



ISO9001 certified

SUBMINIATURE DIP RELAYS

HFD2

2 form C Bifurcated crossbar contacts



- 2 Form C contact
- High sensitivity 150mW
- Fits standard 16 pin IC socket
- High switching capacity 60W,125VA
- Epoxy sealed for automatic wave soldering and cleaning

■ CONTACTS

Contact Form	2 Form C
Initial Contact Resistance	50mΩ
Contact Material	Silver alloy, gold clad
Contact Rating (Resistance)	2A, 30VDC 1A, 125VAC
Max. Switching Power	60W, 125VA
Max. Switching Voltage	220VDC, 250VAC
Max. Switching Current	2A
Max. Carrying Current	5A
Electrical Life	1 × 10 ⁵ ops 2A 30VDC 5 × 10 ⁵ ops 1A 30VDC
Mechanical Life	1 × 10 ⁸ ops

■ COIL DATA

Coil	Single side stable	sensitive	150mW
		standard	200mW
Nominal Power	Latching 2 coil	sensitive	150mW
		standard	200mW
	Latching 1 coil	sensitive	75mW
		standard	100mW
Temperature Rise	Max. 65°C		
Coil Voltage	See table		

■ SPECIFICATION

Insulation Resistance	1000MΩ 500VDC	
Dielectric Strength	Contact to coil	1500Vrms, 1 min (1 coil) 1000Vrms, 1 min (2 coil)
	Contact to contact	1000Vrms, 1 min
Operate Time	4ms	
Release Time	3ms	
Set Time (latching)	3ms	
Reset Time (latching)	3ms	
Bounce Time	1.5ms	
Ambient Temperature	-40 ~ +85 °C	
Humidity	5% ~ 85% R.H.	
Vibration Resistance	196 m/s ² (20g) 10~55Hz	
Shock Resistance	490 m/s ² (50g) functional	
	980 m/s ² (100g) destructive	
Capacitance	Contact to contact	2.0p
	Contact set to contact	1.5p
	Contact to coil	5.0p
Max. Solder Temp. Time	270°C 5 s	
Max. Solvent Temp. Time	80°C 30s	
Terminals	Tinned copper alloy PCB	
Construction	Sealed	
Dimensions (mm)	20.2 × 10.2 × 10.6	
Weight	Approx.5 g	

■ RELAY ORDERING DATA

Single side stable standard (200mW) 20°C

Order Number	Coil Voltage VDC	Pick-up Voltage VDC (max)	Drop-out Voltage VDC (min)	Coil resistance Ω 10%	Max. allow Voltage VDC
003-M	3	2.3	0.3	45	6
005-M	5	3.5	0.5	125	10
006-M	6	4.2	0.6	180	12
009-M	9	6.3	0.9	405	18
012-M	12	8.4	1.2	720	24
015-M	15	10.5	1.5	1125	30
024-M	24	16.8	2.4	2880	48
048-M	48	36.0	4.8	11520	96

Single side stable sensitive (150mW) 20°C

Order Number	Coil Voltage VDC	Pick-up Voltage VDC (max)	Drop-out Voltage VDC (min)	Coil resistance Ω 10%	Max. allow Voltage VDC
003-S	3	2.4	0.3	60	7.0
005-S	5	4.0	0.5	167	11.5
006-S	6	4.8	0.6	240	13.8
009-S	9	7.2	0.9	540	20.8
012-S	12	9.6	1.2	960	27.7
015-S	15	12.0	1.5	1500	34.6
024-S	24	19.2	2.4	3840	55.4

Latching (2 coil) standard (200mW) 20°C

Order Number	Coil Voltage VDC	Set, Reset Voltage VDC (max)	Coil Resistance Ω 10%	Max. allow Voltage VDC
003-M-L2	3	2.25	45	6
005-M-L2	5	3.75	125	10
006-M-L2	6	4.5	180	12
009-M-L2	9	6.75	405	18
012-M-L2	12	9.0	720	24
015-M-L2	15	11.25	1125	30
024-M-L2	24	18.0	2040	48

