

# 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        | mAdc                       |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}$<br>Derate above $T_A = 25^\circ\text{C}$ | $P_D$          | 625<br>5.0  | mW<br>mW/ $^\circ\text{C}$ |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}$<br>Derate above $T_A = 25^\circ\text{C}$ | $P_D$          | 1.5<br>12   | W<br>mW/ $^\circ\text{C}$  |
| Operating and Storage Junction<br>Temperature Range   | $T_J, T_{stg}$ | -55 to +150 | $^\circ\text{C}$           |

#### THERMAL CHARACTERISTICS

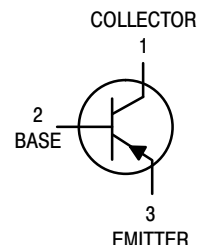
| Characteristic                          | Symbol          | Max  | Unit                      |
|---|-----------------|------|---------------------------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 200  | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Case    | $R_{\theta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

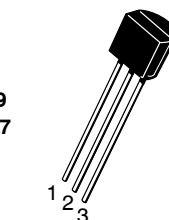


ON Semiconductor®

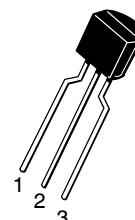
<http://onsemi.com>



TO-92  
CASE 29  
STYLE 17

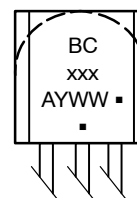


STRAIGHT LEAD  
BULK PACK



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 |
|---|---|------|-----|------|------|
| <b>OFF CHARACTERISTICS</b>  |   |      |     |      |      |
| Collector-Emitter Breakdown Voltage<br>( $I_C = -10\text{ mA}$ , $I_B = 0$ )                                  | $V_{(BR)CEO}$   | -45  | -   | -    | Vdc  |
| Collector-Emitter Breakdown Voltage<br>( $I_C = -100\text{ }\mu\text{A}$ , $I_E = 0$ )                        | $V_{(BR)CES}$   | -50  | -   | -    | Vdc  |
| Emitter-Base Breakdown Voltage<br>( $I_E = -10\text{ }\mu\text{A}$ , $I_C = 0$ )                              | $V_{(BR)EBO}$   | -5.0 | -   | -    | Vdc  |
| Collector Cutoff Current<br>( $V_{CB} = -30\text{ V}$ , $I_E = 0$ )   | $I_{CBO}$   | -    | -   | -100 | nAdc |
| Collector Cutoff Current<br>( $V_{CE} = -45\text{ V}$ , $V_{BE} = 0$ )  | $I_{CES}$   | -    | -   | -100 | nAdc |
| Emitter Cutoff Current<br>( $V_{EB} = -4.0\text{ V}$ , $I_C = 0$ )  | $I_{EBO}$   | -    | -   | -100 | nAdc |
| <b>ON CHARACTERISTICS</b>   |   |      |     |      |      |
| DC Current Gain<br>( $I_C = -100\text{ mA}$ , $V_{CE} = -1.0\text{ V}$ )                                      | $h_{FE}$  | 100  | -   | 630  | -    |
|   | BC327   | 100  | -   | 250  | -    |
|   | BC327-16  | 160  | -   | 400  | -    |
|   | BC327-25  | 250  | -   | 630  | -    |
|   | BC327-40  | 40   | -   | -    | -    |
|   | ( $I_C = -300\text{ mA}$ , $V_{CE} = -1.0\text{ V}$ ) | -    | -   | -    | -    |
| Base-Emitter On Voltage<br>( $I_C = -300\text{ mA}$ , $V_{CE} = -1.0\text{ V}$ )                              | $V_{BE(on)}$  | -    | -   | -1.2 | Vdc  |
| Collector-Emitter Saturation Voltage<br>( $I_C = -500\text{ mA}$ , $I_B = -50\text{ mA}$ )                    | $V_{CE(sat)}$   | -    | -   | -0.7 | Vdc  |
| <b>SMALL-SIGNAL CHARACTERISTICS</b>   |   |      |     |      |      |
| Output Capacitance<br>( $V_{CB} = -10\text{ V}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )                          | $C_{ob}$  | -    | 11  | -    | pF   |
| Current-Gain-Bandwidth Product<br>( $I_C = -10\text{ mA}$ , $V_{CE} = -5.0\text{ V}$ , $f = 100\text{ MHz}$ ) | $f_T$   | -    | 260 | -    | MHz  |

