BCX56-10R1

Preferred Device

NPN Silicon Epitaxial Transistor

These NPN Silicon Epitaxial transistors are designed for use in audio amplifier applications. The device is housed in the SOT-89 package, which is designed for medium power surface mount applications.

- High Current: 1.0 Amp
- Available in 7 inch/1000 unit Tape and Reel
- Device Marking: BK

MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Collector-Base Voltage	V_{CBO}	100	Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current	I_C	1	Adc
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D (Note 1.) (Note 2.)	 1.56 13 0.67 5.0	 Watts mW/°C Watts mW/°C
Operating and Storage Temperature Range	T_J, T_{stg}	–65 to 150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Ambient (surface mounted)	$R_{\theta JA}$ (Note 1.) (Note 2.)	 80 190	°C/W
Maximum Temperature for Soldering Purposes Time in Solder Bath	T_L	 260 10	 °C Sec

1. FR–4 @ 1.0 X 1.0 inch Pad
2. FR–4 @ Minimum Pad

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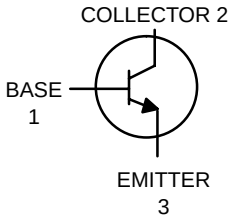
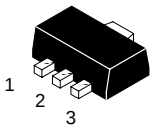
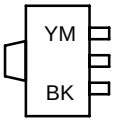
MEDIUM POWER NPN SILICON HIGH CURRENT TRANSISTOR SURFACE MOUNT





SOT–89
CASE 1213
STYLE 2

MARKING DIAGRAM



Y = Year Code
M = Month Code
BK = Device Code

ORDERING INFORMATION

Device	Package	Shipping
BCX56–10R1	SOT–89	1000/Tape & Reel

Preferred devices are recommended choices for future use and best overall value.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	100	–	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 1.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	80	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector-Base Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)	I_{CBO}	–	–	100	nAdc
Emitter-Base Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)	I_{EBO}	–	–	10	μAdc
ON CHARACTERISTICS (Note 3.)					
DC Current Gain (I_C = 5.0 mA, V_{CE} = 2.0 V) (I_C = 150 mA, V_{CE} = 2.0 V) (I_C = 500 mA, V_{CE} = 2.0 V)	h_{FE}	 25 63 25	 – – –	 – 160 –	–
Collector-Emitter Saturation Voltage (I_C = 500 mAdc, I_B = 50 mAdc)	$V_{CE(sat)}$	–	–	0.5	Vdc
Base-Emitter On Voltage (I_C = 500 mAdc, V_{CE} = 2.0 Vdc)	$V_{BE(on)}$	–	–	1.0	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain – Bandwidth Product (I_C = 10 mAdc, V_{CE} = 5.0 Vdc, f = 35 MHz)	f_T	–	130	–	MHz

