

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	@ $T_{amb} = 45^\circ$	BCY59	0.39	mW
			BCY58		
P_D	Total Power Dissipation	@ $T_{case} = 45^\circ$	BCY59	1	Watts
			BCY58		
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	450	$^\circ\text{C/W}$
R_{thJ-c}	Thermal Resistance, Junction to ambient in free air	150	$^\circ\text{C/W}$

NPN BCY58 – BCY59

ELECTRICAL CHARACTERISTICS

T_j=25°C unless otherwise specific

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
I _{CES}	Collector Cutoff Current	V _{CB} =45 V V _{BE} =0V	-	-	10	nA
		BCY59				
I _{CES}	Collector Cutoff Current	V _{CB} =32 V V _B =0V	-	-	10	μA
		BCY58				
I _{CES}	Collector Cutoff Current	V _{CB} =45 V V _{BE} =0V, T _{amb} =150°C	-	-	10	μA
		BCY59				
I _{CES}	Collector Cutoff Current	V _{CB} =32 V, V _{BE} =0 T _{amb} =150°C	-	-	10	μA
		BCY58				
I _{EBO}	Emitter Cutoff Current	V _{BE} =5.0 V I _C =0	-	-	10	nA
V _{CEO}	Collector Emitter Breakdown Voltage	I _C =2 mA, I _B =0	45	-	-	V
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	-	0.4	0.8	
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	0.7	0.85	1.2	
V _{BE}	Base-Emitter Voltage	I _C =10 μA, V _{CE} =5 V	-	0.5	-	V
		V _{CE} =V _{CE max} I _C =20 μA, T _j =100°C	0.2	-	-	
		I _C =2 mA, V _{CE} =5 V	0.55	-	0.7	
		I _C =10 mA, V _{CE} =1 V	-	0.7	-	
I _C =100 mA, V _{CE} =1 V	-	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 =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} =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

NPN BCY58 – BCY59

ELECTRICAL CHARACTERISTICS

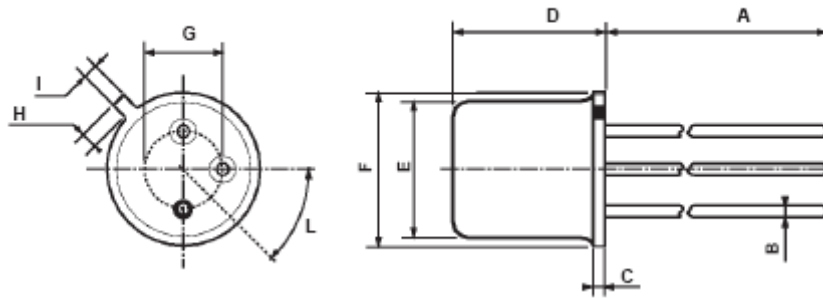
T_j=25°C unless otherwise specified

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit		
f _T	Transition frequency	I _C =10 mA, V _{CE} =5 V f = 100MHz	BCY59	150	-	-	MHz	
			BCY58					
F	Noise figure , RS=2kΩ	I _C =200 μA, V _{CE} =5 V f = 1kHz, B =200Hz	BCY59	-	2	6	db	
			BCY58					
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	-	35	-	ns	
t _r	Rise time		BCY58					
t _{on}	Turn on time		BCY59	-	85	150		ns
t _s	Storage time		BCY59	-	400	-		ns
t _f	Fall time		BCY59	-	80	-		ns
t _{off}	Turn off time		BCY59	-	480	800		ns
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	-	5	-	ns	
t _r	Rise time		BCY58					
t _{on}	Turn on time		BCY59	-	55	150		ns
t _s	Storage time		BCY59	-	250	-		ns
t _f	Fall time		BCY59	-	200	-		ns
t _{off}	Turn off time		BCY59	-	450	800		ns
C _C	Collector capacitance	I _E = I _e = 0 , V _{CB} =10 V f = 1MHz	BCY59	-	-	5	pF	
			BCY58					
C _E	Emitter capacitance	I _C = I _c = 0 , V _{EB} =0.5 V f = 1MHz	BCY59	-	-	15	pF	
			BCY58					

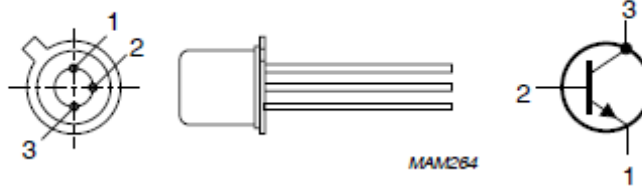
NPN BCY58 – BCY59

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



Revised September 2012

Information furnished is believed to be accurate and reliable. However, Comset Semiconductors assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may results from its use. Data are subject to change without notice. Comset Semiconductors makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Comset Semiconductors assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Comset Semiconductors' products are not authorized for use as critical components in life support devices or systems.