

# General Purpose Transistors

## PNP Silicon

### BC807-16L, BC807-25L, BC807-40L

#### Features

- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### MAXIMUM RATINGS

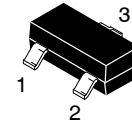
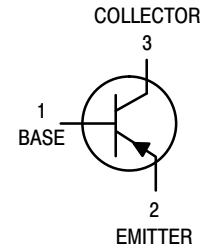
| Rating                         | Symbol    | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector – Emitter Voltage    | $V_{CEO}$ | -45   | V    |
| Collector – Base Voltage       | $V_{CBO}$ | -50   | V    |
| Emitter – Base Voltage         | $V_{EBO}$ | -6.0  | V    |
| Collector Current – Continuous | $I_C$     | -500  | mAdc |

#### THERMAL CHARACTERISTICS

| Characteristic                                                                                                   | Symbol          | Max         | Unit                       |
|------------------------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------------|
| Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$        | $P_D$           | 225<br>1.8  | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient (Note 1)                                                                 | $R_{\theta JA}$ | 436         | $^\circ\text{C}/\text{W}$  |
| Total Device Dissipation Alumina Substrate, (Note 1) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 300<br>2.4  | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient (Note 2)                                                                 | $R_{\theta JA}$ | 417         | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature                                                                                 | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$           |

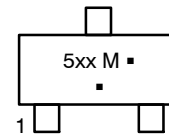
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-4 Board, 1 oz. Cu, 100mm<sup>2</sup>.
2. Alumina = 0.4 x 0.3 x 0.024 in 99.5% alumina.



SOT-23  
CASE 318  
STYLE 6

#### MARKING DIAGRAM



5xx = Device Code  
 xx = A1, B1, or C  
 M = Date Code\*  
 ■ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation and/or overbar may vary depending upon manufacturing location.

#### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

# BC807-16L, BC807-25L, BC807-40L

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)

| Characteristic                                                                                             | Symbol               | Min  | Typ | Max          | Unit     |
|------------------------------------------------------------------------------------------------------------|----------------------|------|-----|--------------|----------|
| <b>OFF CHARACTERISTICS</b>                                                                                 |                      |      |     |              |          |
| Collector–Emitter Breakdown Voltage<br>(I <sub>C</sub> = –10 mA)                                           | V <sub>(BR)CEO</sub> | –45  | –   | –            | V        |
| Collector–Emitter Breakdown Voltage<br>(V <sub>EB</sub> = 0, I <sub>C</sub> = –10 μA)                      | V <sub>(BR)CES</sub> | –50  | –   | –            | V        |
| Emitter–Base Breakdown Voltage<br>(I <sub>E</sub> = –1.0 μA)                                               | V <sub>(BR)EBO</sub> | –6.0 | –   | –            | V        |
| Collector Cutoff Current<br>(V <sub>CB</sub> = –20 V)<br>(V <sub>CB</sub> = –20 V, T <sub>J</sub> = 150°C) | I <sub>CBO</sub>     | –    | –   | –100<br>–5.0 | nA<br>μA |

## ON CHARACTERISTICS

|                                                                                                                                     |                                                                                                |                         |                  |                        |   |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|------------------|------------------------|---|
| DC Current Gain<br>(I <sub>C</sub> = –100 mA, V <sub>CE</sub> = –1.0 V)<br><br>(I <sub>C</sub> = –500 mA, V <sub>CE</sub> = –1.0 V) | BC807–16, SBC80–16L<br>BC807–25, SBC807–25L<br>BC807–40, SBC807–40L<br><br><br>h <sub>FE</sub> | 100<br>160<br>250<br>40 | –<br>–<br>–<br>– | 250<br>400<br>600<br>– | – |
| Collector–Emitter Saturation Voltage<br>(I <sub>C</sub> = –500 mA, I <sub>B</sub> = –50 mA)                                         | V <sub>CE(sat)</sub>                                                                           | –                       | –                | –0.7                   | V |
| Base–Emitter On Voltage<br>(I <sub>C</sub> = –500 mA, V <sub>CE</sub> = –1.0 V)                                                     | V <sub>BE(on)</sub>                                                                            | –                       | –                | –1.2                   | V |

