Automotive power function
- White goods and appliances
- Industrial power applications



Specifications

OPERATING FORCE: 7N typical.
 OPERATING LIFE: Q1: 25,000 cycles; Q2: 100,000 cycles.
 CONTACT RATING: 2A @ 125 VAC / 1A @ 250 VAC.
 CONTACT RESISTANCE: 100mΩ max. initial.
 DIELECTRIC STRENGTH: 1500 VRMS min.
 INSULATION RESISTANCE: 100 Mega-ohms min.
 BOUNCE TIME: 20 milliseconds max.
 OPERATING TEMPERATURE: -20°C to 85°C

Materials

MOVABLE CONTACTS: Silver alloy.
 FIXED CONTACTS/TERMINALS: Silver alloy / Tin over brass.
 BASE: PPS.
 FRAME: Stainless steel.
 ACTUATOR: Silicone rubber.

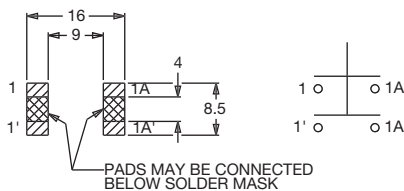
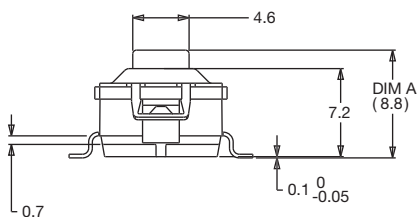
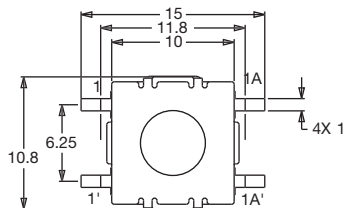
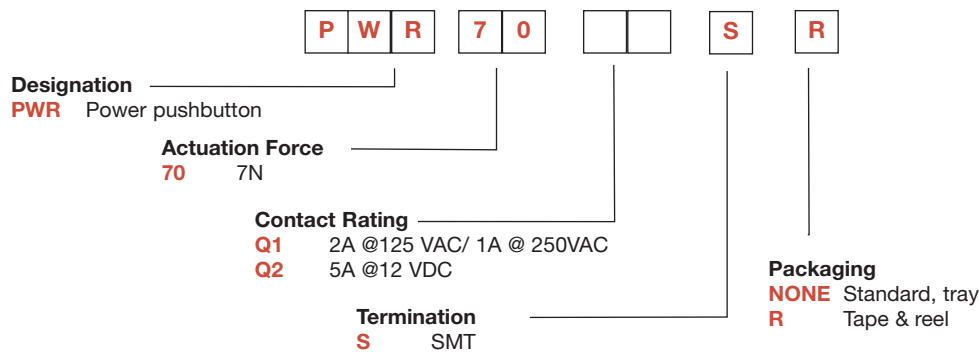
Packaging

In reels of 425 pieces.
 Dimensions of reels according to EIA RS481 or IEC 60286-3.
 External diameter 330 mm ± 2 mm.

NOTE: Specifications and materials listed above are for switches with standard options.
 For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



SWITCH STATE	DIM A
Free position	8.7
Operate position	7.7
Max travel	7.1



Dimensions are shown: mm
 Specifications and dimensions subject to change

NEW!

PB Series Single Pole and Multi-Key Pushbutton Switches



A

Pushbutton

Features/Benefits

- Momentary or latching options
- Reliable contact design
- 2, 4, and 6 pole configurations
- Long travel and extended life cycles

Typical Applications

- Appliances
- Audio and visual equipment
- Consumer electronics
- Industrial equipment



Specifications

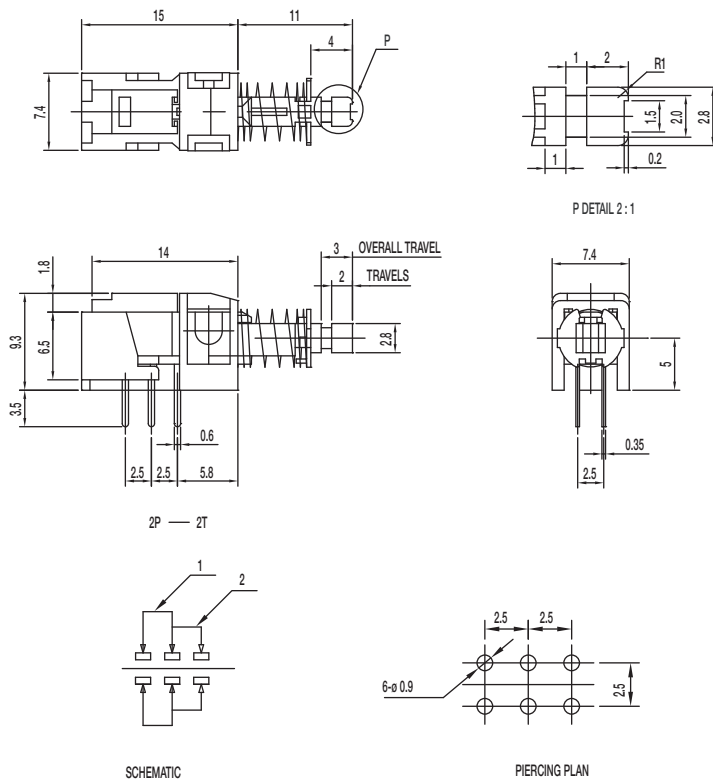
CONTACT RATING: 0.3A @ 30 VDC
INITIAL CONTACT RESISTANCE: 30 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
OPERATING LIFE: 10,000 cycles without load
OPERATING FORCE:
250 ± 100 gf (2.45 ± 0.98N)
LOCK TRAVEL: 2 ± 0.3 mm
TOTAL TRAVEL: 3 ± 0.3 mm
OPERATING TEMPERATURE: -20°C to 70°C

Materials

CASE: PC (UL 94HB)
PLASTIC CLIP: POM (UL 94HB)
SPRING: SUS
KNOB: POM
TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PB-22D01-L 2PDT LOCK / LATCHING



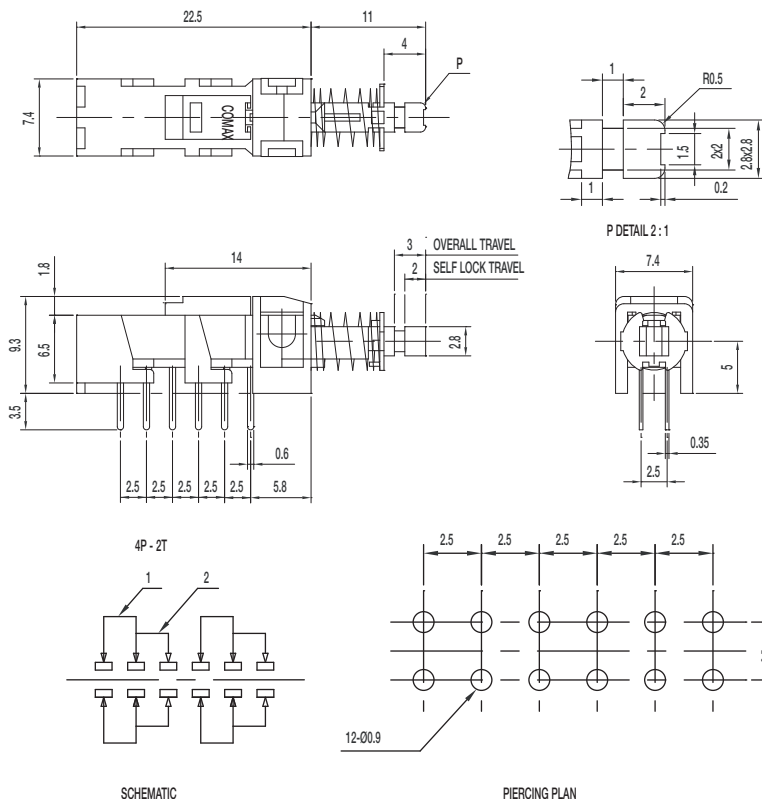
Dimensions are shown: mm
Specifications and dimensions subject to change



