

# BC327, BC327-16, BC327-25, BC327-40

## Amplifier Transistors

### PNP Silicon

#### Features

- These are Pb-Free Devices\*

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	–45	Vdc
Collector–Emitter Voltage	$V_{CES}$	–50	Vdc
Emitter–Base Voltage	$V_{EBO}$	–5.0	Vdc
Collector Current – Continuous	$I_C$	–800	mA <sub>dc</sub>
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $T_A = 25^\circ\text{C}$	$P_D$	625 5.0	mW mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $T_A = 25^\circ\text{C}$	$P_D$	1.5 12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	–55 to +150	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

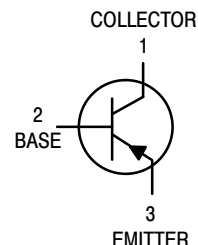
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

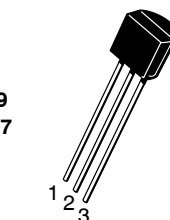


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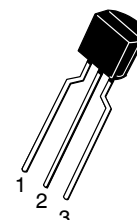
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TO-92  
CASE 29  
STYLE 17

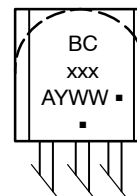


STRAIGHT LEAD  
BULK PACK



BENT LEAD  
TAPE & REEL  
AMMO PACK

#### MARKING DIAGRAM



BCxxx = Device Code

A = Assembly Location

Y = Year

WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering, marking, and shipping information in the package dimensions section on page 4 of this data sheet.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# BC327, BC327-16, BC327-25, BC327-40

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector – Emitter Breakdown Voltage (I <sub>C</sub> = –10 mA, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	–45	–	–	Vdc
Collector – Emitter Breakdown Voltage (I <sub>C</sub> = –100 μA, I <sub>E</sub> = 0)	V <sub>(BR)CES</sub>	–50	–	–	Vdc
Emitter – Base Breakdown Voltage (I <sub>E</sub> = –10 μA, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	–5.0	–	–	Vdc
Collector Cutoff Current (V <sub>CB</sub> = –30 V, I <sub>E</sub> = 0)	I <sub>CBO</sub>	–	–	–100	nAdc
Collector Cutoff Current (V <sub>CE</sub> = –45 V, V <sub>BE</sub> = 0)	I <sub>CES</sub>	–	–	–100	nAdc
Emitter Cutoff Current (V <sub>EB</sub> = –4.0 V, I <sub>C</sub> = 0)	I <sub>EBO</sub>	–	–	–100	nAdc
ON CHARACTERISTICS					
DC Current Gain (I <sub>C</sub> = –100 mA, V <sub>CE</sub> = –1.0 V)	h <sub>FE</sub>	100	–	630	–
	BC327	100	–	250	
	BC327–16	160	–	400	
(I <sub>C</sub> = –300 mA, V <sub>CE</sub> = –1.0 V)	BC327–25	250	–	630	
	BC327–40	40	–	–	
Base–Emitter On Voltage (I <sub>C</sub> = –300 mA, V <sub>CE</sub> = –1.0 V)	V <sub>BE(on)</sub>	–	–	–1.2	Vdc
Collector – Emitter Saturation Voltage (I <sub>C</sub> = –500 mA, I <sub>B</sub> = –50 mA)	V <sub>CE(sat)</sub>	–	–	–0.7	Vdc
SMALL–SIGNAL CHARACTERISTICS					
Output Capacitance (V <sub>CB</sub> = –10 V, I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>ob</sub>	–	11	–	pF
Current – Gain – Bandwidth Product (I <sub>C</sub> = –10 mA, V <sub>CE</sub> = –5.0 V, f = 100 MHz)	f <sub>T</sub>	–	260	–	MHz

