

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

BCY58, VII, VIII, IX, X
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SILICON NPN TRANSISTORS

JEDEC TO-18 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR BCY58, BCY59 Series types are NPN Silicon Transistors manufactured by the epitaxial planar process, mounted in a hermetically sealed metal case, designed for low noise amplifier and switching applications. The PNP Complementary types are BCY78, BCY79 respectively.

MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

	SYMBOL	BCY58	BCY59	UNIT
Collector-Emitter Voltage	V_{CES}	32	45	V
Collector-Emitter Voltage	V_{CEO}	32	45	V
Emitter-Base Voltage	V_{EBO}		7.0	V
Collector Current	I_C		200	mA
Base Current	I_B		50	mA
Power Dissipation	P_D		500	mW
Operating and Storage Junction Temperature	T_J, T_{STG}	-65 TO +200		$^\circ\text{C}$
Thermal Resistance	θ_{JA}	350		$^\circ\text{C}/\text{W}$

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

SYMBOL	TEST CONDITIONS	BCY58 SERIES		MAX	UNIT
		MIN	BCY59 SERIES		
I_{CES}	$V_{CE}=\text{Rated } V_{CES}$			10	nA
I_{CES}	$V_{CE}=\text{Rated } V_{CES}, T_A=150^\circ\text{C}$			10	μA
I_{EBO}	$V_{EB}=5.0\text{V}$			10	nA
BV_{CEO}	$I_C=2.0\text{mA}$ (BCY58 Series)	32			V
BV_{CEO}	$I_C=2.0\text{mA}$ (BCY59 Series)	45			V
BV_{EBO}	$I_E=1.0\mu\text{A}$	7.0			V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=0.25\text{mA}$	0.05		0.35	V
$V_{CE(SAT)}$	$I_C=100\text{mA}, I_B=2.5\text{mA}$	0.15		0.70	V
$V_{BE(ON)}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$	0.55		0.70	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=0.25\text{mA}$	0.60		0.85	V
$V_{BE(SAT)}$	$I_C=100\text{mA}, I_B=2.5\text{mA}$	0.75		1.2	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		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	
h_{fe}	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=1.0\text{kHz}$	125	250	175	350	250	500	350	700

	TEST CONDITIONS	BCY58 SERIES		MAX	UNIT
		MIN	BCY59 SERIES		
f_T	$V_{CE}=5.0\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	150			MHz
C_{ib}	$V_{EB}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$			15	pF
C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$			5.0	pF
NF	$V_{CE}=5.0\text{V}, I_C=0.2\text{mA}, R_g=2.0\text{k}\Omega, f=1.0\text{kHz}$			6.0	dB
t_{on}	$V_{CC}=10\text{V}, I_C=10\text{mA}, I_{B1}=1.0\text{mA}$			150	ns
t_{on}	$V_{CC}=10\text{V}, I_C=100\text{mA}, I_{B1}=10\text{mA}$			150	ns
t_{off}	$V_{CC}=10\text{V}, I_C=10\text{mA}, I_{B1}=I_{B2}=1.0\text{mA}$			800	ns
t_{off}	$V_{CC}=10\text{V}, I_C=100\text{mA}, I_{B1}=I_{B2}=10\text{mA}$			800	ns