

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

## Amplifier Transistors

### PNP Silicon

#### Features

- Pb-Free Packages are Available\*

#### MAXIMUM RATINGS

| Rating                                                                                      | Symbol         | Value       | Unit                       |
|---------------------------------------------------------------------------------------------|----------------|-------------|----------------------------|
| Collector – Emitter Voltage                                                                 | $V_{CEO}$      | -45         | Vdc                        |
| Collector – Base Voltage                                                                    | $V_{CES}$      | -50         | Vdc                        |
| Collector – Emitter Voltage                                                                 | $V_{EBO}$      | -5.0        | Vdc                        |
| Collector Current – Continuous                                                              | $I_C$          | -800        | mA <sub>dc</sub>           |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}$<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

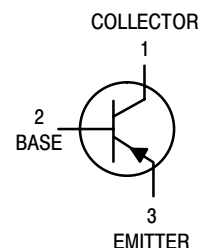
| Characteristic                          | Symbol          | Max  | Unit                      |
|-----------------------------------------|-----------------|------|---------------------------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 200  | $^\circ\text{C}/\text{W}$ |
| Thermal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

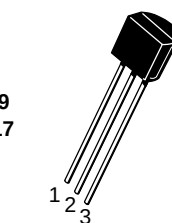


ON Semiconductor®

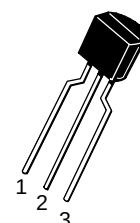
<http://onsemi.com>



TO-92  
CASE 29  
STYLE 17

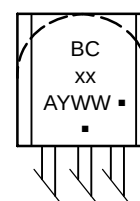


STRAIGHT LEAD  
BULK PACK



BENT LEAD  
TAPE & REEL  
AMMO PACK

#### MARKING DIAGRAM



BCxx = 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<br>(I <sub>C</sub> = –10 mA, I <sub>B</sub> = 0)                                                                                               | V <sub>(BR)CEO</sub> | –45                            | –                     | –                             | Vdc  |
| Collector – Emitter Breakdown Voltage<br>(I <sub>C</sub> = –100 μA, I <sub>E</sub> = 0)                                                                                              | V <sub>(BR)CES</sub> | –50                            | –                     | –                             | Vdc  |
| Emitter – Base Breakdown Voltage<br>(I <sub>E</sub> = –10 μA, I <sub>C</sub> = 0)                                                                                                    | V <sub>(BR)EBO</sub> | –5.0                           | –                     | –                             | Vdc  |
| Collector Cutoff Current<br>(V <sub>CB</sub> = –30 V, I <sub>E</sub> = 0)                                                                                                            | I <sub>CBO</sub>     | –                              | –                     | –100                          | nAdc |
| Collector Cutoff Current<br>(V <sub>CE</sub> = –45 V, V <sub>BE</sub> = 0)                                                                                                           | I <sub>CES</sub>     | –                              | –                     | –100                          | nAdc |
| Emitter Cutoff Current<br>(V <sub>EB</sub> = –4.0 V, I <sub>C</sub> = 0)                                                                                                             | I <sub>EBO</sub>     | –                              | –                     | –100                          | nAdc |
| ON CHARACTERISTICS                                                                                                                                                                   |                      |                                |                       |                               |      |
| DC Current Gain<br>(I <sub>C</sub> = –100 mA, V <sub>CE</sub> = –1.0 V)<br><br>BC327<br>BC327–16<br>BC327–25<br>BC327–40<br><br>(I <sub>C</sub> = –300 mA, V <sub>CE</sub> = –1.0 V) | h <sub>FE</sub>      | 100<br>100<br>160<br>250<br>40 | –<br>–<br>–<br>–<br>– | 630<br>250<br>400<br>630<br>– | –    |
| Base – Emitter On Voltage<br>(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<br>(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<br>(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<br>(I <sub>C</sub> = –10 mA, V <sub>CE</sub> = –5.0 V, f = 100 MHz)                                                                               | f <sub>T</sub>       | –                              | 260                   | –                             | MHz  |