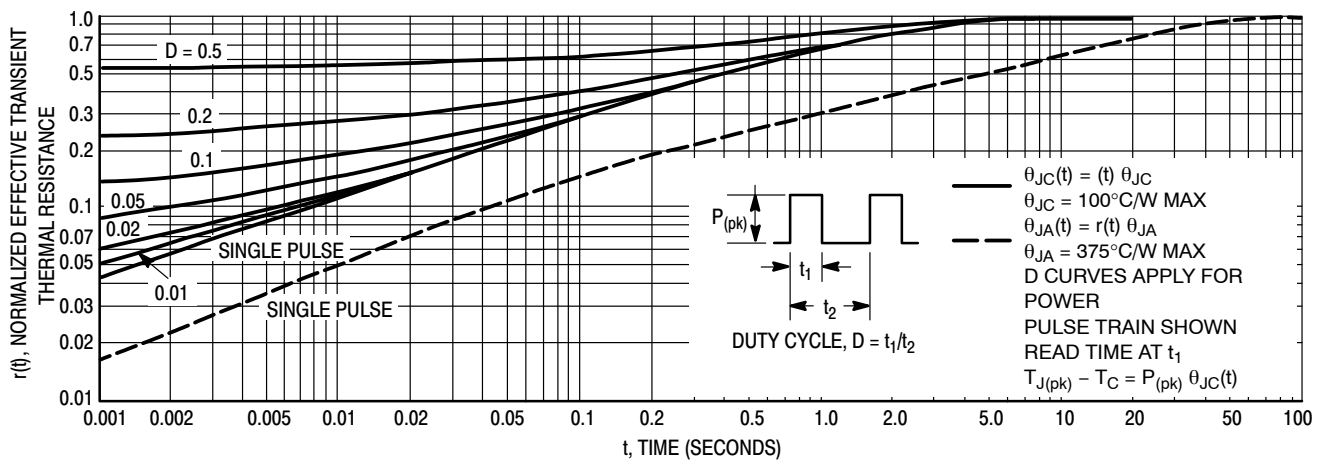


Figure 1. Thermal Response

# BC327, BC327-16, BC327-25, BC327-40

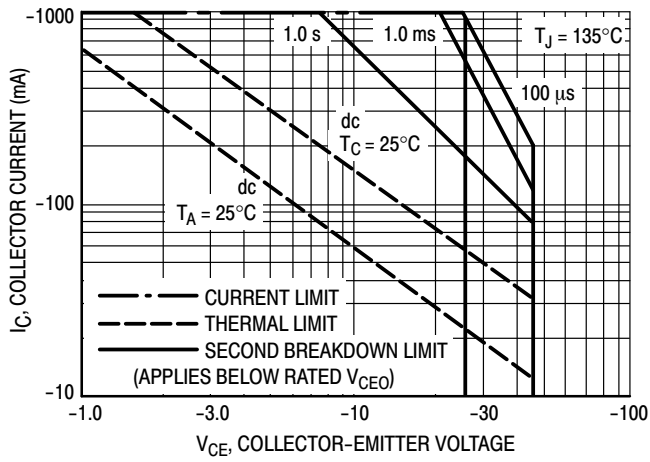


Figure 2. Active Region – Safe Operating Area

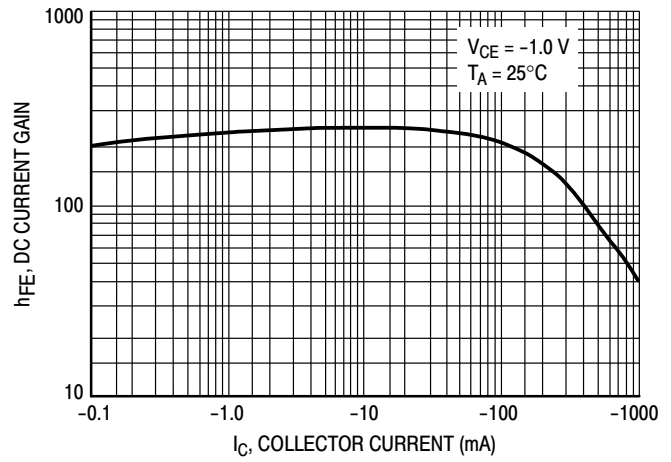


Figure 3. DC Current Gain

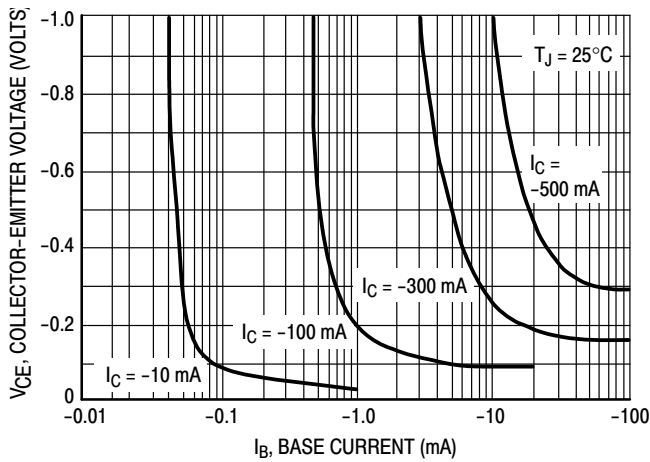


Figure 4. Saturation Region

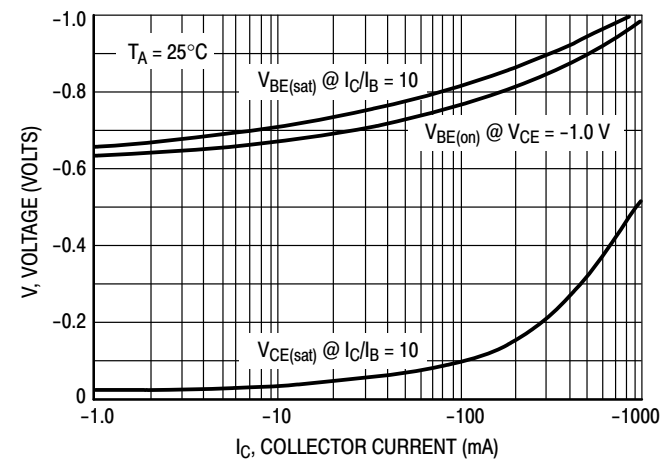


Figure 5. “On” Voltages

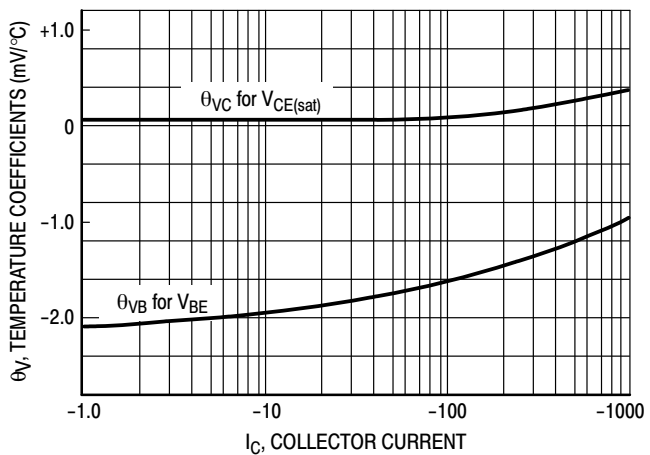


Figure 6. Temperature Coefficients

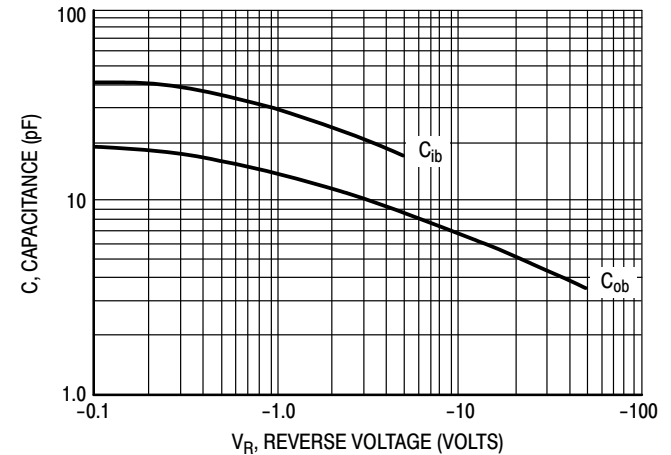


Figure 7. Capacitances

## BC327, BC327-16, BC327-25, BC327-40

### ORDERING INFORMATION

Device Order Number	Specific Device Marking	Package Type	Shipping <sup>†</sup>
BC327G	7	TO-92 Straight Lead (Pb-Free)	5000 Units / Bulk
BC327RL1G	327	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Reel
BC327-025G	327	TO-92 Straight Lead (Pb-Free)	5000 Units / Bulk
BC327-25RL1G	7-25	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Reel
BC327-25ZL1G	32725	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Ammo Box
BC327-40ZL1G	7-40	TO-92 Bent Lead (Pb-Free)	2000 / Tape & Ammo Box

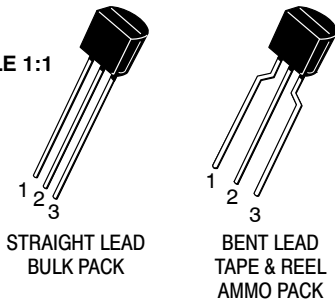
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

