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°	BCY59	0.39	mW
			BCY58		
P_D	Total Power Dissipation	@ T_{case}= 45°	BCY59	1	Watts
			BCY58		
T_J	Junction Temperature		BCY59	200	°C
			BCY58		
T_{Stg}	Storage Temperature range		BCY59	-65 to +150	°C
			BCY58		

(1) Applicable up to I_C = 500mA

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to mounting base	450	°C/W
R_{thJ-c}	Thermal Resistance, Junction to ambient in free air	150	°C/W

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ELECTRICAL CHARACTERISTICS

Tj=25°C unless otherwise specifie

Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit
I_{CES}	Collector Cutoff Current	V_{CB} =45 V V_{BE} =0V	BCY59	-	-	10	nA
		V_{CB} =32 V V_B =0V	BCY58				
I_{CES}	Collector Cutoff Current	V_{CB} =45 V V_{BE} =0V,T_{amb} =150°C	BCY59	-	-	10	µA
		V_{CB} =32 V, V_{BE} =0 T_{amb} =150°C	BCY58				
I_{EBO}	Emitter Cutoff Current	V_{BE} =5.0 VI_C =0	BCY59	-	-	10	nA
			BCY58				
V_{CEO}	Collector Emitter Breakdown Voltage	I_C =2 mA, I_B =0	BCY59	45	-	-	V
			BCY58	32	-	-	
V_{EBO}	Emitter Base Breakdown Voltage	I_E =1µA, I_C =0	BCY59	7	-	-	V
			BCY58				
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage	I_C =10 mA I_B =0.25 mA	BCY59	-	0.12	0.25	V
			BCY58				
		I_C =100 mA I_B =2.5 mA	BCY59	-	04	08	
			BCY58				
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	I_C =10 mA I_B =0.25 mA	BCY59	0.6	0.7	0.85	
			BCY58				
		I_C =100 mA I_B =2.5 mA	BCY59	0.7	0.85	1.2	
			BCY58				
V_{BE}	Base-Emitter Voltage	I_C =10 µA, V_{CE} =5 V	BCY59	-	0.5	-	V
			BCY58				
		V_{CE} =$V_{CE\ max}$ I_C =20 µA, T_j =100°C	BCY59	0.2	-	-	
			BCY58				
		I_C =2 mA, V_{CE} =5 V	BCY59	0.55	-	0.7	
			BCY58				
		I_C =10 mA, V_{CE} =1 V	BCY59	-	0.7	-	
			BCY58				
		I_C =100 mA, V_{CE} =1 V	BCY59	-	0.76	-	
			BCY58				

Symbol	Ratings	Test Condition(s)	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 =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
			-	<400	<630	<1000
		I_C =100 mA, V_{CE} =1V	>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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ELECTRICAL CHARACTERISTICS

Tj=25°C unless otherwise specifie

Symbol	Ratings	Test Condition(s)		Min	Typ	Mx	Unit
f_T	Transition frequency	I_C =10 mA, V_{CE} =5 V f = 100MHz	BCY59 BCY58	150	-	-	MHz
F	Noise figure , RS=2kΩ	I_C =200 µA, V_{CE} =5 V f = 1kHz, B =200Hz	BCY59 BCY58	-	2	6	db
t_d	Delay time	I_C=10 mA , I_B =1 mA -I_{BM} =1 mA, V_{BB}=3.6 V R1= R2 = 5kΩ R_L= 990 Ω	BCY59 BCY58	-	35	-	ns
t_r	Rise time		BCY59 BCY58	-	50	-	
t_{on}	Turn on time		BCY59 BCY58	-	85	150	
t_s	Storage time		BCY59 BCY58	-	400	-	
t_f	Fall time		BCY59 BCY58	-	80	-	
t_{off}	Turn off time		BCY59 BCY58	-	480	800	
t_d	Delay time	I_C=100 mA , I_B =10 mA -I_{BM} =10 mA, V_{BB} =5 V R1 = 500Ω , R1 = 700Ω R_L= 990 Ω	BCY59 BCY58	-	5	-	ns
t_r	Rise time		BCY59 BCY58	-	50	-	
t_{on}	Turn on time		BCY59 BCY58	-	55	150	
t_s	Storage time		BCY59 BCY58	-	250	-	
t_f	Fall time		BCY59 BCY58	-	200	-	
t_{off}	Turn off time		BCY59 BCY58	-	450	800	
C_C	Collector capacitance	I_E = I_e = 0 ,V_{CB} =10 V f = 1MHz	BCY59 BCY58	-	-	5	pF
C_E	Emitter capacitance	I_C = I_c = 0 ,V_{EB} =0.5 V f = 1MHz	BCY59 BCY58	-	-	15	pF

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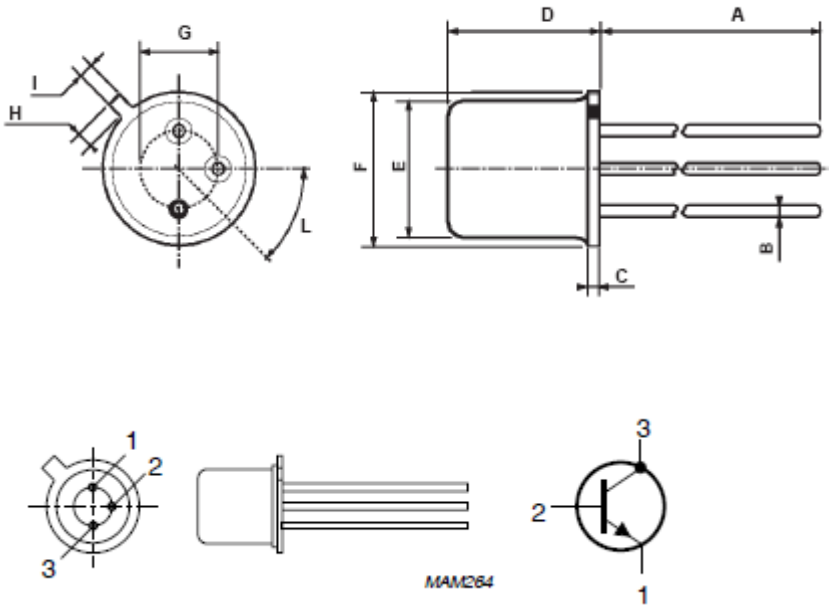
MECHANICAL DATA CASE TO-18

DIMENSIONS (mm)		
	min	max
A	12.7	-
B	-	0.49
C	0.9	-
D	-	5.3
E	-	4.9
F	-	5.8
G	2.54	-
H	-	1.2
I	-	1.16
L	45°	-



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

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