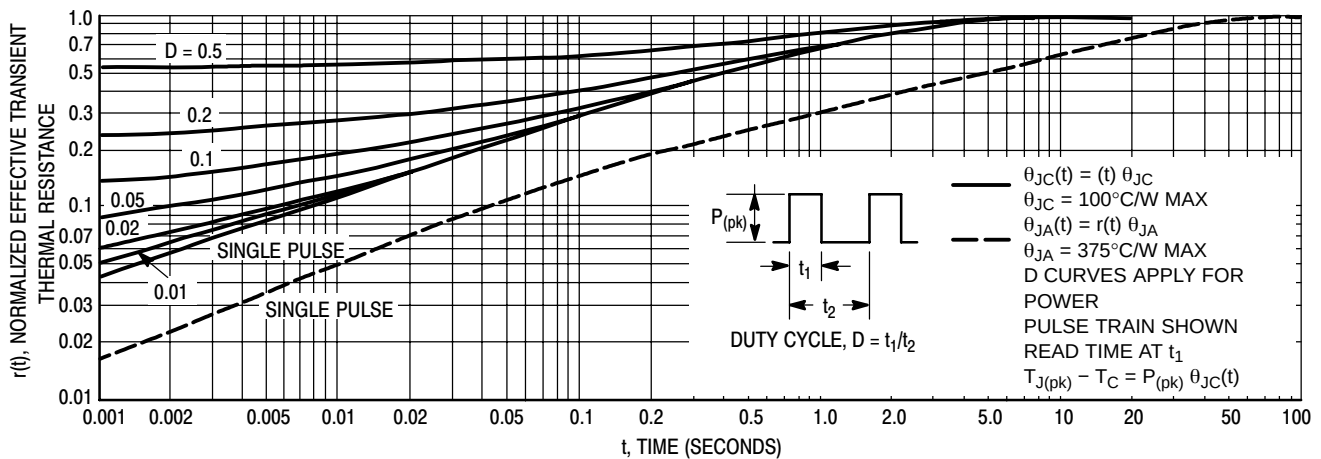


Figure 1. Thermal Response

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

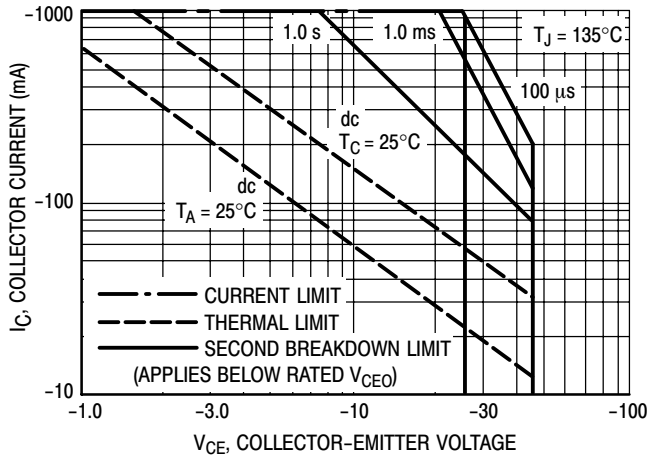


Figure 2. Active Region - Safe Operating Area

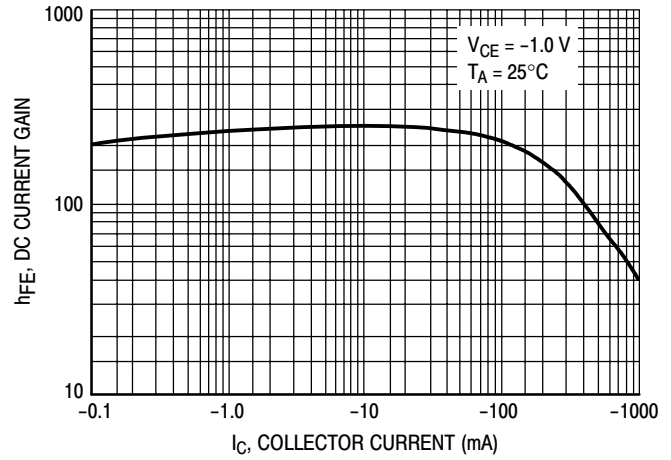


Figure 3. DC Current Gain

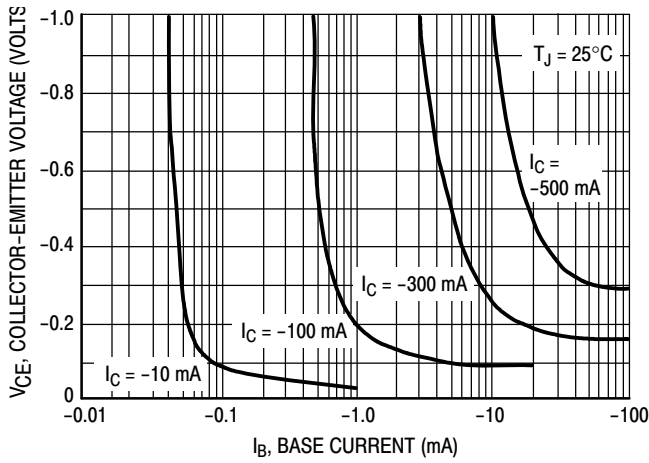


Figure 4. Saturation Region

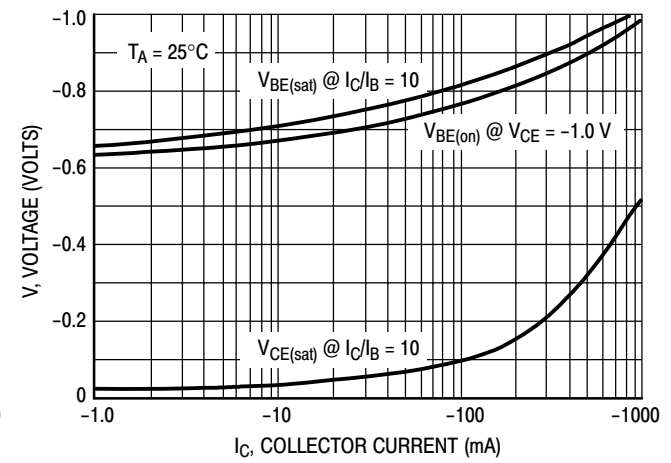


Figure 5. "On" Voltages

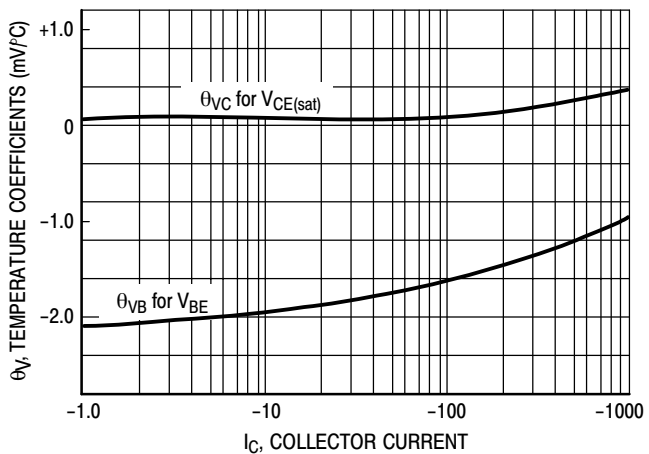


Figure 6. Temperature Coefficients

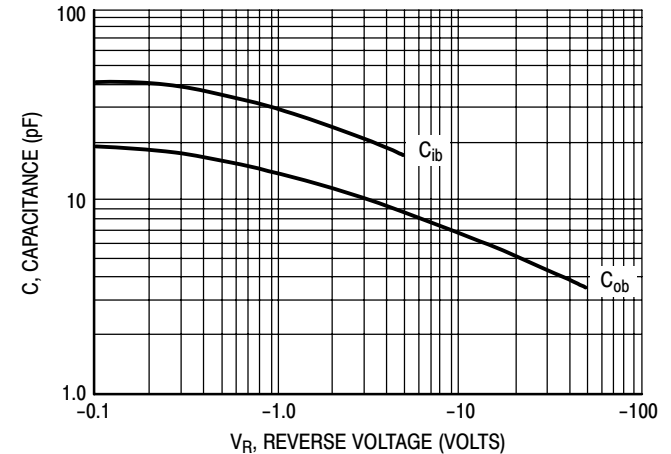


Figure 7. Capacitances

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

### ORDERING INFORMATION

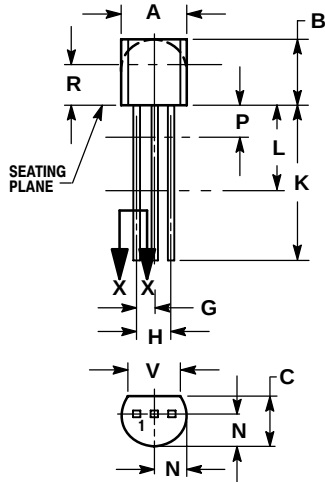
| Device Order Number | Specific Device Marking | Package Type                     | Shipping <sup>†</sup>  |
|---------------------|-------------------------|----------------------------------|------------------------|
