

PNP BCY78 – BCY79

SILICON PLANAR EPITAXIAL TRANSISTORS

The BCY78 and BCY79 are PNP transistors mounted in TO-18 metal package with the collector connected to the case .

They are designed for use in audio drive and low-noise input stages.
Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	BCY79	-45	V
		BCY78	-32	
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	BCY79	-45	V
		BCY78	-32	
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	BCY79	-5	V
		BCY78	-5	
I_C	Collector Current	BCY79	-200	mA
		BCY78		
I_B	Base Current	BCY79	-20	mA
		BCY78		
P_D	Total Power Dissipation	@ $T_{amb} = 25^\circ$	390	mW
P_D	Total Power Dissipation	@ $T_{case} = 45^\circ$	1	Watts
T_J	Junction Temperature	BCY79	200	$^\circ\text{C}$
		BCY78		
T_{Stg}	Storage Temperature range	BCY79	-65 to +150	$^\circ\text{C}$
		BCY78		

THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to mounting base	BCY79	450	$^\circ\text{C/W}$
		BCY78		
R_{thJ-c}	Thermal Resistance, Junction to ambient in free air	BCY79	150	$^\circ\text{C/W}$
		BCY78		

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ELECTRICAL CHARACTERISTICS

T_j=25°C unless otherwise specified

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
I_{CES}	Collector Cutoff Current	V _{CB} = -35 V, V _{BE} = 0V	BCY79	-	-	-20	nA
		V _{CB} = -25 V, V _B = 0V	BCY78				
I_{CES}	Collector Cutoff Current	V _{CB} = -35 V	BCY79	-	-	-10	μA
		V _{BE} = 0V, T _j = 150°C V _{CB} = -25 V V _{BE} = 0V, T _j = 150°C	BCY78				
I_{EBO}	Emitter Cutoff Current	V _{BE} = -4.0 V, I _C = 0	BCY79	-	-	-20	nA
			BCY78				
V_{CEO}	Collector Emitter Breakdown Voltage	I _C = -2 mA, I _B = 0	BCY79	-45	-	-	V
			BCY78	-32	-	-	
V_{EBO}	Emitter Base Breakdown Voltage	I _E = -1 μA, I _C = 0	BCY79	-5	-	-	V
			BCY78				
V_{CE(SAT)}	Collector-Emitter saturation Voltage	I _C = -10 mA, I _B = -0.25 mA	BCY79	-	-0.12	-0.25	V
			BCY78				
		I _C = -100 mA, I _B = -2.5 mA	BCY79	-	-0.4	-0.8	
			BCY78				
V_{BE(SAT)}	Base-Emitter Saturation Voltage	I _C = -10 mA, I _B = -0.25 mA	BCY79	-0.6	-0.7	-0.85	V
			BCY78				
		I _C = -100 mA, I _B = -2.5 mA	BCY79	-0.7	-0.85	-1.2	
			BCY78				
V_{BE}	Base-Emitter Voltage	I _C = -10 μA, V _{CE} = -5 V	BCY79	-	-0.55	-	V
			BCY78				
		I _C = -2 mA, V _{CE} = -5 V	BCY79	-0.6	-0.65	-0.75	
			BCY78				
I _C = -10 mA, V _{CE} = -1 V	BCY79	-	-0.68	-			
	BCY78						
I _C = -100 mA, V _{CE} = -1 V	BCY79	-	-0.75	-			
	BCY78						

			BCY79VII	BCY79VIII	BCY79IX	BCY79X
			BCY78VII	BCY78VIII	BCY78IX	BCY78X
h_{FE}	DC Current Gain	I _C = -10 μA, V _{CE} = -5 V	-	>30	>40	>100
			Typ.140	Typ.200	Typ.270	Typ.390
		I _C = -2 mA, V _{CE} = -5 V	>120	>180	>250	>380
			<220	<310	<460	<630
		I _C = -10 mA, V _{CE} = -1 V	>80	>120	>160	>240
I _C = -100 mA, V _{CE} = -1 V	-	<400	<630	<1000		
	>40	>45	>60	>60		
h_{fe}	Small-Signal Current Gain	I _C = 2 mA, V _{CE} = 5 V f = 1kHz	>125	>175	>250	>350
			<250	<350	<500	<700

