

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	θ_{JA}	450		$^\circ\text{C/W}$
Thermal Resistance	θ_{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	μA
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
$V_{CE(\text{SAT})}$	$I_C=10\text{mA}, I_B=250\mu\text{A}$		0.35	V
$V_{CE(\text{SAT})}$	$I_C=100\text{mA}, I_B=2.5\text{mA}$		0.70	V
$V_{BE(\text{SAT})}$	$I_C=10\text{mA}, I_B=250\mu\text{A}$	0.60	0.85	V
$V_{BE(\text{SAT})}$	$I_C=100\text{mA}, I_B=2.5\text{mA}$	0.75	1.20	V

		BCY58-VII			BCY58-VIII		BCY58-IX		BCY58-X	
		MIN	TYP	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	630
h_{FE}	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	80	-	-	120	400	160	630	240	1000
h_{FE}	$V_{CE}=1.0\text{V}, I_C=100\text{mA}$	40	-	-	45	-	60	-	60	-

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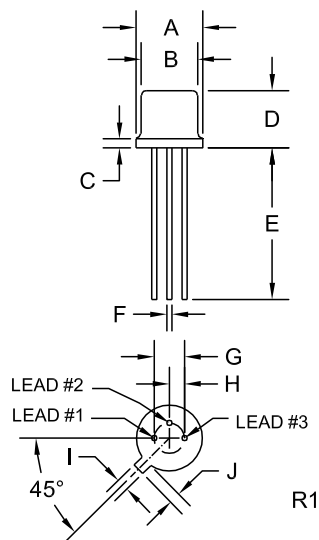
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

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)

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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

DESIGNER SUPPORT/SERVICES

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

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- 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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