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	**BCY59**	450	°C/W
		BCY58		
R_{thJ-c}	Thermal Resistance, Junction to ambient in free air	**BCY59**	150	°C/W
		BCY58		

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ELECTRICAL CHARACTERISTICS

Tj=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	**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} =0V,T_{amb} =150°C	**BCY58**				
I_{EBO}	Emitter Cutoff Current	V_{BE} =5.0 V, I_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				
		I_C =20 µA, V_{CE} =$V_{CE\ max}$ 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				

			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
			-	<400	<630	<1000
		I_C =100 mA, V_{CE} =1 V	>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 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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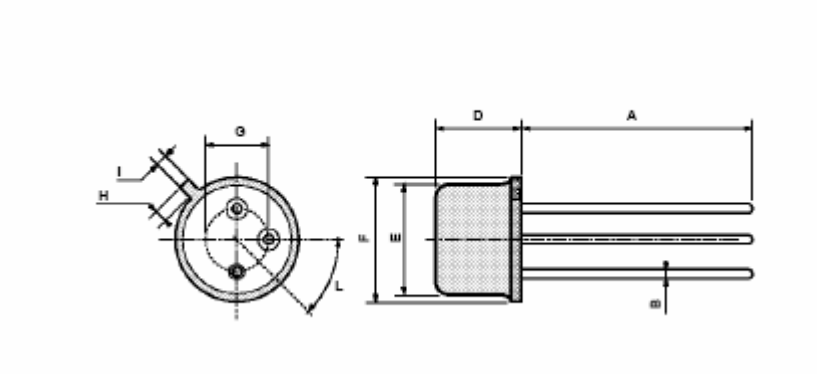
MECHANICAL DATA CASE TO-18

DIMENSIONS		
	mm	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