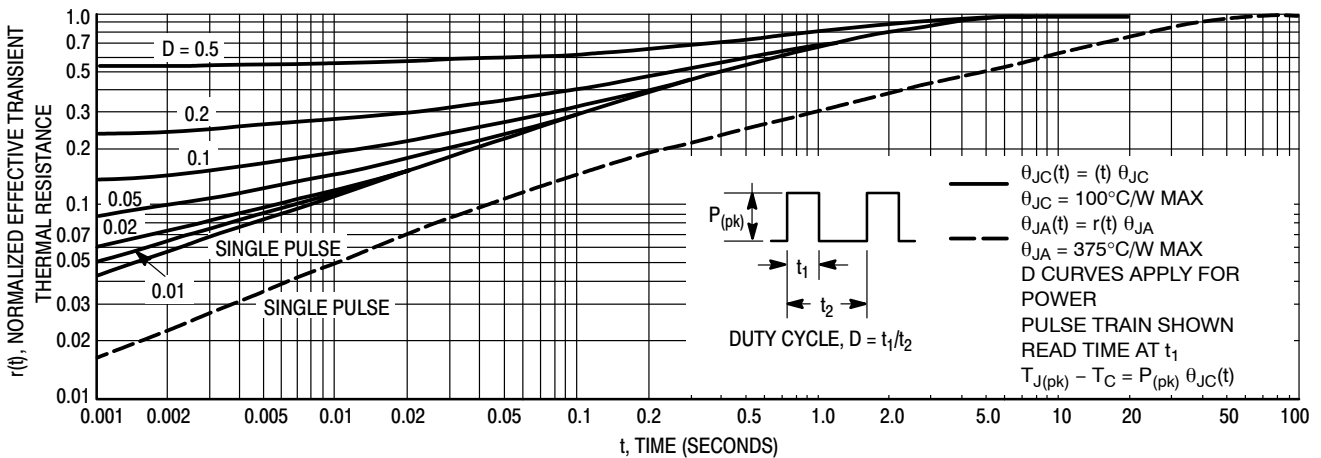


Figure 1. Thermal Response

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

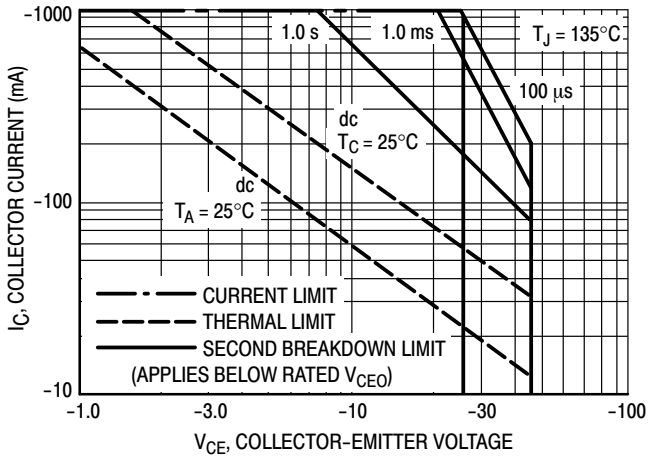


Figure 2. Active Region - Safe Operating Area

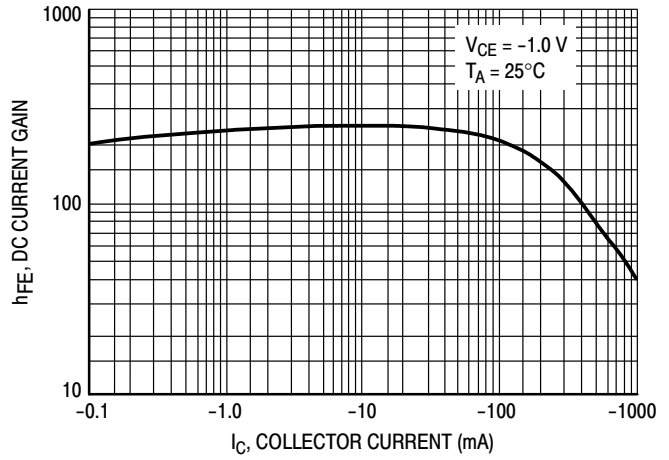


Figure 3. DC Current Gain

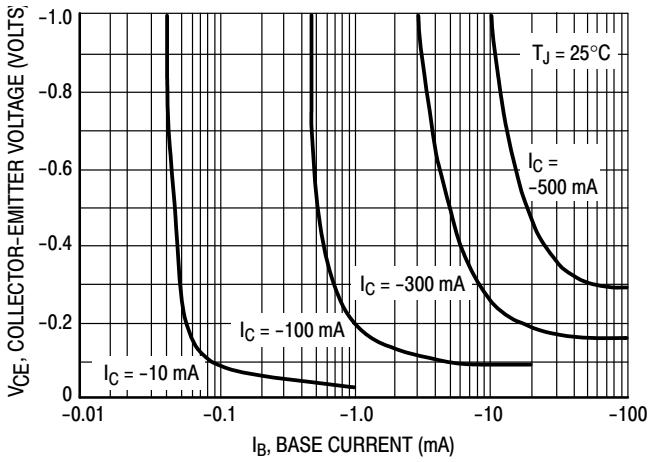


Figure 4. Saturation Region

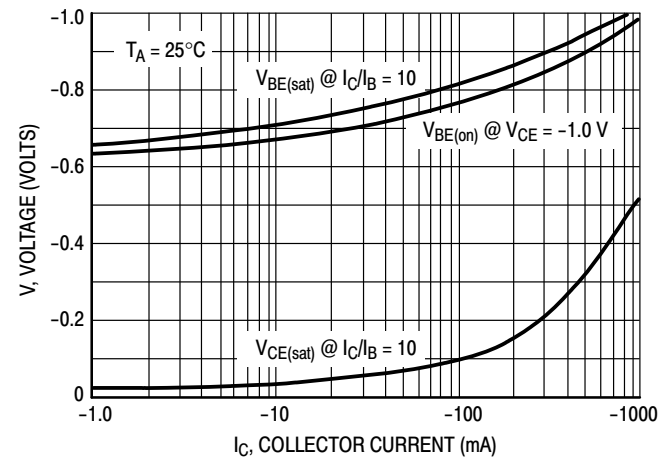


Figure 5. "On" Voltages

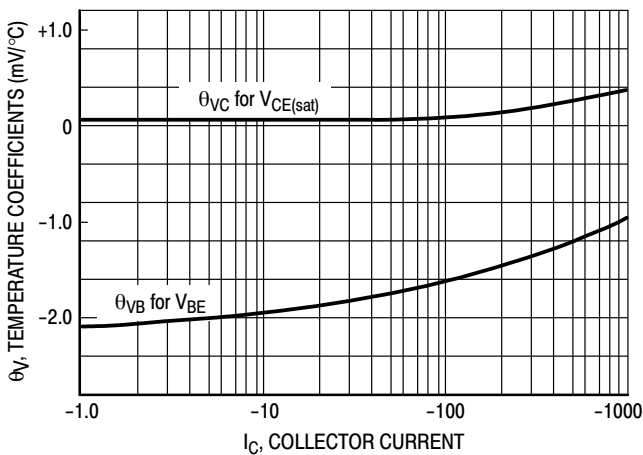


Figure 6. Temperature Coefficients

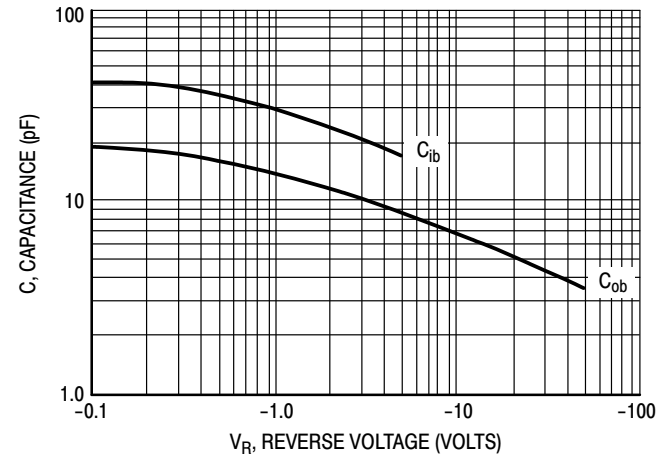


Figure 7. Capacitances

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

### ORDERING INFORMATION

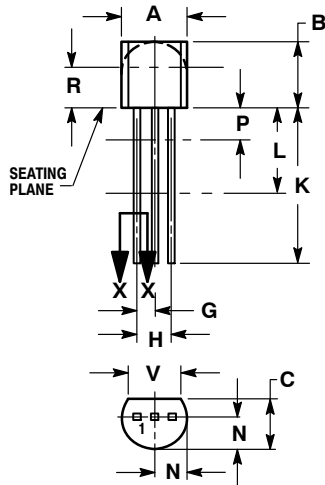
| Device Order Number | Specific Device Marking | Package Type                     | Shipping†              |
|---------------------|-------------------------|----------------------------------|------------------------|
| BC327G              | 7                       | TO-92 Straight Lead<br>(Pb-Free)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

†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.

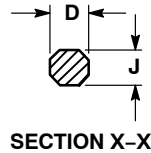
# BC327, BC327-16, BC327-25, BC327-40

## PACKAGE DIMENSIONS

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



STRAIGHT LEAD  
BULK PACK

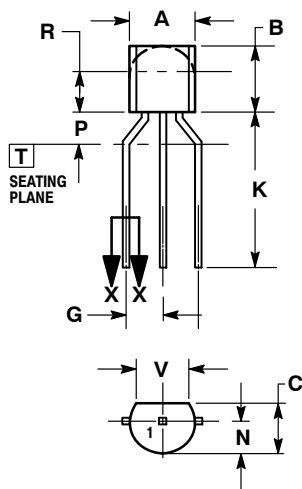


SECTION X-X

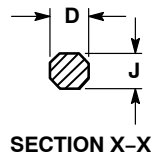
NOTES:

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



SECTION X-X

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        | ---  |

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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