| BC327G              | 7                       | TO-92 Straight Lead<br>(Pb-Free) | 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 |
| BC327-40ZL1         | 7-40                    | TO-92 Bent Lead                  | 2000 / Tape & Ammo Box |
| BC327-40ZL1G        | 7-40                    | TO-92 Bent Lead<br>(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.

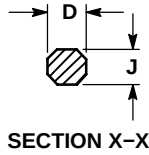
# BC327, BC327-16, BC327-25, BC327-40

## PACKAGE DIMENSIONS

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



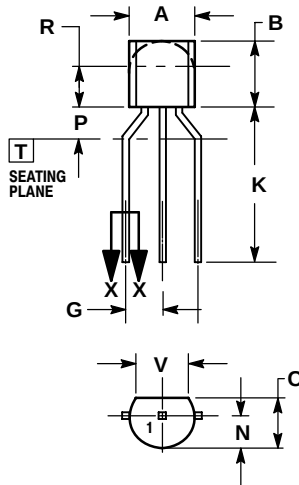
STRAIGHT LEAD  
BULK PACK



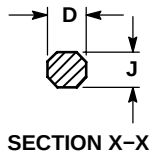
### NOTES:

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        | ---  |

### STYLE 17:

- PIN 1. COLLECTOR
- BASE
- EMITTER

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## 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: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local Sales Representative