## SMALL-SIGNAL CHARACTERISTICS

|                                                                                                        |                  |     |    |   |     |
|--------------------------------------------------------------------------------------------------------|------------------|-----|----|---|-----|
| Current–Gain – Bandwidth Product<br>(I <sub>C</sub> = –10 mA, V <sub>CE</sub> = –5.0 Vdc, f = 100 MHz) | f <sub>T</sub>   | 100 | –  | – | MHz |
| Output Capacitance<br>(V <sub>CB</sub> = –10 V, f = 1.0 MHz)                                           | C <sub>obo</sub> | –   | 10 | – | pF  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## ORDERING INFORMATION

| Device         | Specific Marking | Package             | Shipping <sup>†</sup> |
|----------------|------------------|---------------------|-----------------------|
| BC807-16LT1G   | 5A1              | SOT-23<br>(Pb-Free) | 3000 / Tape & Reel    |
| SBC807-16LT1G* |                  |                     |                       |
| BC807-16LT3G   | 5A1              |                     | 10,000 / Tape & Reel  |
| SBC807-16LT3G* |                  |                     |                       |
| BC807-25LT1G   | 5B1              |                     | 3000 / Tape & Reel    |
| SBC807-25LT1G* |                  |                     |                       |
| BC807-25LT3G   | 5B1              |                     | 10,000 / Tape & Reel  |
| SBC807-25LT3G* |                  |                     |                       |
| BC807-40LT1G   | 5C               |                     | 3000 / Tape & Reel    |
| SBC807-40LT1G* |                  |                     |                       |
| BC807-40LT3G   | 5C               |                     | 10,000 / Tape & Reel  |
| SBC807-40LT3G* |                  |                     |                       |

<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.