Latching (2 coil) sensitive (150mW) 20°C

Order Number	Coil Voltage VDC	Set, Reset Voltage VDC (max)	Coil Resistance Ω 10%	Max. allow Voltage VDC
005-S-L2	5	4.0	167	11.5
006-S-L2	6	4.8	240	13.8
009-S-L2	9	7.2	540	20.8
012-S-L2	12	9.6	960	27.7
015-S-L2	15	12.0	1500	34.6
024-S-L2	24	19.2	3840	55.4

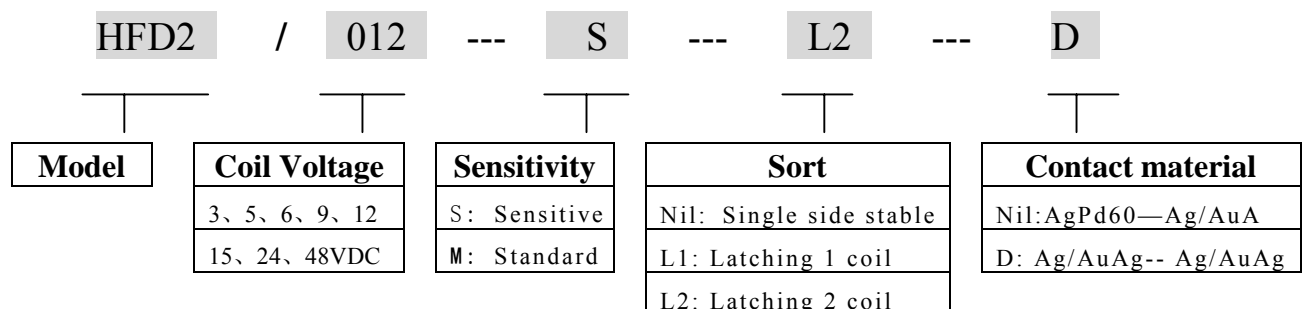
Latching (1 coil) standard (100mW) 20°C

Order number	Coil Voltage VDC	Set, Reset Voltage VDC (max)	Coil resistance Ω 10%	Max. allow Voltage VDC
003-M-L1	3	2.25	90	8.4
005-M-L1	5	3.75	250	14
006-M-L1	6	4.5	360	17
009-M-L1	9	6.75	810	25
012-M-L1	12	9.0	1440	34
015-M-L1	15	11.25	2220	42
024-M-L1	24	18.0	4000	56

Latching (1 coil) sensitive (75mW) 20°C

Order number	Coil Voltage VDC	Set, Reset Voltage VDC (max)	Coil resistance Ω 10%	Max. allow Voltage VDC
005-S-L1	5	4.0	330	16
006-S-L1	6	4.8	480	19
009-S-L1	9	7.2	1080	29
012-S-L1	12	9.6	1920	39
015-S-L1	15	12.0	3000	43
024-S-L1	24	19.2	7680	78

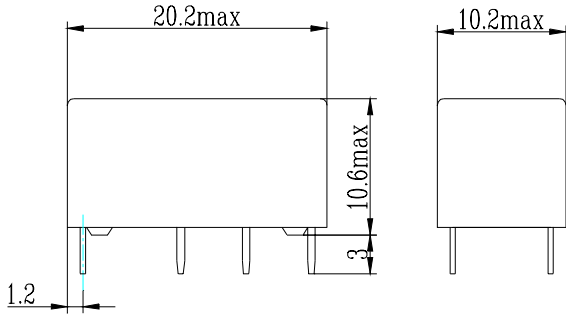
■ ORDER DESIGNATION



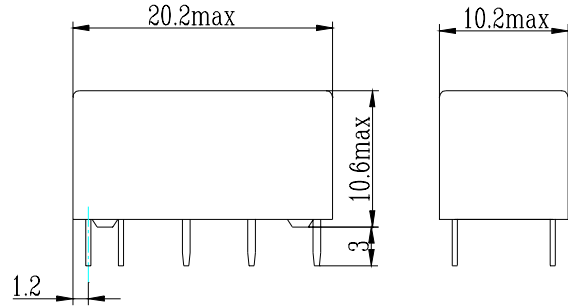
■ **OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT**

