

BCY58, VII, VIII, IX, X  
BCY59, VII, VIII, IX, X

SILICON  
NPN TRANSISTORS



TO-18 CASE



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR BCY58 and BCY59 series types are silicon NPN epitaxial planar transistors, mounted in a hermetically sealed metal case, designed for low noise amplifier and switching applications.

**MARKING: FULL PART NUMBER**

MAXIMUM RATINGS: (T <sub>A</sub> =25°C unless otherwise noted)		SYMBOL	BCY58	BCY59	UNITS
Collector-Base Voltage		V <sub>CB0</sub>	32	45	V
Collector-Emitter Voltage		V <sub>CEO</sub>	32	45	V
Emitter-Base Voltage		V <sub>EBO</sub>		7.0	V
Continuous Collector Current		I <sub>C</sub>		100	mA
Peak Collector Current		I <sub>CM</sub>		200	mA
Peak Base Current		I <sub>BM</sub>		200	mA
Power Dissipation		P <sub>D</sub>		340	mW
Power Dissipation (T <sub>C</sub> =25°C)		P <sub>D</sub>		1.0	W
Operating and Storage Junction Temperature		T <sub>J</sub> , T <sub>stg</sub>		-65 to +200	°C
Thermal Resistance		θ <sub>JA</sub>		450	°C/W
Thermal Resistance		θ <sub>JC</sub>		150	°C/W

**ELECTRICAL CHARACTERISTICS: (T<sub>A</sub>=25°C unless otherwise noted)**

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I <sub>CB0</sub>	V <sub>CB</sub> =Rated V <sub>CB0</sub>		10	nA
I <sub>CB0</sub>	V <sub>CB</sub> =Rated V <sub>CB0</sub> , T <sub>A</sub> =150°C		10	μA
I <sub>EBO</sub>	V <sub>EB</sub> =5.0V		10	nA
BV <sub>CB0</sub>	I <sub>C</sub> =10μA (BCY58)	32		V
BV <sub>CB0</sub>	I <sub>C</sub> =10μA (BCY59)	45		V
BV <sub>CEO</sub>	I <sub>C</sub> =2.0mA (BCY58)	32		V
BV <sub>CEO</sub>	I <sub>C</sub> =2.0mA (BCY59)	45		V
BV <sub>EBO</sub>	I <sub>E</sub> =1.0μA	7.0		V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =250μA		0.35	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =2.5mA		0.70	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =250μA	0.60	0.85	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =2.5mA	0.75	1.20	V

	TEST CONDITIONS	BCY58-VII		BCY58-VIII		BCY58-IX		BCY58-X	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =10μA	-	20	-	20	-	40	-	100
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =2.0mA	120	-	220	180	310	250	460	380 630
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =10mA	80	-	-	120	400	160	630	240 1000
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =100mA	40	-	-	45	-	60	-	60 -

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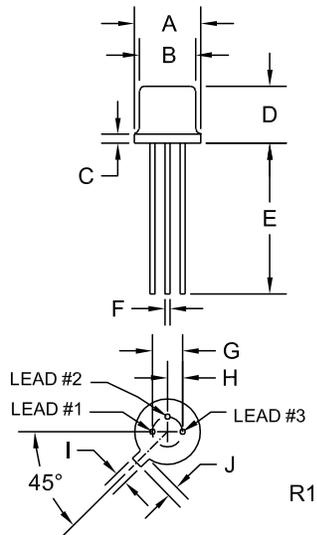
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$f_T$	$V_{CE}=5.0\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$	150			MHz
$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$			5.0	pF
$C_{ib}$	$V_{EB}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$			15	pF
NF	$V_{CE}=5.0\text{V}$ , $I_C=0.2\text{mA}$ , $R_S=2.0\text{k}\Omega$ , $f=1.0\text{kHz}$ , $B=200\text{Hz}$			10	dB
$t_{on}$	$V_{CC}=10\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		85	150	ns
$t_d$	$V_{CC}=10\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		35		ns
$t_r$	$V_{CC}=10\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		50		ns
$t_{off}$	$V_{CC}=10\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		450	800	ns
$t_s$	$V_{CC}=10\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		400		ns
$t_f$	$V_{CC}=10\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		80		ns
$t_{on}$	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$		55	150	ns
$t_d$	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$		5.0		ns
$t_r$	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$		50		ns
$t_{off}$	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$		450	800	ns
$t_s$	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$		250		ns
$t_f$	$V_{CC}=10\text{V}$ , $I_C=100\text{mA}$ , $I_{B1}=I_{B2}=10\text{mA}$		20		ns

**TO-18 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.209	0.230	5.31	5.84
B (DIA)	0.178	0.195	4.52	4.95
C	-	0.030	-	0.76
D	0.170	0.210	4.32	5.33
E	0.500	-	12.70	-
F (DIA)	0.016	0.019	0.41	0.48
G (DIA)	0.100		2.54	
H	0.050		1.27	
I	0.036	0.046	0.91	1.17
J	0.028	0.048	0.71	1.22

TO-18 (REV: R1)

**LEAD CODE:**

- 1) Emitter
- 2) Base
- 3) Collector

**MARKING:**  
FULL PART NUMBER

R2 (8-November 2013)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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