\*S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

TYPICAL CHARACTERISTICS – BC807-16LT1

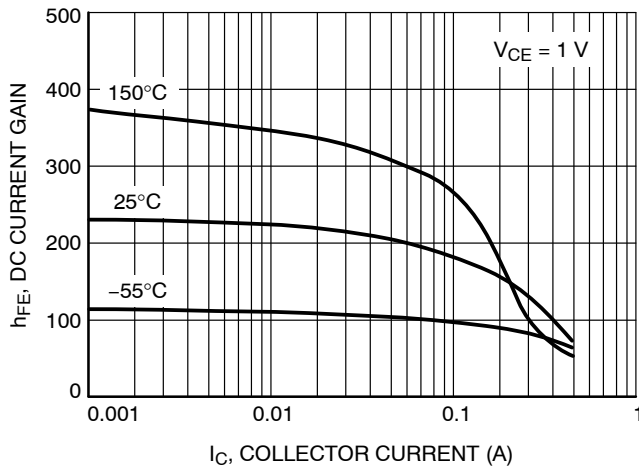


Figure 1. DC Current Gain vs. Collector Current

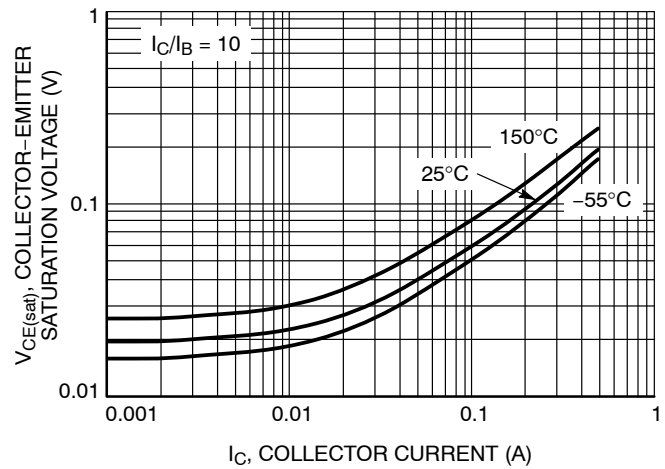


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

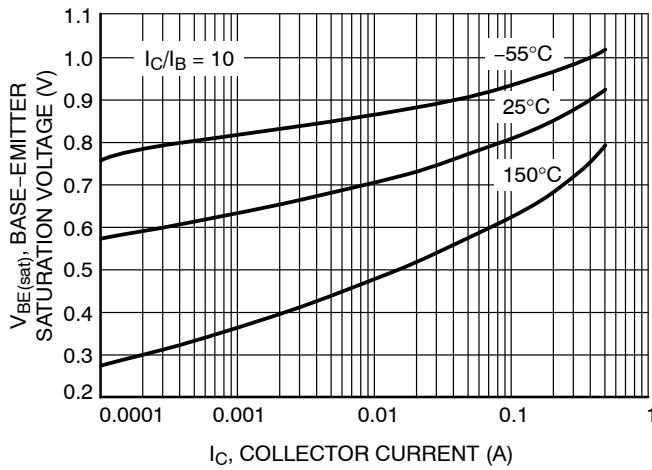


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

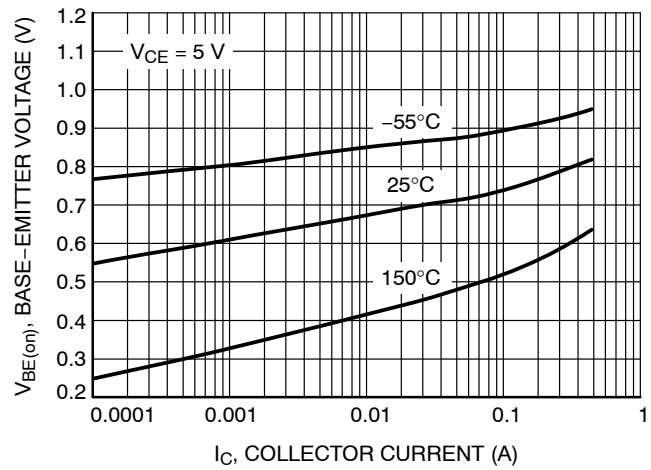