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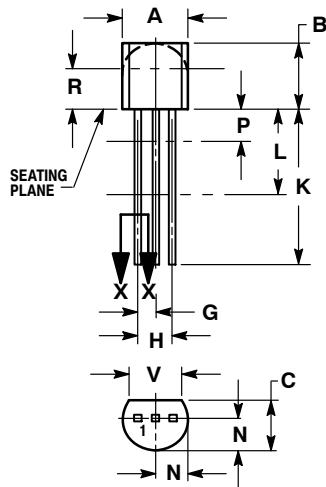
ON

SCALE 1:1

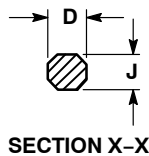


TO-92 (TO-226)  
CASE 29-11  
ISSUE AM

DATE 09 MAR 2007



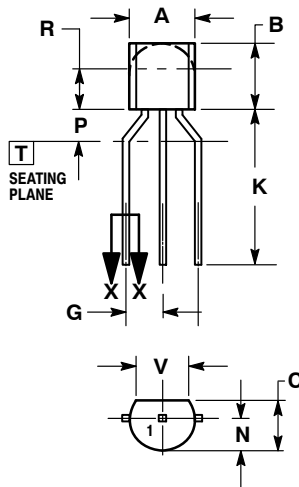
STRAIGHT LEAD  
BULK PACK



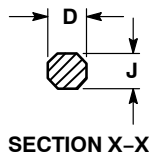
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---



BENT LEAD  
TAPE & REEL  
AMMO PACK



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

STYLES ON PAGE 2

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		PAGE 1 OF 3


**TO-92 (TO-226)**  
**CASE 29-11**  
**ISSUE AM**

DATE 09 MAR 2007

STYLE 1: PIN 1. EMITTER 2. BASE 3. COLLECTOR	STYLE 2: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 3: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 5: PIN 1. DRAIN 2. SOURCE 3. GATE
STYLE 6: PIN 1. GATE 2. SOURCE & SUBSTRATE 3. DRAIN	STYLE 7: PIN 1. SOURCE 2. DRAIN 3. GATE	STYLE 8: PIN 1. DRAIN 2. GATE 3. SOURCE & SUBSTRATE	STYLE 9: PIN 1. BASE 1 2. EMITTER 3. BASE 2	STYLE 10: PIN 1. CATHODE 2. GATE 3. ANODE
STYLE 11: PIN 1. ANODE 2. CATHODE & ANODE 3. CATHODE	STYLE 12: PIN 1. MAIN TERMINAL 1 2. GATE 3. MAIN TERMINAL 2	STYLE 13: PIN 1. ANODE 1 2. GATE 3. CATHODE 2	STYLE 14: PIN 1. EMITTER 2. COLLECTOR 3. BASE	STYLE 15: PIN 1. ANODE 1 2. CATHODE 3. ANODE 2
STYLE 16: PIN 1. ANODE 2. GATE 3. CATHODE	STYLE 17: PIN 1. COLLECTOR 2. BASE 3. EMITTER	STYLE 18: PIN 1. ANODE 2. CATHODE 3. NOT CONNECTED	STYLE 19: PIN 1. GATE 2. ANODE 3. CATHODE	STYLE 20: PIN 1. NOT CONNECTED 2. CATHODE 3. ANODE
STYLE 21: PIN 1. COLLECTOR 2. EMITTER 3. BASE	STYLE 22: PIN 1. SOURCE 2. GATE 3. DRAIN	STYLE 23: PIN 1. GATE 2. SOURCE 3. DRAIN	STYLE 24: PIN 1. EMITTER 2. COLLECTOR/ANODE 3. CATHODE	STYLE 25: PIN 1. MT 1 2. GATE 3. MT 2
STYLE 26: PIN 1. $V_{CC}$ 2. GROUND 2 3. OUTPUT	STYLE 27: PIN 1. MT 2. SUBSTRATE 3. MT	STYLE 28: PIN 1. CATHODE 2. ANODE 3. GATE	STYLE 29: PIN 1. NOT CONNECTED 2. ANODE 3. CATHODE	STYLE 30: PIN 1. DRAIN 2. GATE 3. SOURCE
STYLE 31: PIN 1. GATE 2. DRAIN 3. SOURCE	STYLE 32: PIN 1. BASE 2. COLLECTOR 3. EMITTER	STYLE 33: PIN 1. RETURN 2. INPUT 3. OUTPUT	STYLE 34: PIN 1. INPUT 2. GROUND 3. LOGIC	STYLE 35: PIN 1. GATE 2. COLLECTOR 3. EMITTER

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