PB Series Single Pole and Multi-Key Pushbutton Switches **NEW!**

Pushbutton
A

PB-42D01-L 4PDT LOCK / LATCHING



Specifications

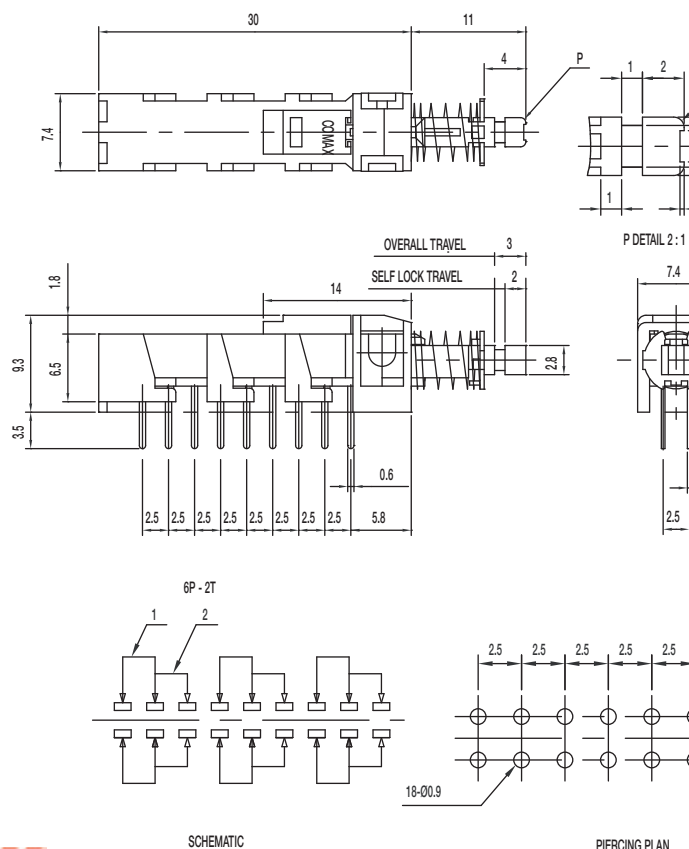
CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 280 ± 100 gf
 LOCK TRAVEL: 2 ± 0.3 mm
 TOTAL TRAVEL: 3 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

CASE: PC (UL 94HB)
 PLASTIC CLIP: POM (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PB-62D01-L 6PDT LOCK / LATCHING



Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 300 ± 100 gf (2.94 ± 0.98N)
 LOCK TRAVEL: 2 ± 0.3 mm
 TOTAL TRAVEL: 3 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

CASE: PC (UL 94HB)
 PLASTIC CLIP: POM (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
 Specifications and dimensions subject to change

NEW!

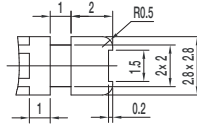
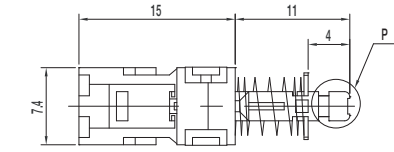
PB Series Single Pole and Multi-Key Pushbutton Switches



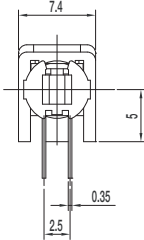
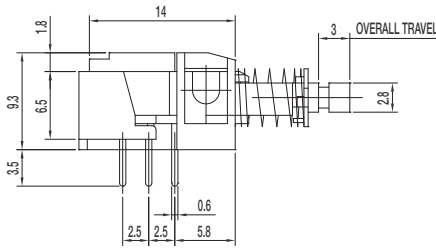
A

Pushbutton

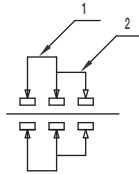
PB-22D01-F 2PDT NON-LOCK / MOMENTARY



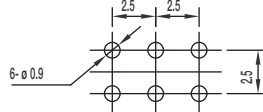
P DETAIL 2:1



2P — 2T



SCHEMATIC



PIERCING PLAN

Specifications

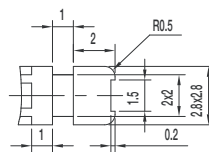
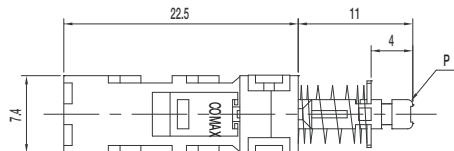
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
250 ± 100 gf (2.45 ± 0.98N)
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

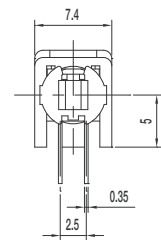
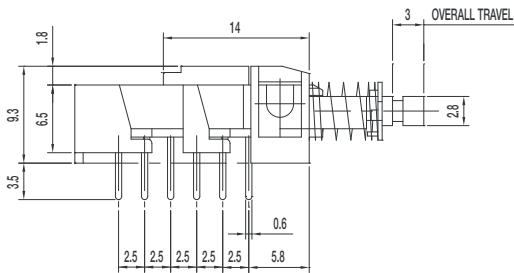
- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

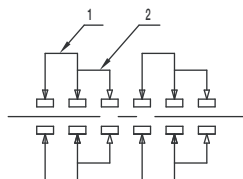
PB-42D01-F 4PDT NON-LOCK / MOMENTARY



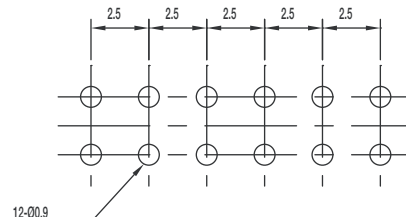
P DETAIL 2:1



4P - 2T



SCHEMATIC



PIERCING PLAN

Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
280 ± 100 gf (2.477 ± 0.98N)
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change



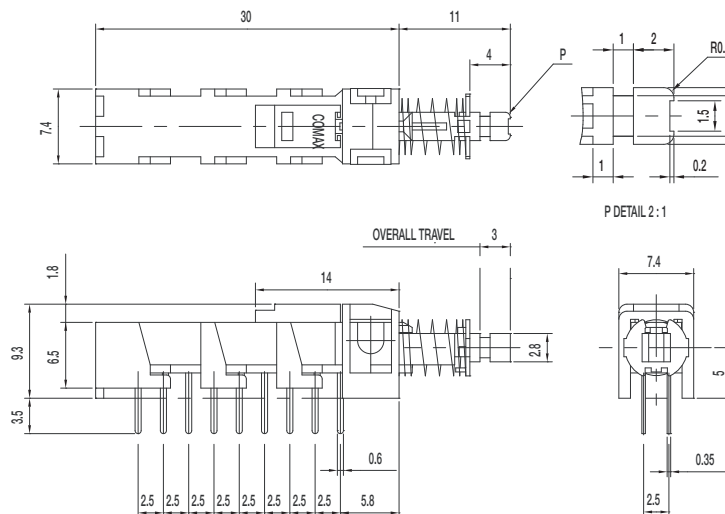
PB Series Single Pole and Multi-Key Pushbutton Switches

NEW!

A

Pushbutton

PB-62D01-F 6PDT NON-LOCK / MOMENTARY

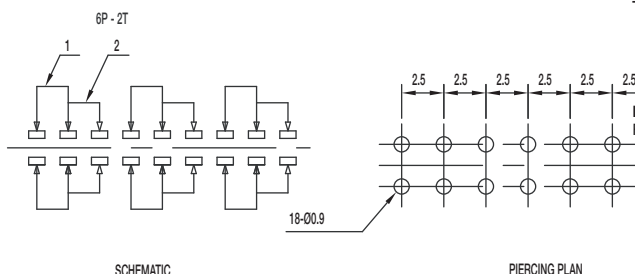


Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

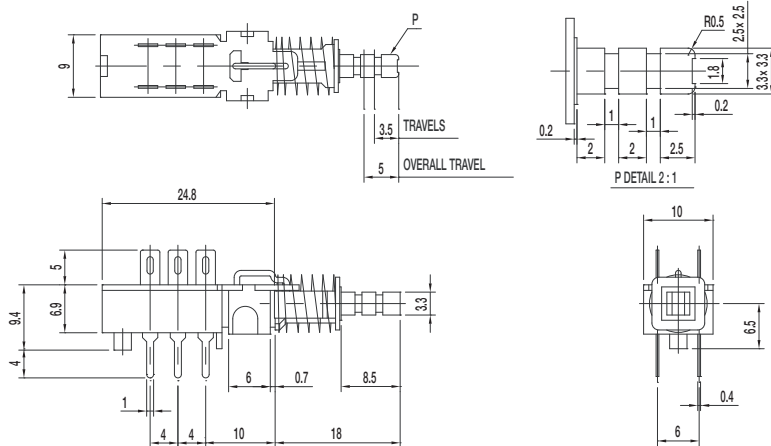
Materials

- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated



NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PB-22G02-L 2PDT LOCK / LATCHING