Figure 4. Base Emitter Voltage vs. Collector Current

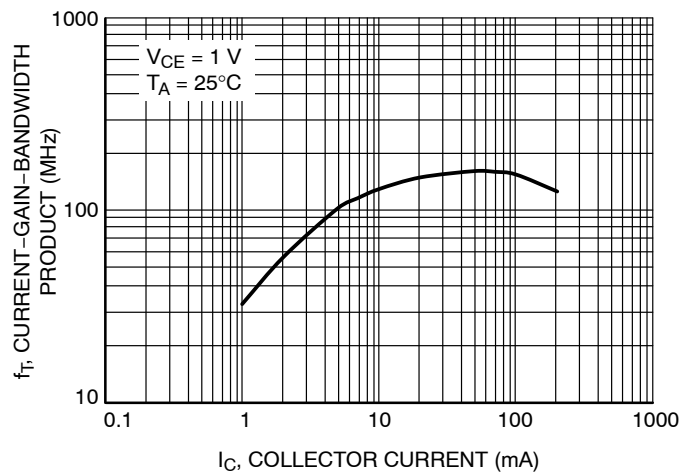


Figure 5. Current Gain Bandwidth Product vs. Collector Current

# BC807-16L, BC807-25L, BC807-40L

## TYPICAL CHARACTERISTICS – BC807-16LT1

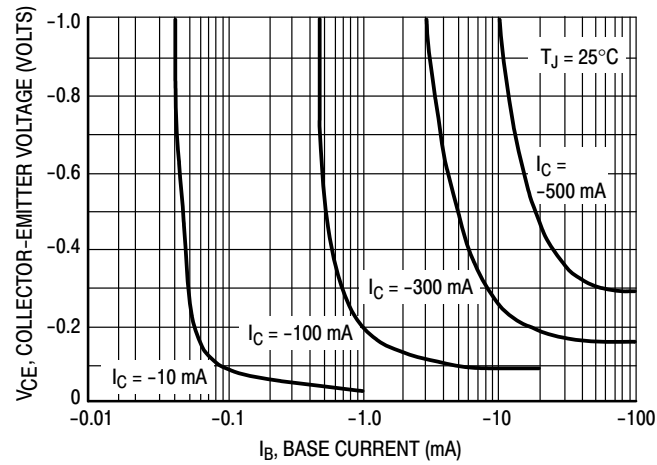


Figure 6. Saturation Region

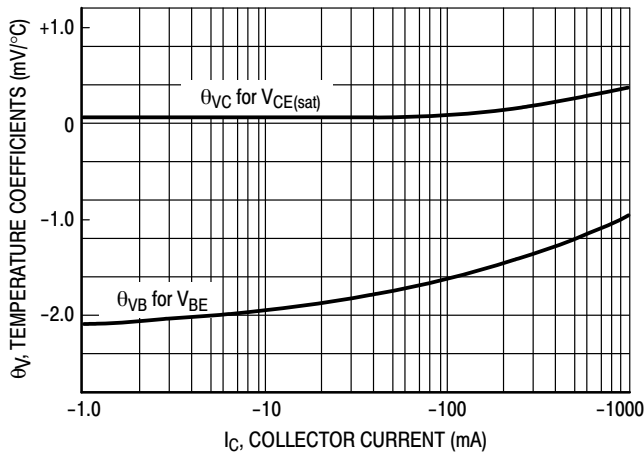


Figure 7. Temperature Coefficients

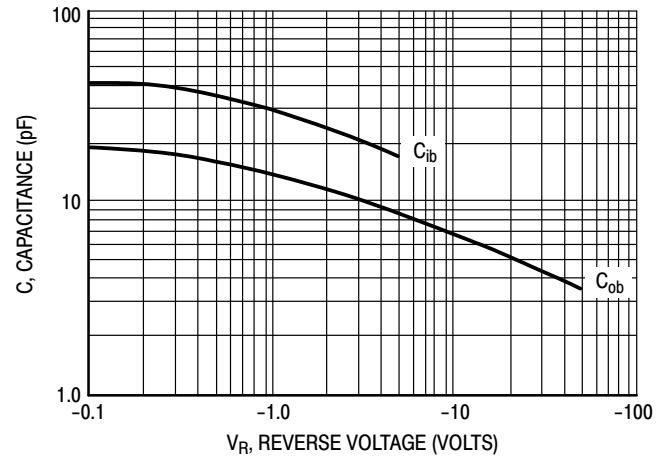


Figure 8. Capacitances