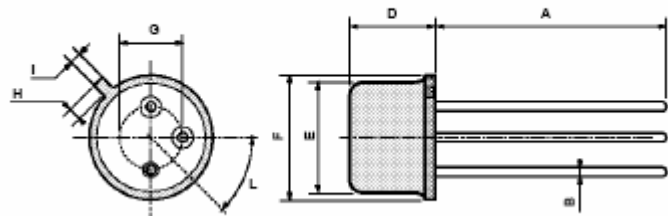
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Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
f_T	Transition frequency	$I_C = -10 \text{ mA}$, $V_{CE} = -5 \text{ V}$ $f = 100 \text{ MHz}$	BCY79 BCY78	-	180	-	MHz
F	Noise figure , $R_S = 2 \text{ k}\Omega$	$I_C = -200 \mu\text{A}$, $V_{CE} = -5 \text{ V}$ $f = 1 \text{ kHz}$, $B = 200 \text{ Hz}$	BCY79 BCY78	-	2	6	db
t_d	Delay time	$I_{Con} = -10 \text{ mA}$ $I_{Bon} = -I_{Boff} = -1 \text{ mA}$ $V_{BB} = 3.6 \text{ V}$ $R_1 = R_2 = 5 \text{ k}\Omega$ $R_L = 990 \Omega$	BCY79 BCY78	-	35	-	ns
t_r	Rise time		BCY79 BCY78	-	50	-	
t_{on}	Turn on time		BCY79 BCY78	-	85	150	
t_s	Storage time		BCY79 BCY78	-	400	-	
t_f	Fall time		BCY79 BCY78	-	80	-	
t_{off}	Turn off time		BCY79 BCY78	-	480	800	
t_d	Delay time		$I_{Con} = -100 \text{ mA}$ $I_{Bon} = -I_{Boff} = -10 \text{ mA}$ $V_{BB} = 5 \text{ V}$ $R_1 = 500 \Omega$ $R_2 = 700 \Omega$ $R_L = 98 \Omega$	BCY79 BCY78	-	5	
t_r	Rise time	BCY79 BCY78		-	50	-	
t_{on}	Turn on time	BCY79 BCY78		-	55	150	
t_s	Storage time	BCY79 BCY78		-	250	-	
t_f	Fall time	BCY79 BCY78		-	200	-	
t_{off}	Turn off time	BCY79 BCY78		-	450	800	
C_C	Collector capacitance	$I_E = I_e = 0$, $V_{CB} = -10 \text{ V}$ $f = 1 \text{ MHz}$		BCY79 BCY78	-	-	5
C_E	Emitter capacitance	$I_C = I_c = 0$, $V_{EB} = -0.5 \text{ V}$ $f = 1 \text{ MHz}$	BCY79 BCY78	-	-	15	pF

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MECHANICAL DATA CASE TO-18

DIMENSIONS		
	mm	inches
A	12,7	0,5
B	0,49	0,019
D	5,3	0,208
E	4,9	0,193
F	5,8	0,228
G	2,54	0,1
H	1,2	0,047
I	1,16	0,045
L	45°	45°



Pin 1 :	emitter
Pin 2 :	base
Pin 3 :	Collector

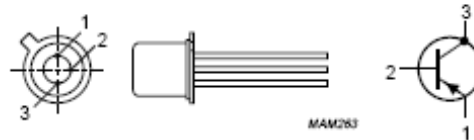


Fig.1 Simplified outline (TO-18) and symbol.

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Data are subject to change without notice.