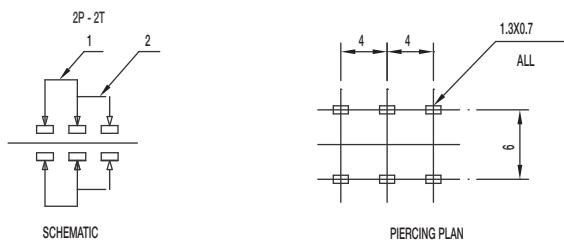


Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
350 ± 150 gf (3.43 ± 1.47N)
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated



NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

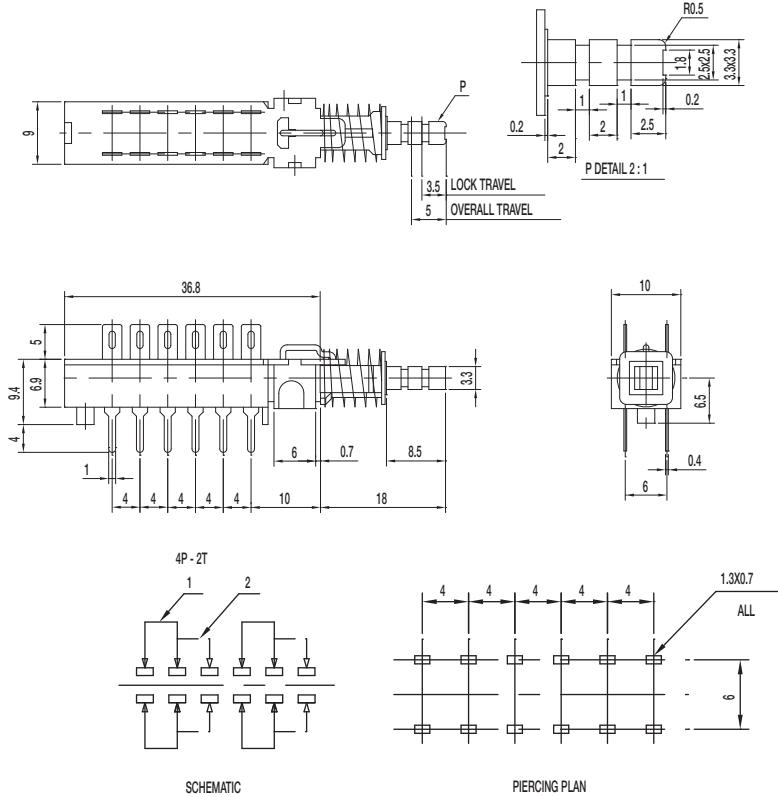
PB Series Single Pole and Multi-Key Pushbutton Switches



A

Pushbutton

PB-42G02-L 4PDT LOCK / LATCHING



Specifications

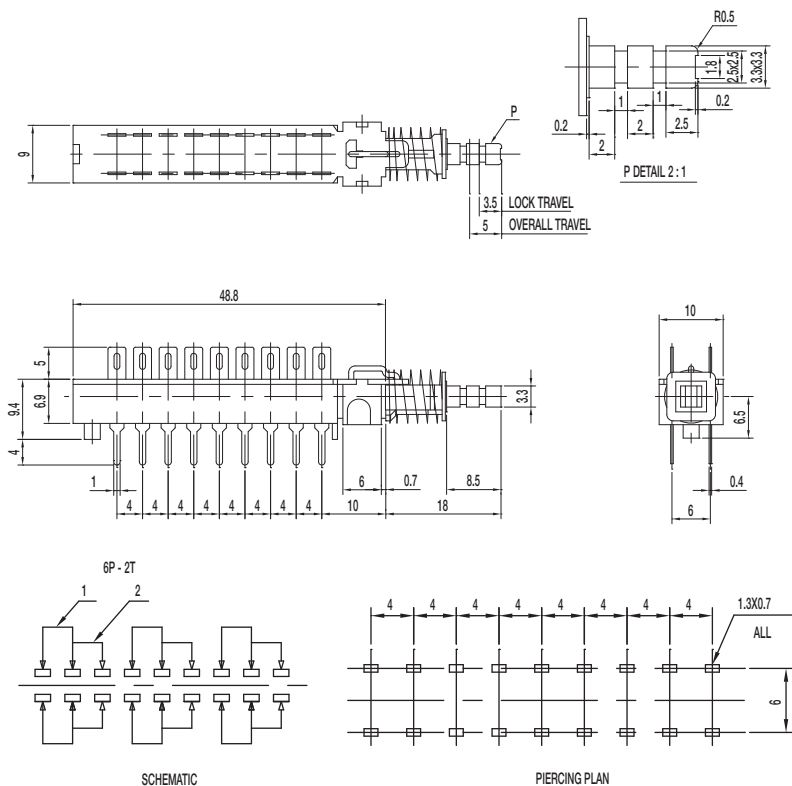
- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
400 ± 150 gf (3.92 ± 1.47N)
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- HOUSING: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PB-62G02-L DPDT LOCK / LATCHING



Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
450 ± 150 gf
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- HOUSING: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

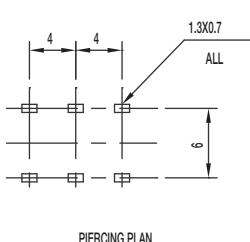
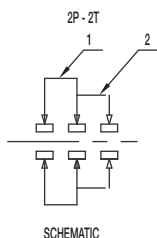
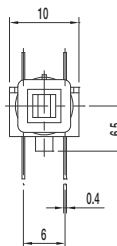
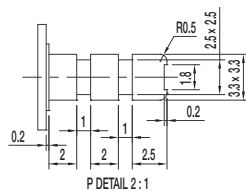
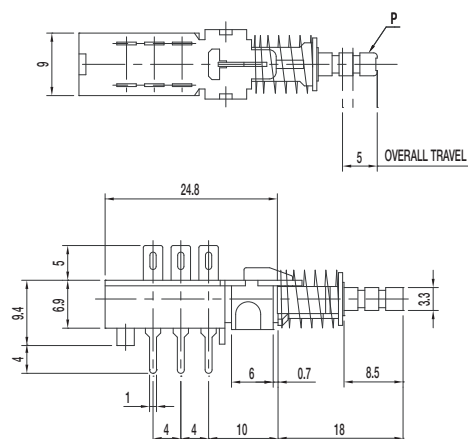


PB Series Single Pole and Multi-Key Pushbutton Switches

NEW!

Pushbutton
A

PB-22G02-F DPDT NON-LOCK / MOMENTARY



Specifications

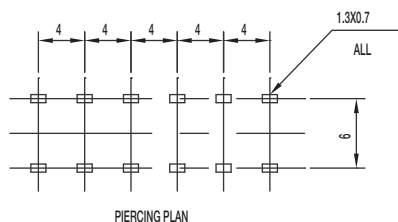
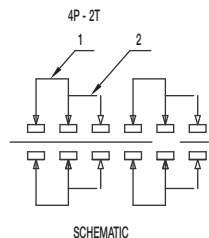
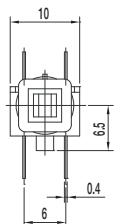
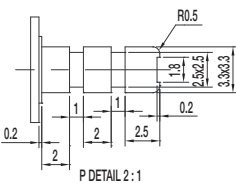
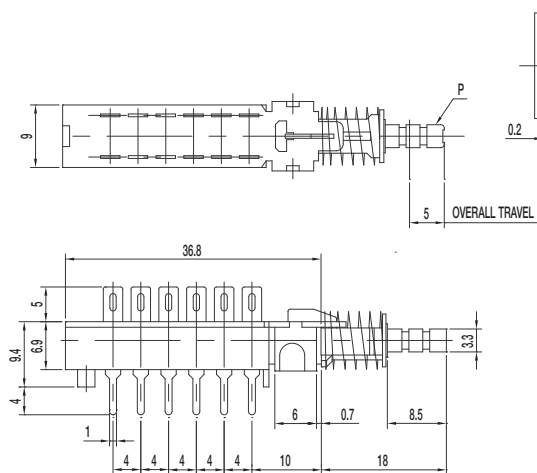
- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
350 ± 150 gf (3.43 ± 1.47N)
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PB-42G02-F 4PDT NON-LOCK / MOMENTARY



Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
400 ± 150 gf (3.92 ± 1.47N)
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- HOUSING: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