TYPICAL CHARACTERISTICS – BC807-25LT1

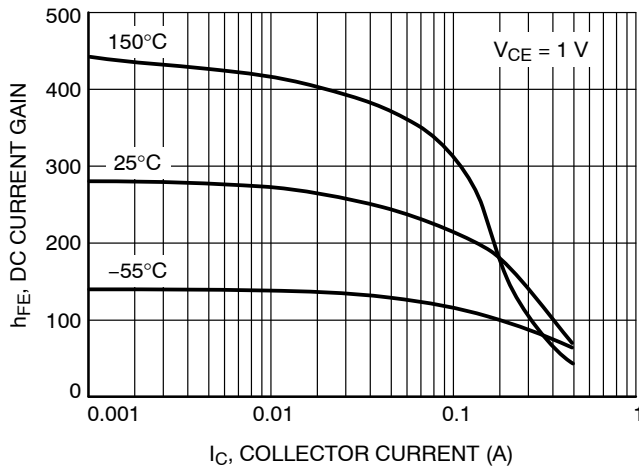


Figure 9. DC Current Gain vs. Collector Current

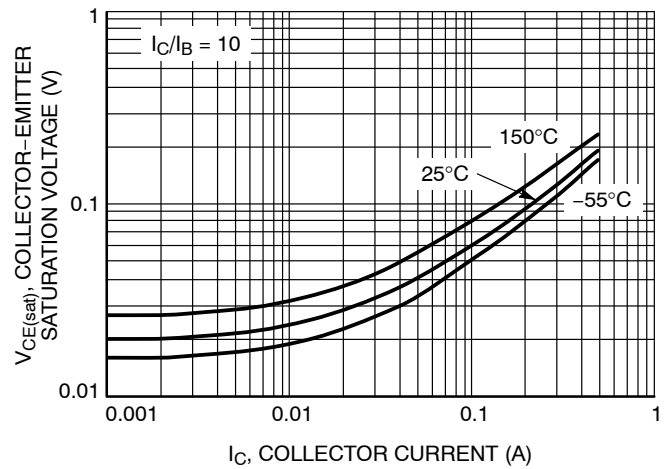


Figure 10. Collector Emitter Saturation Voltage vs. Collector Current

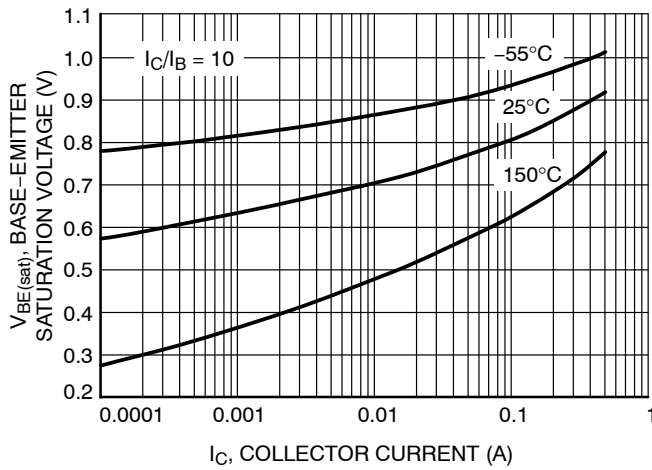


Figure 11. Base Emitter Saturation Voltage vs. Collector Current

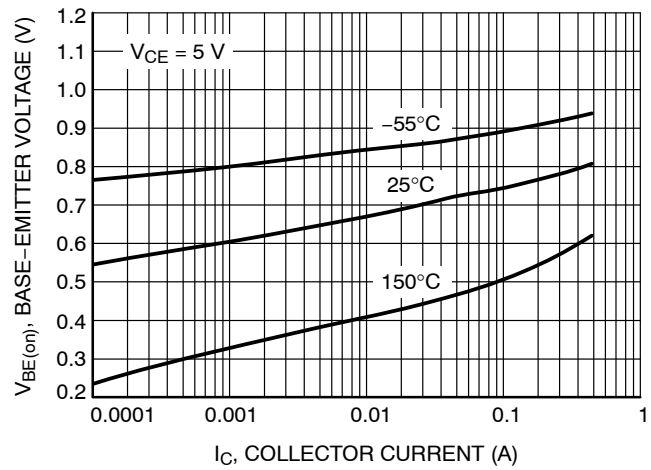


Figure 12. Base Emitter Voltage vs. Collector Current

