

NPN BCY58 – BCY59

SILICON PLANAR EPITAXIAL TRANSISTORS

The BCY58 and BCY59 are NPN 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(1)	BCY59	45	V
		BCY58	32	
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	BCY59	45	V
		BCY58	32	
V_{EBO}	Emitter-Base Voltage	BCY59	7	V
		BCY58	7	
I_C	Collector Current	BCY59	200	mA
		BCY58		
I_B	Base Current	BCY59	50	mA
		BCY58		
P_D	Total Power Dissipation	@ $T_{amb} = 45^\circ$	0.39	mW
		BCY59		
P_D	Total Power Dissipation	@ $T_{case} = 45^\circ$	1	Watts
		BCY59		
T_J	Junction Temperature	BCY59	200	$^\circ\text{C}$
		BCY58		
T_{Stg}	Storage Temperature range	BCY59	-65 to +150	$^\circ\text{C}$
		BCY58		

(1) Applicable up to $I_C = 500\text{mA}$

THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to mounting base	BCY59	450	$^\circ\text{C/W}$
		BCY58		
R_{thJ-c}	Thermal Resistance, Junction to ambient in free air	BCY59	150	$^\circ\text{C/W}$
		BCY58		

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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} =45 V, V _{BE} =0V	-	-	10	nA
		V _{CB} =32 V, V _B =0V				
I _{CES}	Collector Cutoff Current	V _{CB} =45 V	-	-	10	μA
		V _{BE} =0V, T _{amb} =150°C				
I _{EBO}	Emitter Cutoff Current	V _{CB} =32 V	-	-	-	-
		V _{BE} =0V, T _{amb} =150°C				
V _{CEO}	Collector Emitter Breakdown Voltage	V _{BE} =5.0 V, I _C =0	45	-	-	V
		I _C =2 mA, I _B =0				
V _{EBO}	Emitter Base Breakdown Voltage	I _E =1μA, I _C =0	7	-	-	V
V _{CE(SAT)}	Collector-Emitter saturation Voltage	I _C =10 mA, I _B =0.25 mA	-	0.12	0.25	V
		I _C =100 mA, I _B =2.5 mA				
V _{BE(SAT)}	Base-Emitter Saturation Voltage	I _C =10 mA, I _B =0.25 mA	0.6	0.7	0.85	V
		I _C =100 mA, I _B =2.5 mA				
V _{BE}	Base-Emitter Voltage	I _C =10 μA, V _{CE} =5 V	-	0.5	-	V
		I _C =20 μA, V _{CE} =V _{CE max}				
		T _J =100°C				
		I _C =2 mA, V _{CE} =5 V				
		I _C =10 mA, V _{CE} =1 V				
		I _C =100 mA, V _{CE} =1 V				

		BCY59VII	BCY59VIII	BCY59IX	BCY59X	
		BCY58VII	BCY58VIII	BCY58IX	BCY58X	
h _{FE}	DC Current Gain	I _C =10 μA, V _{CE} =5 V	-	>20	>40	>60
			Typ.20	Typ.95	Typ.190	Typ.300
		I _C =10 μA, V _{CE} =5 V	>120	>180	>250	>380
			<220	<310	<460	<630
		I _C =10 mA, V _{CE} =1 V	>80	>120	>160	>240
h _{fe}	Small-Signal Current Gain	I _C =100 mA, V _{CE} =1 V	-	<400	<630	<1000
			>40	>45	>60	>60
		I _C =2 mA, V _{CE} =5 V, f = 1kHz	>125	>175	>250	>350
		<250	<350	<500	<700	

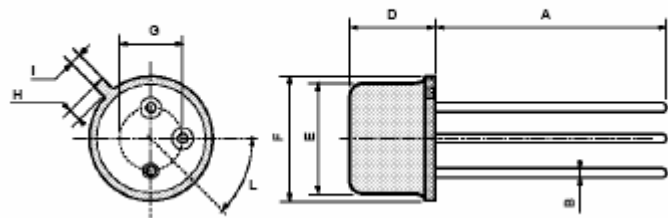
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Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit		
f_T	Transition frequency	$I_C=10\text{ mA}, V_{CE}=5\text{ V}$ $f = 100\text{MHz}$	BCY59	150	-	-	MHz	
			BCY58					
F	Noise figure , $R_S=2\text{k}\Omega$	$I_C=200\ \mu\text{A}, V_{CE}=5\text{ V}$ $f = 1\text{kHz}, B =200\text{Hz}$	BCY59	-	2	6	db	
			BCY58					
t_d	Delay time	$I_C=10\text{ mA}, I_B=1\text{ mA}$ $-I_{BM}=1\text{ mA}, V_{BB}=3.6\text{ V}$ $R_1= R_2 = 5\text{k}\Omega$ $R_L= 990\ \Omega$	BCY59	-	35	-	ns	
t_r	Rise time		BCY58					
t_{on}	Turn on time		BCY59	-	85	150		
t_s	Storage time		BCY58					
t_f	Fall time		BCY59	-	80	-		
t_{off}	Turn off time		BCY58					
t_d	Delay time		BCY59	-	5	-		ns
t_r	Rise time		BCY58					
t_{on}	Turn on time	BCY59	-	55	150			
t_s	Storage time	BCY58						
t_f	Fall time	BCY59	-	200	-			
t_{off}	Turn off time	BCY58						
C_C	Collector capacitance	$I_E = I_e = 0, V_{CB}=10\text{ V}$ $f = 1\text{MHz}$	BCY59	-	-	5	pF	
C_E	Emitter capacitance	$I_C = I_c = 0, V_{EB}=0.5\text{ V}$ $f = 1\text{MHz}$	BCY59					
			BCY58	-	-	15	pF	

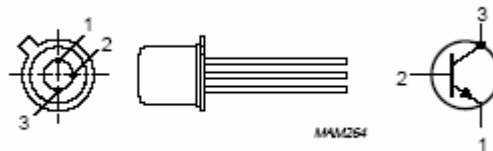
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MECHANICAL DATA CASE TO-18

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



Information furnished is believed to be accurate and reliable. However, CS assumes no responsibility for the consequences of use of such information nor for errors that could appear.

Data are subject to change without notice.