PS Series Pushbutton Switches



A

Pushbutton

Features/Benefits

- Latching pushbutton
- Non-shorting with lock
- 4.5mm travel
- SPDT

Typical Applications

- Automotive interior lighting
- Computer peripherals
- Appliances



Specifications

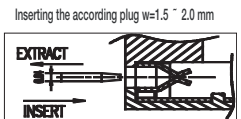
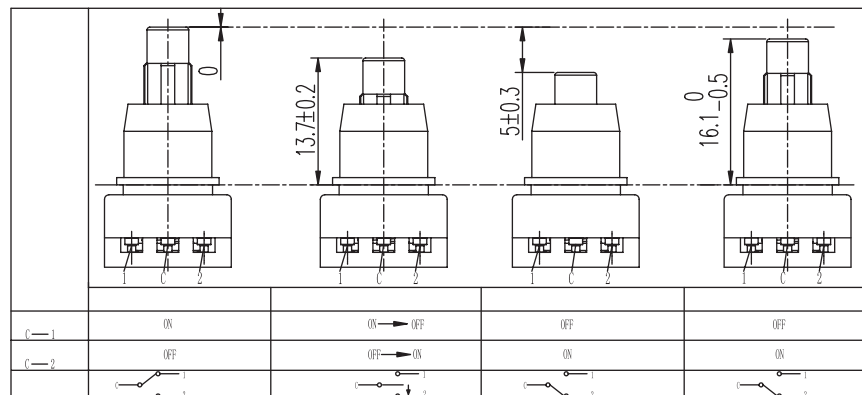
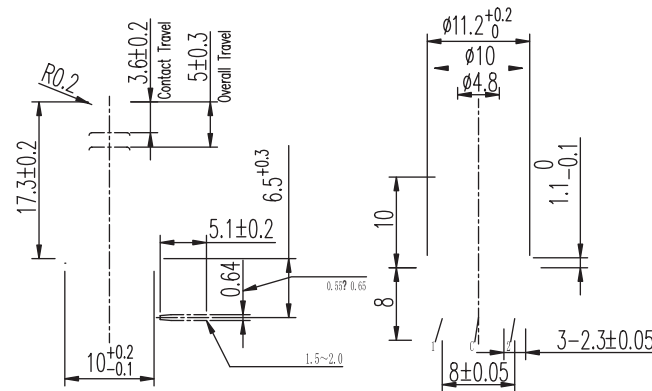
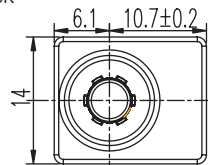
CONTACT RATING: 1A @ 14 VDC
 INITIAL CONTACT RESISTANCE: 100 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 20,000 cycles with load
 OPERATING FORCE: 400 ± 100 gf
 OPERATING POSITION: 3.6 ± 0.2 mm
 TOTAL TRAVEL: 5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM (UL 94HB) Lock version
 HOUSING: PBT (UL 94V-0)
 COVER: PBT (UL 94V-0)
 ROTOR: PBT (UL 94V-0)
 SLIDER: POM (UL 94HB)
 TERMINAL: Phospher bronze, silver plated
 SPRING: SUS
 CONTACT: Phospher bronze

NOTE: Specifications and materials listed above are for switches with standard options.
 For information on specific and custom switches, please contact Customer Service.

PS-12G01 SPDT NON-SHORTING WITH LOCK



Dimensions are shown: mm
 Specifications and dimensions subject to change



PS Series Pushbutton Switches

NEW!

A
Pushbutton

Specifications

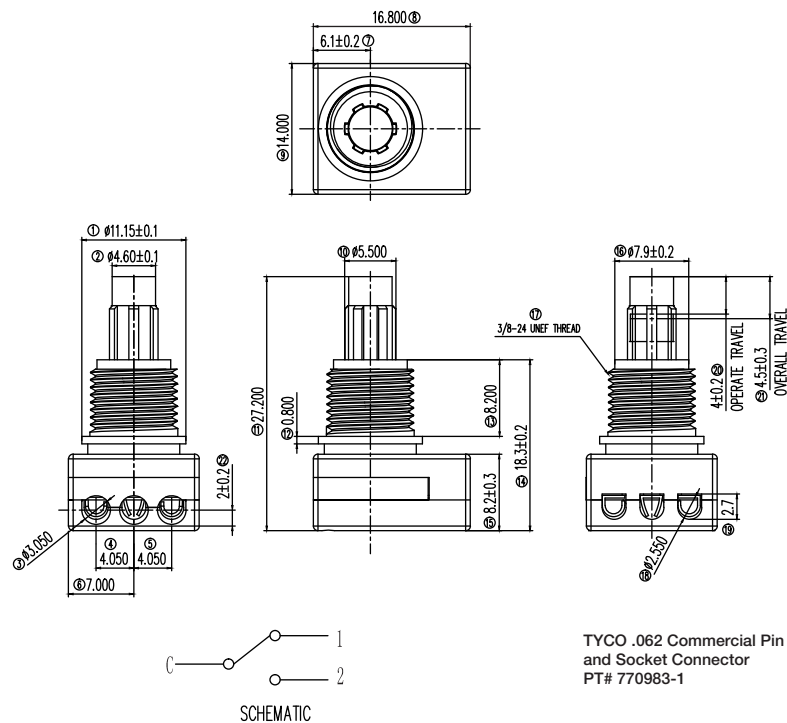
CONTACT RATING: 2.2A @ 14.5 VDC
 INITIAL CONTACT RESISTANCE: 50 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 20,000 cycles with load
 OPERATING FORCE: 650 ± 200 gf
 OPERATING POSITION: 4.00 ± 0.2 mm
 TOTAL TRAVEL: 4.5 ± 0.3 mm
 OPERATING TEMPERATURE: -40°C to 85°C

Materials

KNOB: POM (UL 94HB)
 HOUSING: Housing A: PBT (UL 94V-0)
 Housing B: PA (UL 94V-0)
 COVER: PBT (UL 94V-0)
 ROTOR: PBT (UL 94V-0)
 SLIDER: POM (UL 94HB)
 TERMINAL: Brass, silver plated
 SPRING: SUS
 CONTACT: Phosphor bronze, silver plated

NOTE: Specifications and materials listed above are for switches with standard options.
 For information on specific and custom switches, please contact Customer Service.

PS-12G03 SPDT NON-SHORTING WITH LOCK



Dimensions are shown: mm
 Specifications and dimensions subject to change

NEW!

PS Series Pushbutton Switches



A

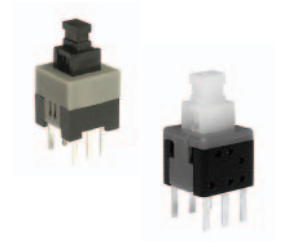
Pushbutton

Features/Benefits

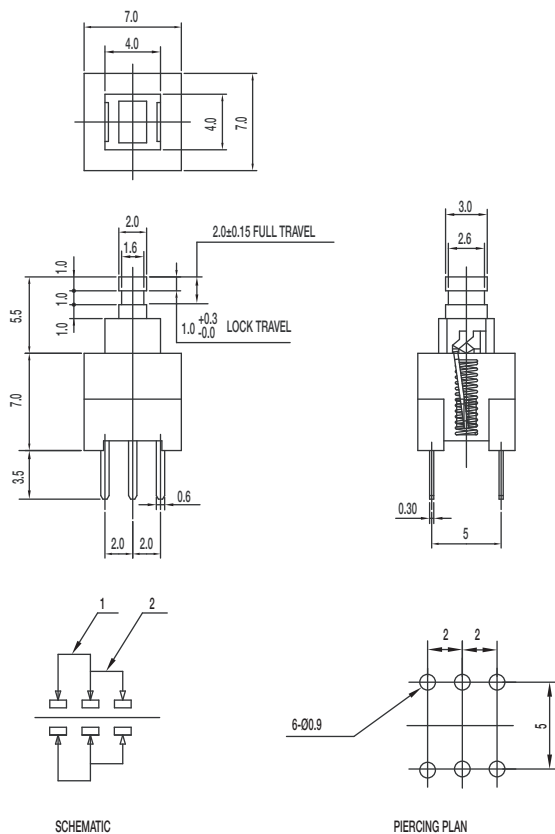
- Broad range of products
- Momentary or latching options
- Robust control for automotive
- Compact miniature push switch
- Shorting or non-shorting
- Custom design available

Typical Applications

- Consumer electronics
- Computer peripherals
- Telecommunications
- Audio and visual equipment
- Medical
- Automotive