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

TYPICAL ELECTRICAL CHARACTERISTICS

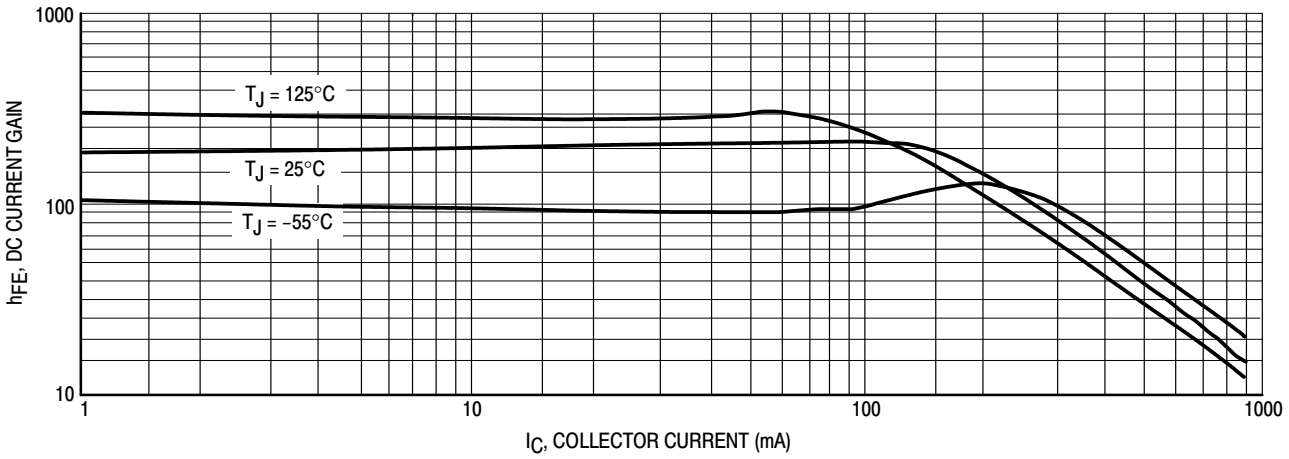


Figure 1. DC Current Gain

TYPICAL ELECTRICAL CHARACTERISTICS

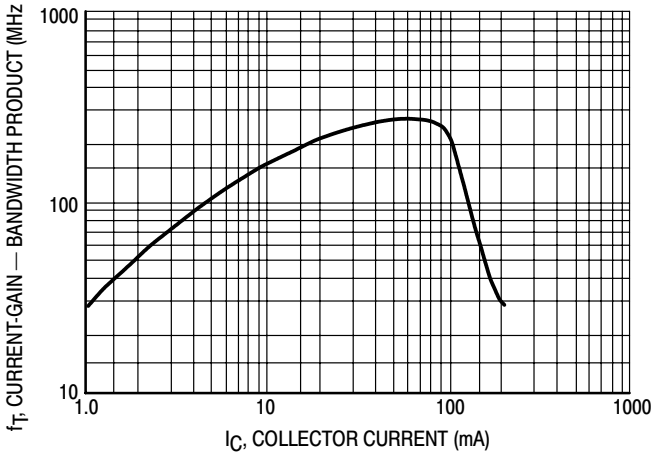


Figure 2. Current-Gain – Bandwidth Product

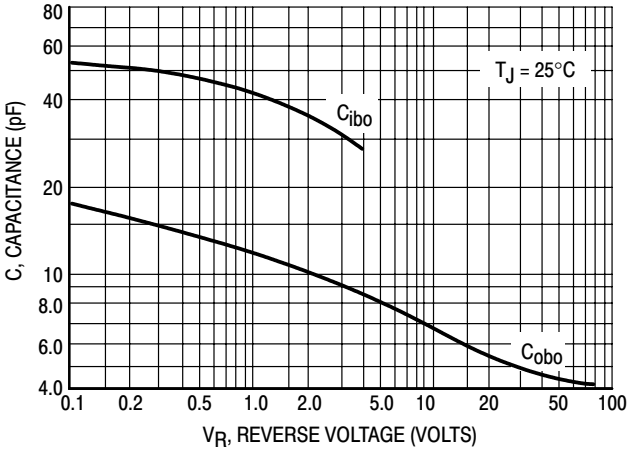


Figure 3. Capacitance

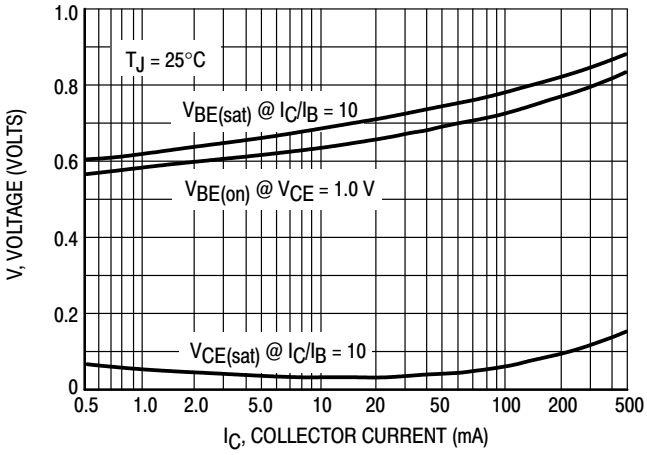


Figure 4. “On” Voltages

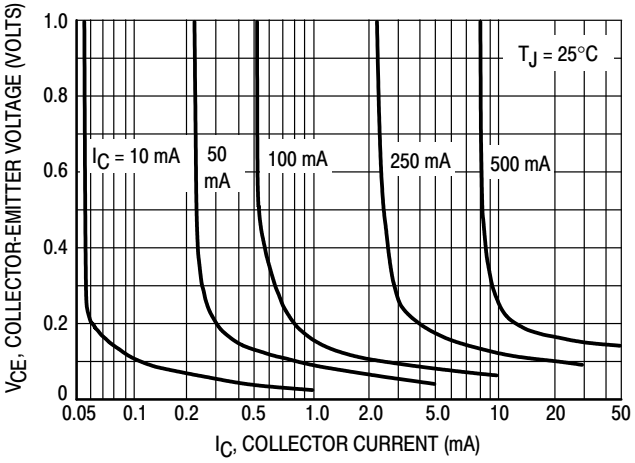


Figure 5. Collector Saturation Region

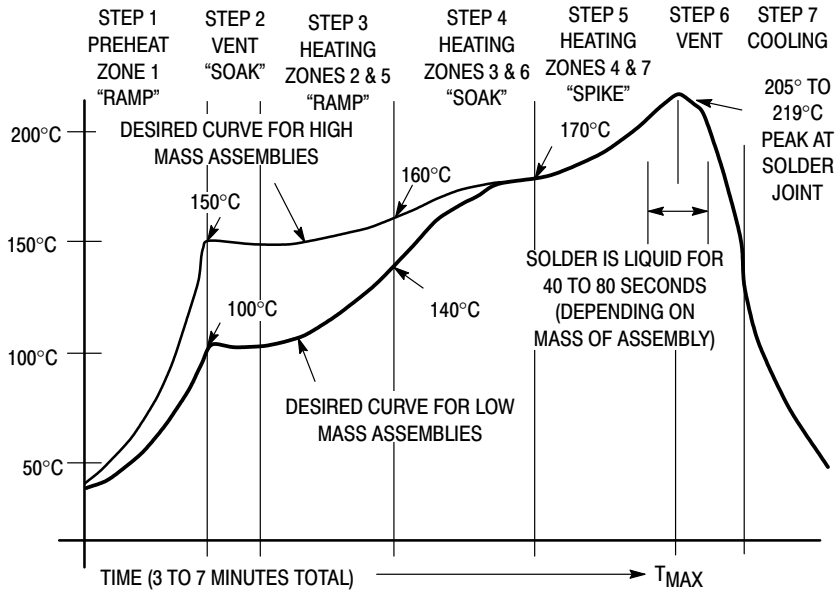
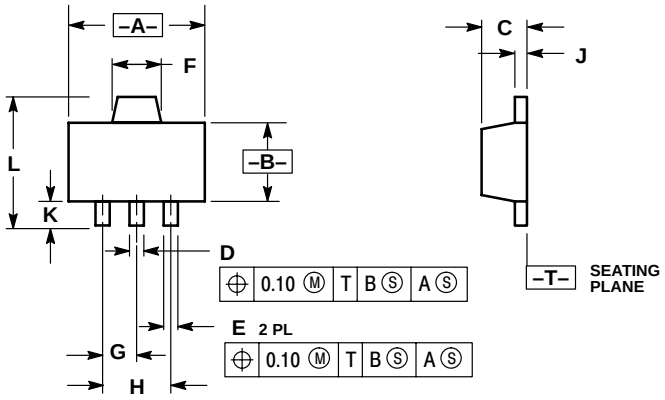


Figure 6. Typical Solder Heating Profile

BCX56–10R1

PACKAGE DIMENSIONS

SOT–89
(3–LEAD)
CASE 1213–02
ISSUE C



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. 1213–01 OBSOLETE, NEW STANDARD 1213–02.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	4.40	4.60	0.173	0.181
B	2.40	2.60	0.094	0.102
C	1.40	1.60	0.055	0.063
D	0.37	0.57	0.015	0.022
E	0.32	0.52	0.013	0.020
F	1.50	1.83	0.059	0.072
G	1.50 BSC		0.059 BSC	
H	3.00 BSC		0.118 BSC	
J	0.30	0.50	0.012	0.020
K	0.80	---	0.031	---
L	---	4.25	---	0.167

STYLE 2:
PIN 1. BASE
2. COLLECTOR
3. EMITTER

PUBLICATION ORDERING INFORMATION

Literature Fulfillment:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303–675–2175 or 800–344–3860 Toll Free USA/Canada
Fax: 303–675–2176 or 800–344–3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com

N. American Technical Support: 800–282–9855 Toll Free USA/Canada

JAPAN: ON Semiconductor, Japan Customer Focus Center
4–32–1 Nishi–Gotanda, Shinagawa–ku, Tokyo, Japan 141–0031
Phone: 81–3–5740–2700
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For additional information, please contact your local Sales Representative.