

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors  
www.centrasemi.com

BCY78, VII, VIII, IX, X  
BCY79, VII, VIII, IX, X

PNP SILICON TRANSISTOR

JEDEC TO-18 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR BCY78, BCY79 Series types are Silicon PNP Epitaxial Planar Transistors, mounted in a hermetically sealed metal case, designed for low noise amplifier and switching applications.

## MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

	<u>SYMBOL</u>	<u>BCY78</u>	<u>BCY79</u>	<u>UNITS</u>
Collector-Base Voltage	V <sub>CBO</sub>	32	45	V
Collector-Emitter Voltage	V <sub>CEO</sub>	32	45	V
Emitter-Base Voltage	V <sub>EBO</sub>	5.0		V
Collector Current	I <sub>C</sub>	100		mA
Collector Current (Peak)	I <sub>CM</sub>	200		mA
Base Current (Peak)	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)

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>MAX</u>	<u>UNITS</u>
I <sub>CBO</sub>	V <sub>CB</sub> = Rated V <sub>CBO</sub>		15	nA
I <sub>CBO</sub>	V <sub>CB</sub> = Rated V <sub>CBO</sub> , T <sub>A</sub> =150°C		10	μA
I <sub>EBO</sub>	V <sub>EB</sub> =5.0V		20	nA
BV <sub>CBO</sub>	I <sub>C</sub> =10μA (BCY78)	32		V
BV <sub>CBO</sub>	I <sub>C</sub> =10μA (BCY79)	45		V
BV <sub>CEO</sub>	I <sub>C</sub> =2.0mA (BCY78)	32		V
BV <sub>CEO</sub>	I <sub>C</sub> =2.0mA (BCY79)	45		V
BV <sub>EBO</sub>	I <sub>E</sub> =1.0μA	5.0		V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =250μA		0.25	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =2.5mA		0.80	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	0.70	1.20	V
V <sub>BE(ON)</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =2.0mA	0.60	0.75	V

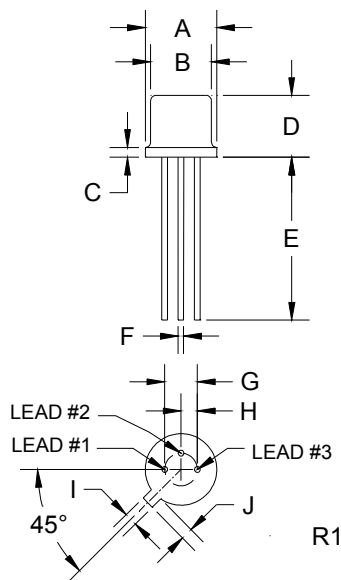
<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	BCY78-VII		BCY78-VIII		BCY78-IX		BCY78-X	
		<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =10μA	140 TYP		30		40		100	
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =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	

(SEE REVERSE SIDE)

ELECTRICAL CHARACTERISTICS Continued

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>TYP</u>	<u>MAX</u>	<u>UNITS</u>
$f_T$	$V_{CE}=5.0V, I_C=10mA, f=100MHz$	100			MHz
$C_{ob}$	$V_{CB}=10V, I_E=0, f=1.0MHz$			7.0	pF
$C_{ib}$	$V_{EB}=0.5V, I_C=0, f=1.0MHz$			15	pF
NF	$V_{CE}=5.0V, I_C=200\mu A, R_S=2k\Omega, f=1.0kHz, B=200Hz$			10	dB
$t_{on}$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=-I_{B2}=1.0mA$			100	ns
$t_d$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=-I_{B2}=1.0mA$			50	ns
$t_r$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=-I_{B2}=1.0mA$			50	ns
$t_{off}$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=-I_{B2}=1.0mA$			700	ns
$t_s$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=-I_{B2}=1.0mA$			600	ns
$t_f$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=-I_{B2}=1.0mA$			100	ns
$t_{on}$	$V_{CC}=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA$			100	ns
$t_d$	$V_{CC}=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA$			35	ns
$t_r$	$V_{CC}=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA$			65	ns
$t_{off}$	$V_{CC}=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA$			400	ns
$t_s$	$V_{CC}=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA$			300	ns
$t_f$	$V_{CC}=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA$			100	ns

TO-18 PACKAGE - MECHANICAL OUTLINE



SYMBOL	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

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