PS-2203-L NS PA DPDT NON-SHORTING WITH LOCK
PS-2203-F NS PA DPDT NON-SHORTING



Specifications

CONTACT RATING: 0.1A @ 30 VDC

INITIAL CONTACT RESISTANCE: 30 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:

200 ± 100 gf (1.96 ± 0.98N)

LOCK TRAVEL: 1 + 0.30/ -0.00 mm

TOTAL TRAVEL: 2 ± 0.15 mm

OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM (UL 94HB) Lock version

KNOB: No lock version

HOUSING: PA (UL 94HB)

COVER: POM (UL 94HB)

TERMINAL: Silver plated

CONTACT CLIP: Silver plated

SPRING: SUS

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

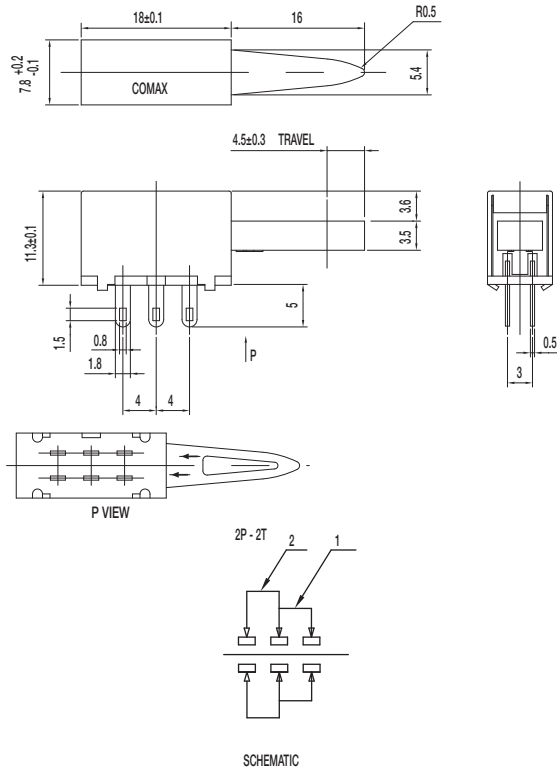
PS Series Pushbutton Switches



A

Pushbutton

PS-22105 DPDT NON-SHORTING



Specifications

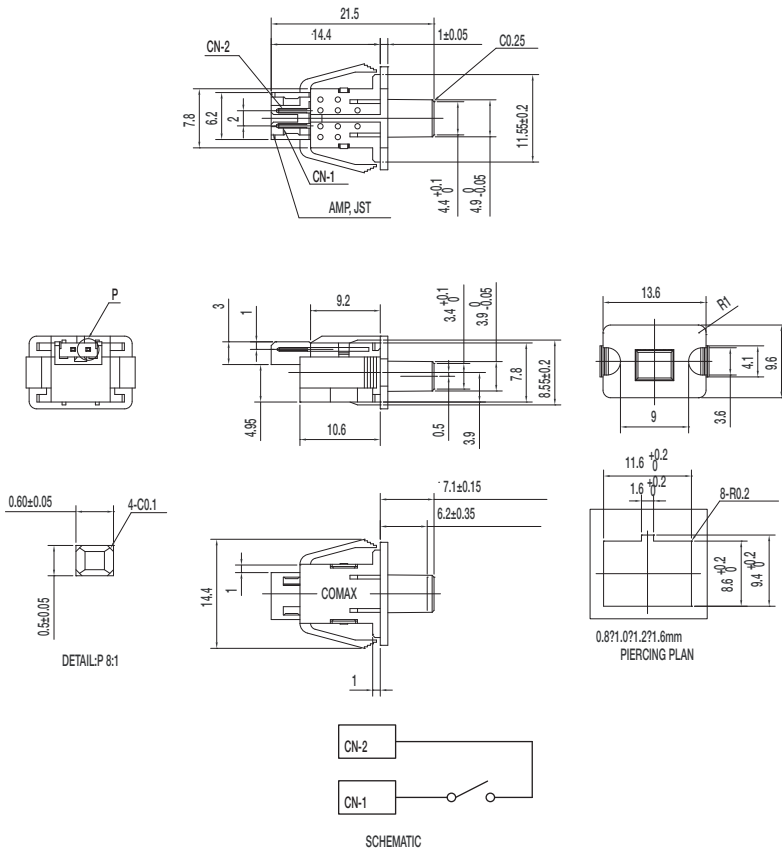
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 400 ± 150 gf (3.92 ± 1.47N)
- TOTAL TRAVEL: 4.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SECC
- KNOB: POM (UL 94HB)
- CONTACT PLATE: Silver clad
- SPRING: SUS
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-12C02-F NS SPST NON-SHORTING



Specifications

- CONTACT RATING: 100 μ A @ 3 VDC min. / 10mA @ 5 VDC max
- INITIAL CONTACT RESISTANCE: 100 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 100,000 cycles with load
- OPERATING FORCE: 50 ± 15 gf (0.49 ± 0.147N)
- PRE-TRAVEL: 6.20 ± 0.35 mm
- OPERATING TEMPERATURE: -40°C to 85°C

Materials

- KNOB: POM (UL 94HB)
- COVER: PA (UL 94V-0)
- HOUSING: PA (UL 94V-0)
- SPRING: SUS
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

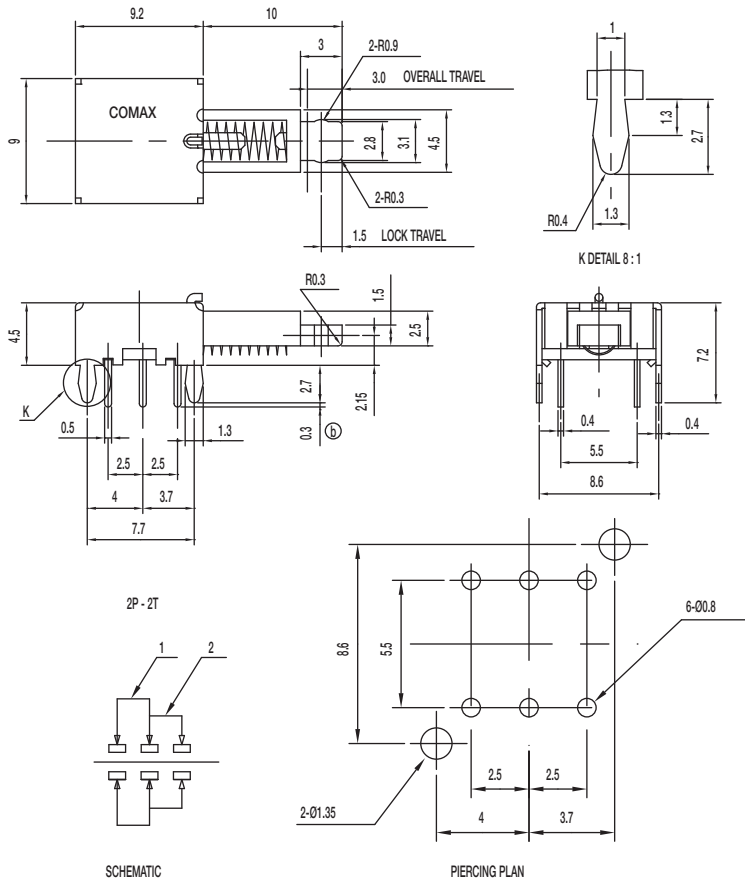
PS Series Pushbutton Switches



A

Pushbutton

PS-22C08-G10 NS DPDT NON-SHORTING



Specifications

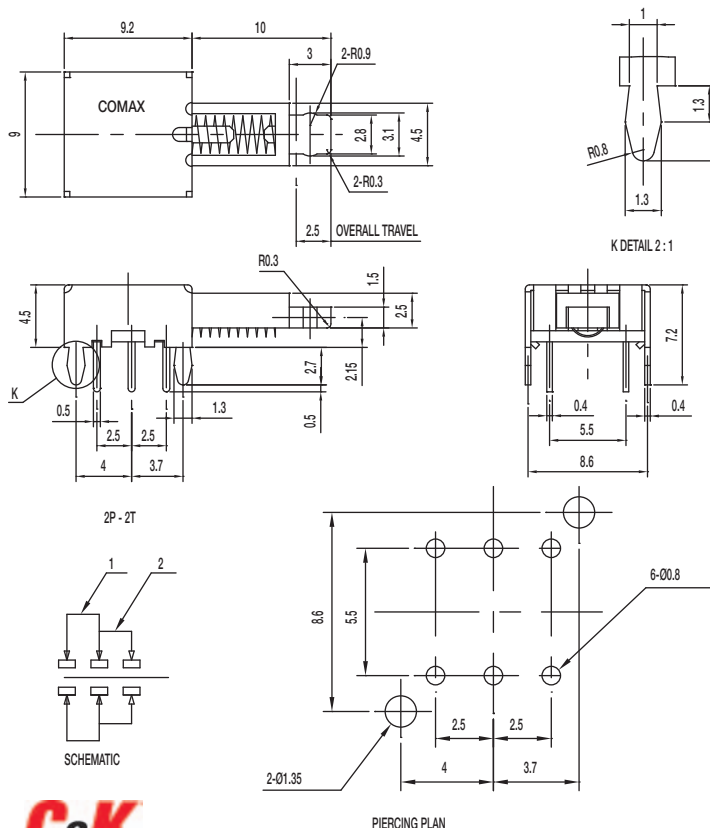
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
- LOCK TRAVEL: 1.5 ± 0.3 mm
- OVER-TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: SUS
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-22E08-G10 NS DPDT NON-SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
- TOTAL TRAVEL: 2.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: SUS
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