Outline Dimensions

Single side stable or Latching (1 coil)

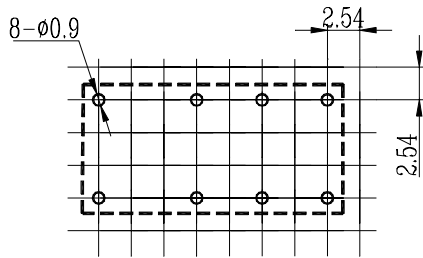


Latching (2 coil)



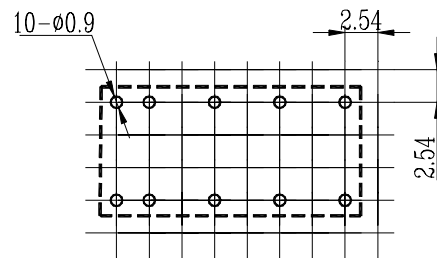
PC Board layout

Single side stable or Latching (1 coil)



matching 16 pin IC socket

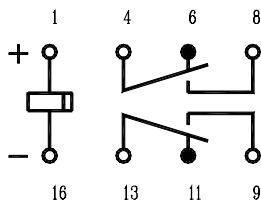
Latching (2 coil)



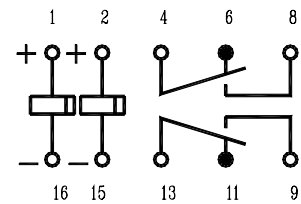
matching 16 pin IC socket

Wiring diagram (bottom view)

Single side stable or Latching (1 coil)



Latching (2 coil)



For latching, diagram shows the "reset" position
 Energize terminals 1 and 16 to "set"
 Reverse energize terminals 1 and 16 to "reset"

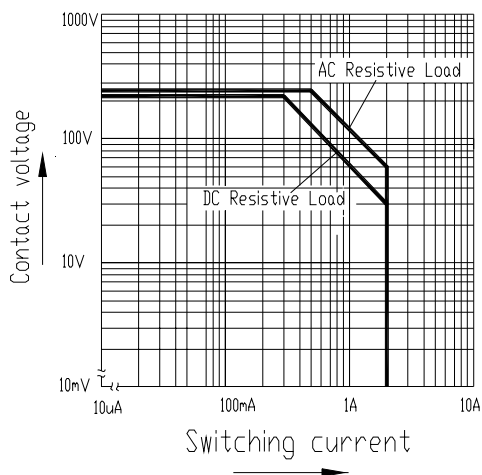
Diagram shows the "reset" position
 Energize terminals 1 and 16 to "set"
 Energize terminals 2 and 15 to "reset"

■ TYPICAL CONTACT LIFE EXPECTANCY

voltage	Power	Number of operations	
		Resistive Load	Inductive Load For AC $\cos \phi = 0.7$
50 mV	50 μ W	5×10^7	5×10^7
30 VDC	20 W	3×10^6	1×10^6
30 VDC	30 W	1×10^6	3×10^5
30 VDC	60 W	1×10^5	1.5×10^4
60 VDC	20 W	3×10^6	--
60 VDC	30 W	1×10^6	--
60 VDC	60 W	1×10^5	--
30 VAC	40 VA	3×10^6	1×10^6
30 VAC	80 VA	1×10^6	3×10^5
30 VAC	120 VA	1×10^5	1.5×10^4
60 VAC	40 VA	3×10^6	1×10^6
60 VAC	80 VA	1×10^6	3×10^5
60 VAC	120 VA	1×10^5	1.5×10^4
125 VAC	40 VA	3×10^6	1×10^6
125 VAC	80 VA	1×10^6	3×10^5
125 VAC	125 VA	1×10^5	1.5×10^4

■ USEFUL CURVES

Maximum switching power



Coil Temperature Rise

