

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: ( $T_A=25^\circ\text{C}$ unless otherwise noted)	SYMBOL	BCY58	BCY59	UNITS
Collector-Base Voltage	$V_{CB0}$	32	45	V
Collector-Emitter Voltage	$V_{CEO}$	32	45	V
Emitter-Base Voltage	$V_{EBO}$		7.0	V
Continuous Collector Current	$I_C$		100	mA
Peak Collector Current	$I_{CM}$		200	mA
Peak Base Current	$I_{BM}$		200	mA
Power Dissipation	$P_D$		340	mW
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$		1.0	W
Operating and Storage Junction Temperature	$T_J, T_{stg}$		-65 to +200	$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$		450	$^\circ\text{C/W}$
Thermal Resistance	$\theta_{JC}$		150	$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$I_{CBO}$	$V_{CB}=\text{Rated } V_{CB0}$		10	nA
$I_{CBO}$	$V_{CB}=\text{Rated } V_{CB0}, T_A=150^\circ\text{C}$		10	$\mu\text{A}$
$I_{EBO}$	$V_{EB}=5.0\text{V}$		10	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$ (BCY58)	32		V
$BV_{CBO}$	$I_C=10\mu\text{A}$ (BCY59)	45		V
$BV_{CEO}$	$I_C=2.0\text{mA}$ (BCY58)	32		V
$BV_{CEO}$	$I_C=2.0\text{mA}$ (BCY59)	45		V
$BV_{EBO}$	$I_E=1.0\mu\text{A}$	7.0		V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=250\mu\text{A}$		0.35	V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=2.5\text{mA}$		0.70	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=250\mu\text{A}$	0.60	0.85	V
$V_{BE(SAT)}$	$I_C=100\text{mA}, I_B=2.5\text{mA}$	0.75	1.20	V

	TEST CONDITIONS	BCY58-VII		BCY58-VIII		BCY58-IX		BCY58-X	
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$	-	20	-	20	-	40	-	100
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$	120	-	220	180	310	250	460	380
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	80	-	-	120	400	160	630	240
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=100\text{mA}$	40	-	-	45	-	60	-	60

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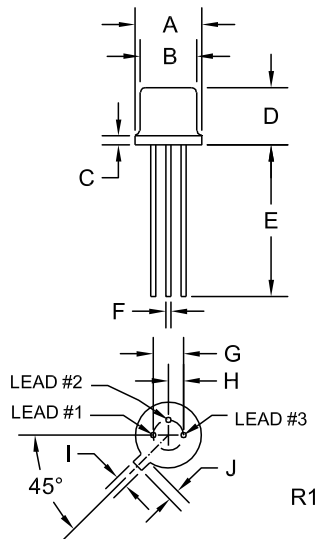
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

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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