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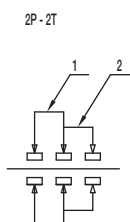
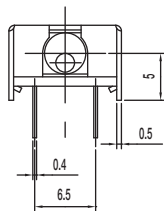
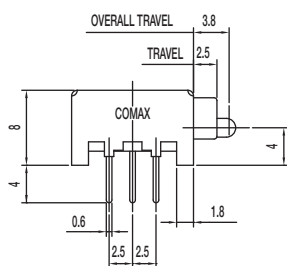
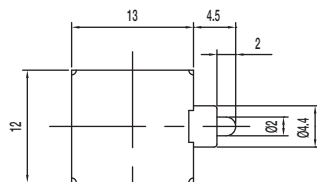


PS Series Pushbutton Switches

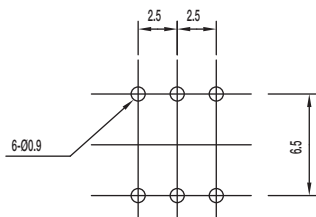
NEW!

PS-22E09-G 4.5 NS DPDT NON-SHORTING

Pushbutton
A



SCHEMATIC



PIERCING PLAN

Specifications

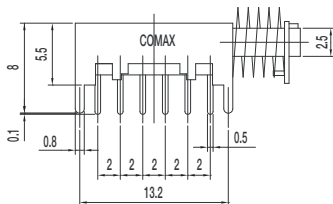
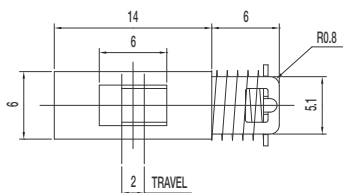
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 70 ± 20 gf (0.686 ± 0.196N)
- TRAVEL: 2.5 ± 0.3 mm
- TOTAL TRAVEL: 3.8 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

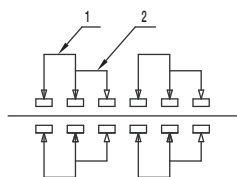
- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: SUS
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

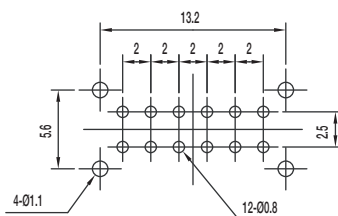
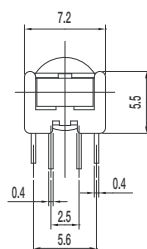
PS-42D09-NS 4P2T NON-SHORTING



4P-2T



SCHEMATIC



PIERCING PLAN

Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT PLATE: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

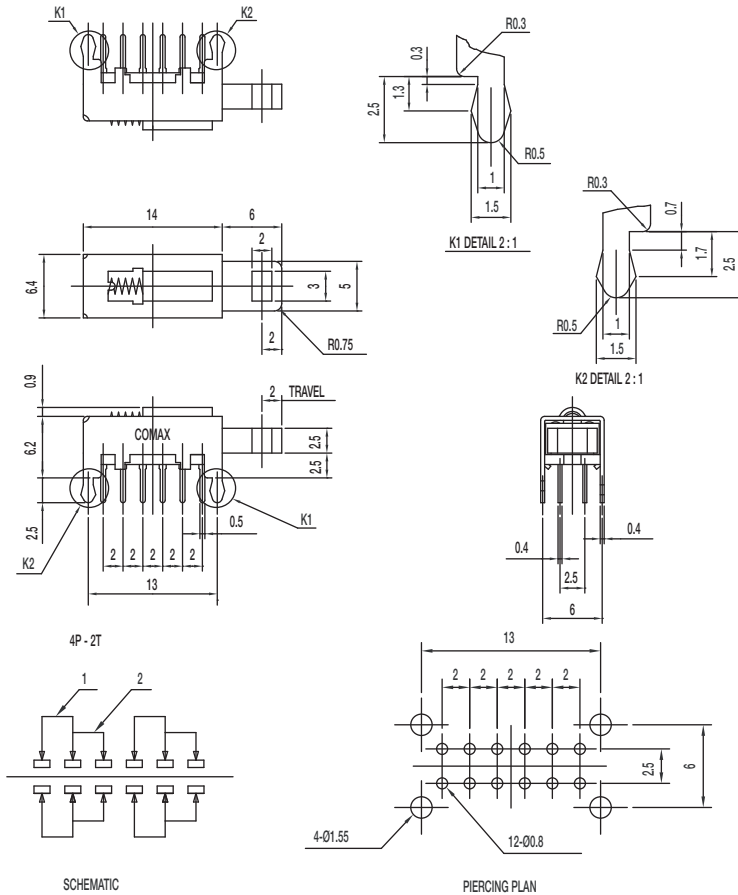
PS Series Pushbutton Switches



A

Pushbutton

PS-42D13-NS 4P2T NON-SHORTING



Specifications

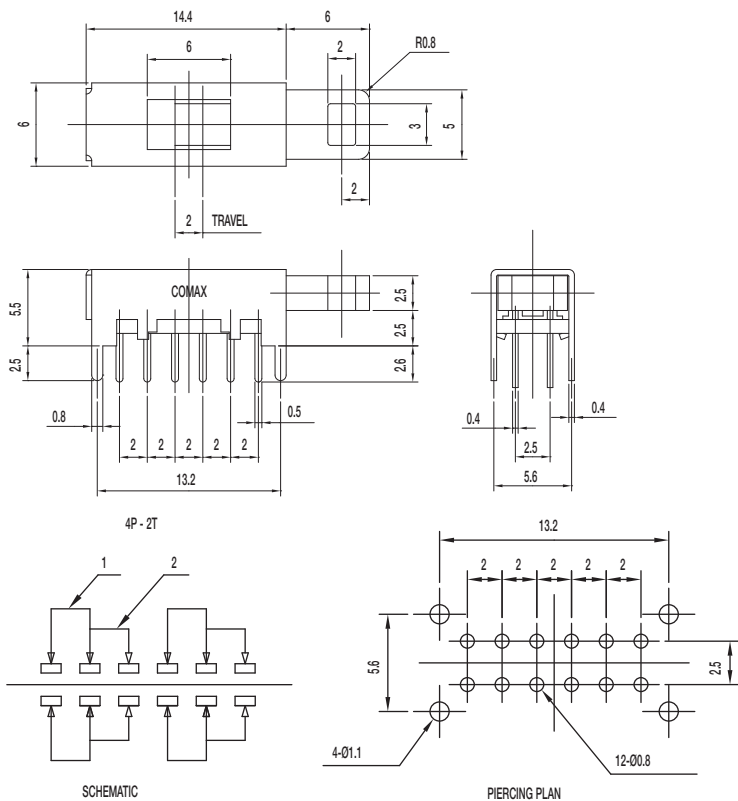
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-42D16-S 4P2T SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 60 ± 30 gf (0.59 ± 0.29N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Dimensions are shown: mm
Specifications and dimensions subject to change



