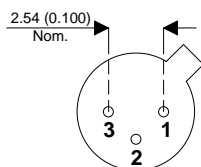
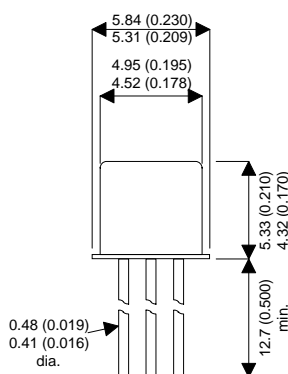


GENERAL PURPOSE PNP SILICON TRANSISTOR

MECHANICAL DATA

Dimensions in mm (inches)



TO18 PACKAGE(TO-206AA)

Underside View

PIN 1 – Emitter PIN 2 – Base PIN 3 – Collector

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

		BCY70	BCY71	BCY72
V_{CBO}	Collector - Base Voltage ($I_E = 0$)	-50V	-45V	-25V
V_{CEO}	Collector - Emitter Voltage ($I_B = 0$)	-40V	-45V	-25V
V_{EBO}	Emitter - Base Voltage ($I_C = 0$)		-5V	
I_{CM}	Collector Peak Current		-200mA	
P_{tot}	Total Power Dissipation @ $T_{amb} < 25^\circ\text{C}$		350mW	
T_J, T_{STG}	Operating and Storage Junction Temperature Range		-65 to +200°C	
THERMAL DATA				
$R_{th-j-Case}$	Thermal Resistance Junction -case		150°C/W max	
$R_{th-j-amb}$	Thermal Resistance Junction -ambient		500°C/W max	

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
I_{CES} Collector Cut-off Current ($V_{BE} = 0$)	$V_{CE} = -20\text{V}$ $V_{CE} = -50\text{V}$ BCY70			-10 -500	nA	
	$V_{CE} = -20\text{V}$ $V_{CE} = -45\text{V}$ BCY71			-100 -10	nA μA	
	$V_{CE} = -20\text{V}$ $V_{CE} = -25\text{V}$ BCY72			-100 -10	nA μA	
	$V_{EB} = -5\text{V}$			-10	μA	
I_{EBO} Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = -5\text{V}$			-10	μA	
$V_{CE(sat)}$ * Collector – Emitter Saturation Voltage	$I_C = -10\text{mA}$ $I_B = -1\text{mA}$ $I_C = -50\text{mA}$ $I_B = -5\text{mA}$			-0.25 -0.5	V	
$V_{BE(sat)}$ * Base – Emitter Saturation Voltage	$I_C = -10\text{mA}$ $I_B = -1\text{mA}$ BCY70 AND BCY71 ONLY $I_C = -50\text{mA}$ $I_B = -5\text{mA}$	-0.6		-0.9 -1.2	V	
h_{FE} * DC Current Gain	BCY70 $I_C = -0.1\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -1\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -10\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -50\text{mA}$ $V_{CE} = -1\text{V}$	40 45 50 15				
	BCY71 $I_C = -0.01\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -0.1\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -1\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -10\text{mA}$ $V_{CE} = 1\text{V}$ $I_C = -50\text{mA}$ $V_{CE} = -1\text{V}$		60			
	BCY72 $I_C = -1\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -10\text{mA}$ $V_{CE} = -1\text{V}$	40 50				
	$I_C = -10\text{mA}$ $V_{CE} = 1\text{V}$	100		600		
	$I_C = -50\text{mA}$ $V_{CE} = -1\text{V}$	15				
	$I_C = -1\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -10\text{mA}$ $V_{CE} = -1\text{V}$	40 50				
	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{KHz}$	100		400	—	
	f_T Transition Frequency	$I_C = -0.1\text{mA}$ $V_{CE} = -20\text{V}$ $f = 10.7\text{MHz}$ BCY71	15			MHz
		$I_C = -10\text{mA}$ $V_{CE} = -20\text{V}$ $f = 100\text{MHz}$ BCY70 BCY71 and BCY72	250 200			
	C_{EBO} Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = -1\text{V}$ $f = 1\text{MHz}$			8	pF
C_{CBO} Collector-Base Capacitance	$I_E = 0$ $V_{CB} = -10\text{V}$ $f = 1\text{MHz}$			6		

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ELECTRICAL CHARACTERISTICS continued ($T_A = 25^\circ\text{C}$ unless otherwise stated)

Parameter		Test Conditions	Min.	Typ.	Max.	Unit
NF	Noise Figure	$I_C = -0.1\text{mA}$ $V_{CE} = -5\text{V}$ $R_g = 2\text{K}\Omega$ $f = 10$ to 10000 Hz BCY70 AND BCY71 BCY70			6 2	dB
h_{ie}	Input Impedance	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{kHz}$ BCY71 ONLY	2		12	$\text{K}\Omega$
h_{re}	Reverse Voltage Ratio	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{kHz}$ BCY71 ONLY			20×10^{-4}	—
h_{oe}	Output Admittance	$I_C = -1\text{mA}$ $V_{CE} = -10\text{V}$ $f = 1\text{kHz}$ BCY71 ONLY	10		60	μS
t_d	Delay Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -1\text{mA}$ BCY70 AND BCY72 ONLY		23	35	ns
t_r	Rise Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -1\text{mA}$ BCY70 AND BCY72 ONLY		25	35	ns
t_s	Storage Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -I_{B2} = -1\text{mA}$ BCY70 AND BCY72 ONLY		270	350	ns
t_f	Fall Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -I_{B2} = -1\text{mA}$ BCY70 AND BCY72 ONLY		50	80	ns
t_{on}	Turn-on Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -1\text{mA}$ BCY70 AND BCY72 ONLY		48	65	ns
t_{off}	Turn-Off Time	$I_C = -10\text{mA}$ $V_{EE} = 3\text{V}$ $I_{B1} = -I_{B2} = -1\text{mA}$ BCY70 AND BCY72 ONLY		320	420	ns

NOTES:

* Pulse test: $t_p \leq 300\mu\text{s}$, $\delta \leq 1\%$