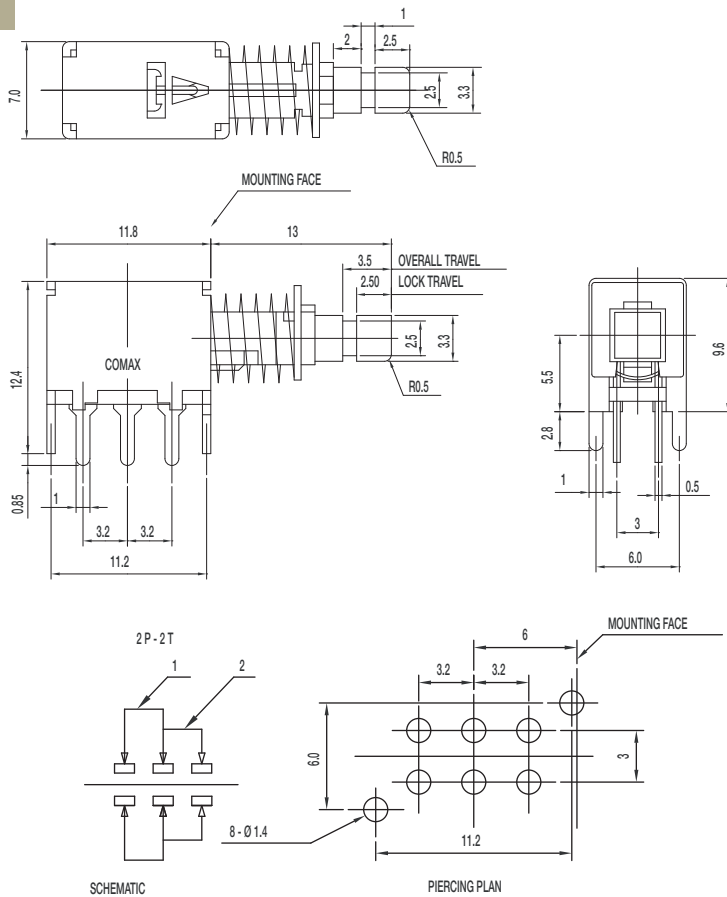
PS Series Pushbutton Switches

NEW!

A

PS-22E04-G13 NS DPDT NON-SHORTING WITH LOCK

Pushbutton



Specifications

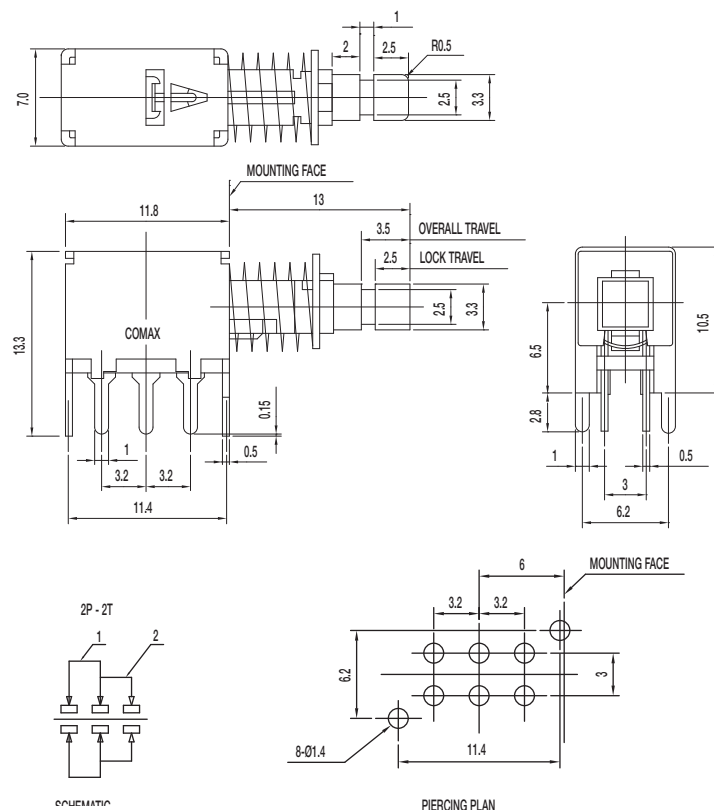
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- LOCK TRAVEL: 2.5 ± 0.3 mm
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-22E44-G13 NS DPDT NON-SHORTING WITH LOCK



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- LOCK TRAVEL: 2.5 ± 0.3 mm
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

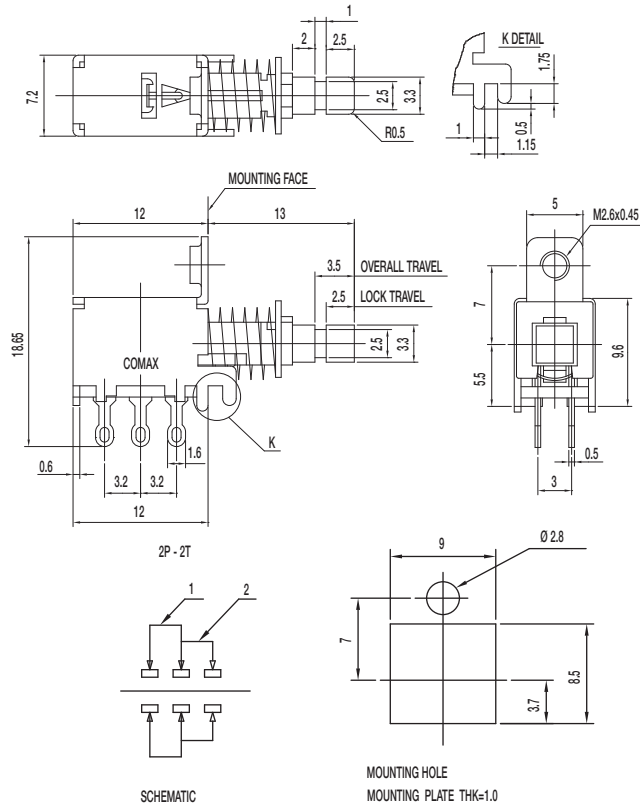
PS Series Pushbutton Switches



A

Pushbutton

PS-22E75-G13 NS DPDT NON-SHORTING WITH LOCK



Specifications

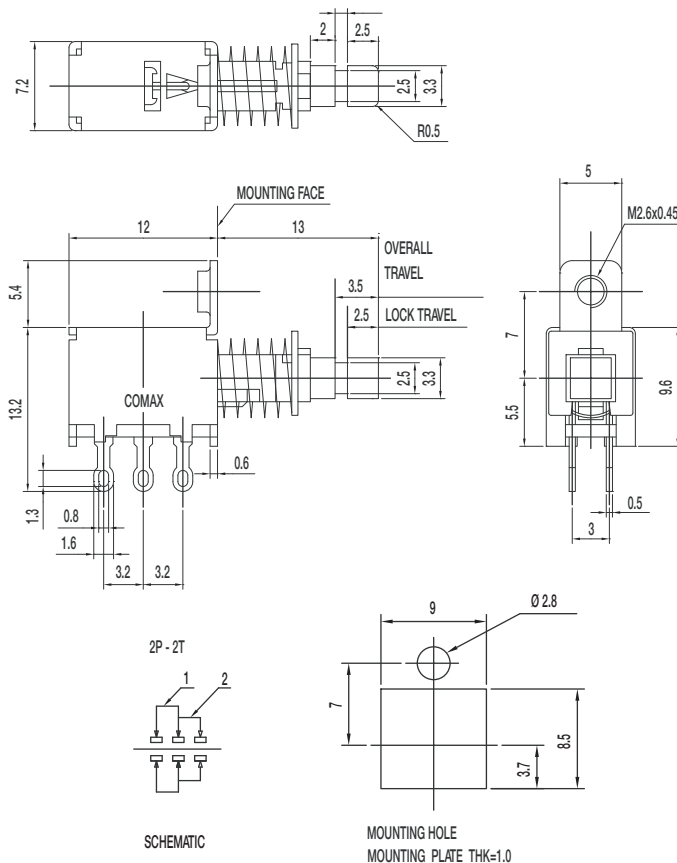
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- LOCK TRAVEL: 2.5 ± 0.3 mm
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-22E95-G13 NS DPDT NON-SHORTING WITH LOCK



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- LOCK TRAVEL: 2.5 ± 0.3 mm
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change



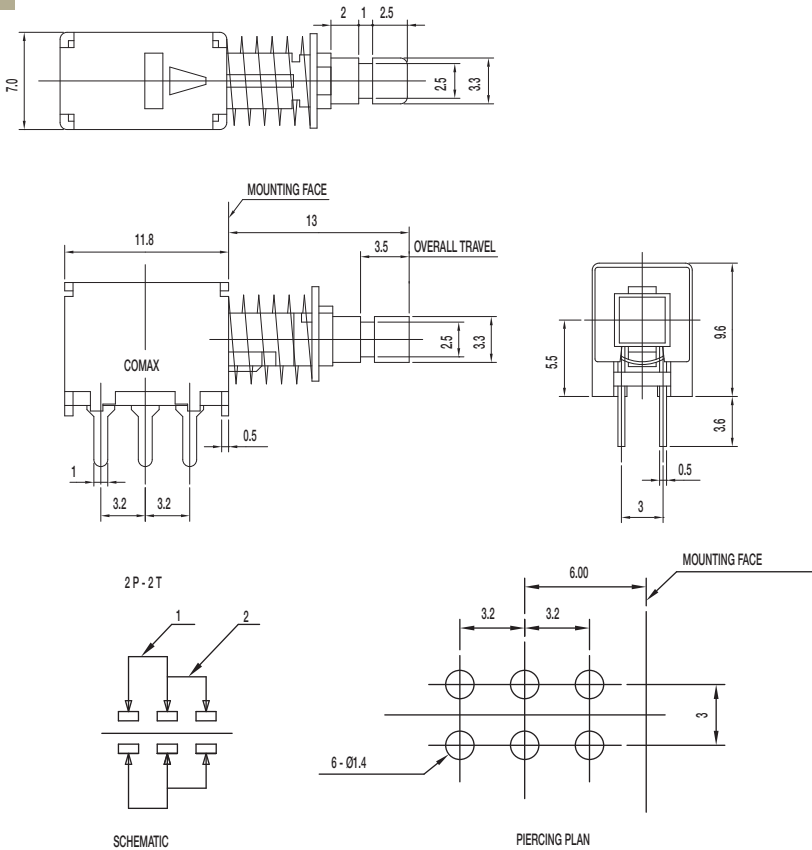
PS Series Pushbutton Switches

NEW!

A

PS-22F02-G13 S DPDT SHORTING

Pushbutton



Specifications

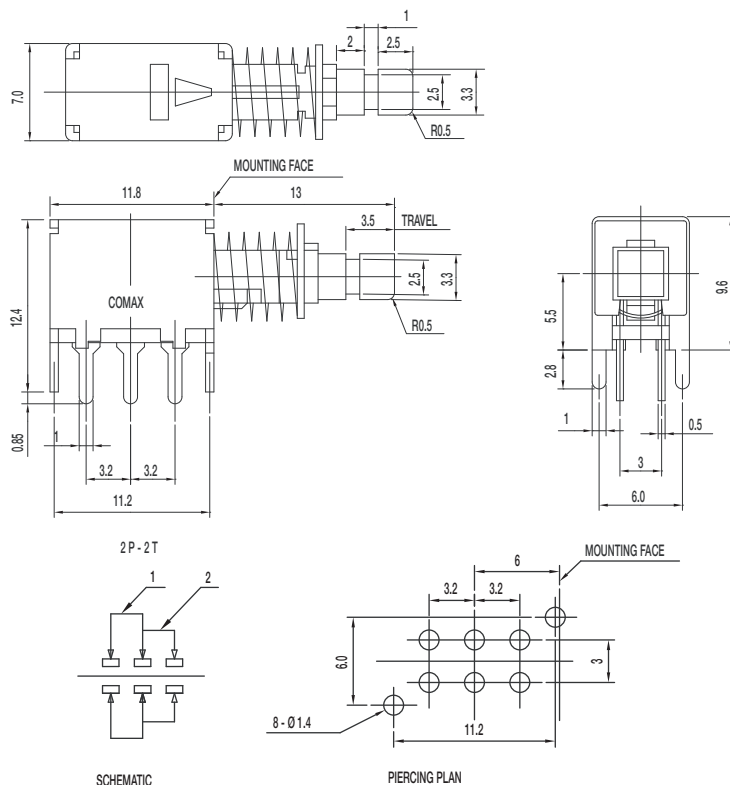
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-22F04-G13 NS DPDT NON_SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change

NEW!

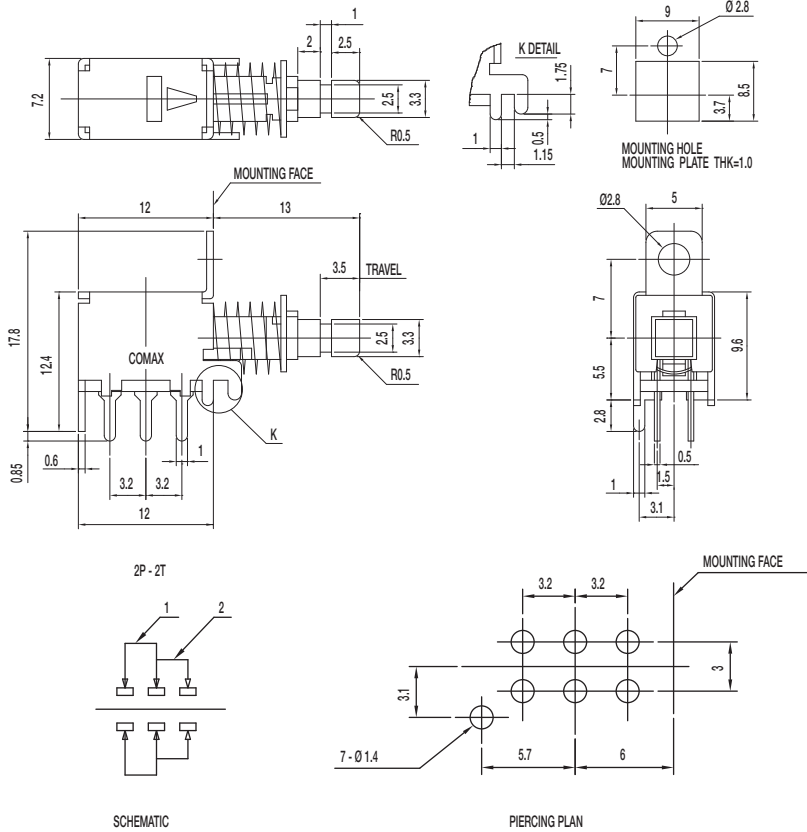
PS Series Pushbutton Switches



A

Pushbutton

PS-22F24-G13 NS DPDT NON_SHORTING



Specifications

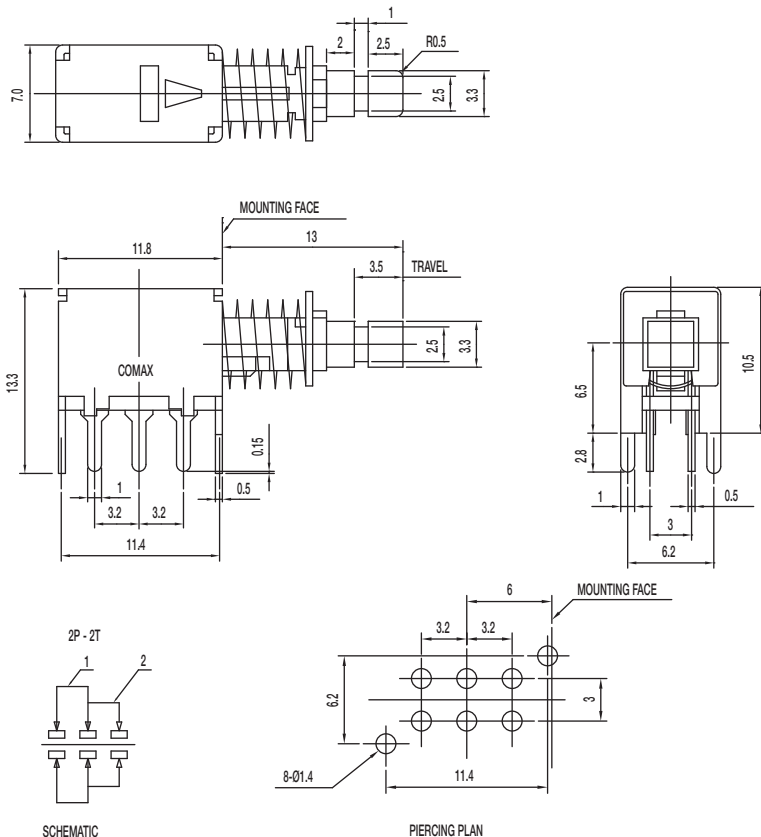
- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

PS-22F44-G13 NS DPDT NON_SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.



Dimensions are shown: mm
Specifications and dimensions subject to change