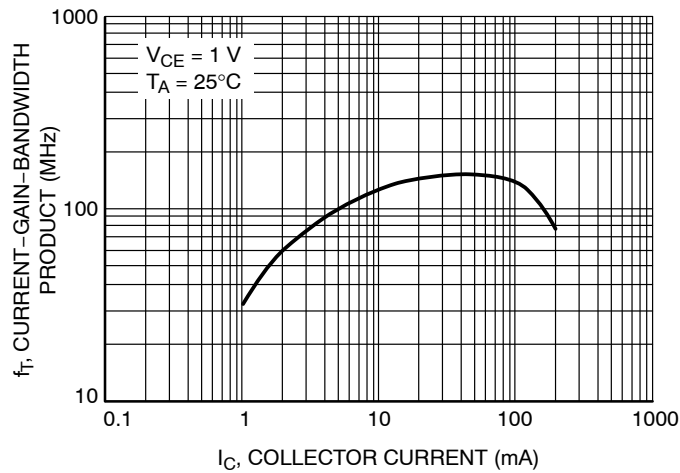


Figure 13. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS – BC807-25LT1

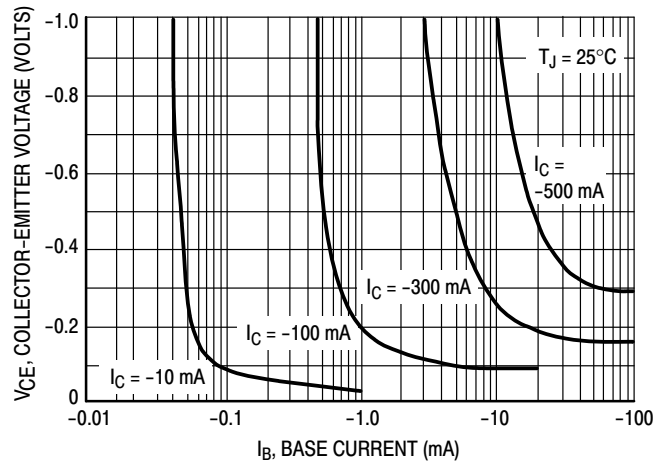


Figure 14. Saturation Region

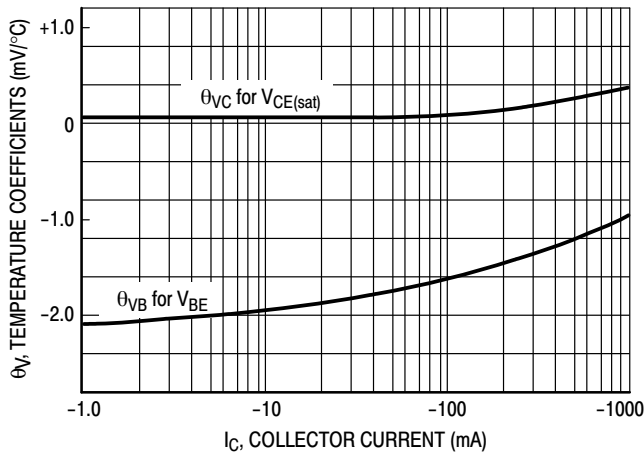


Figure 15. Temperature Coefficients

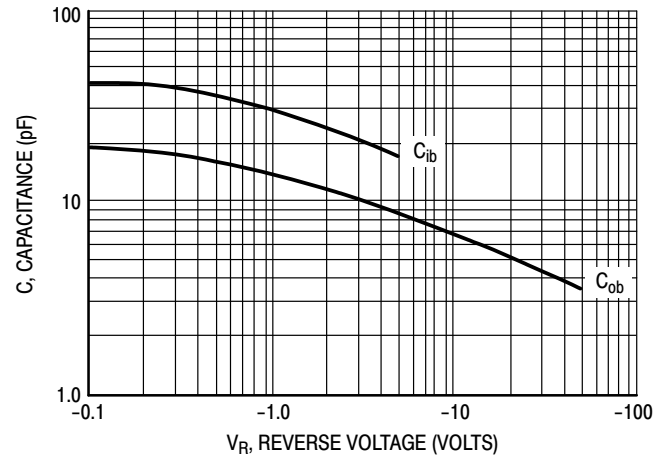
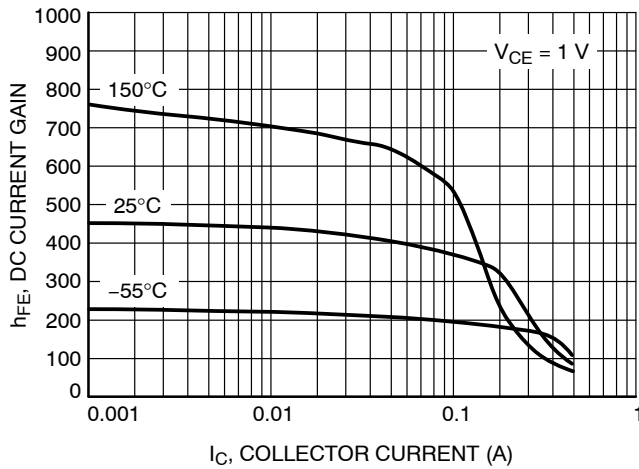


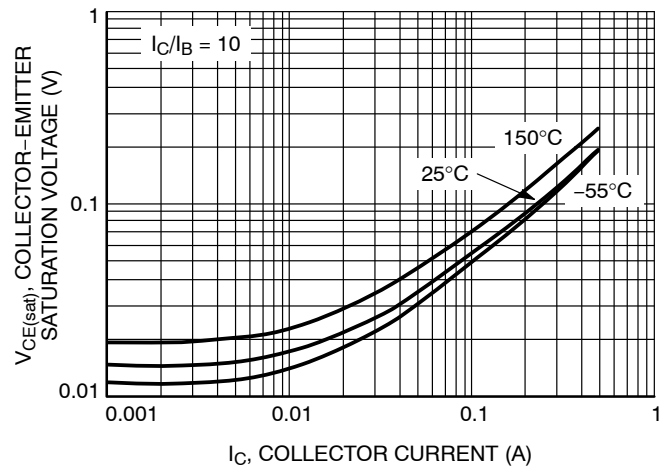
Figure 16. Capacitances

# BC807-16L, BC807-25L, BC807-40L

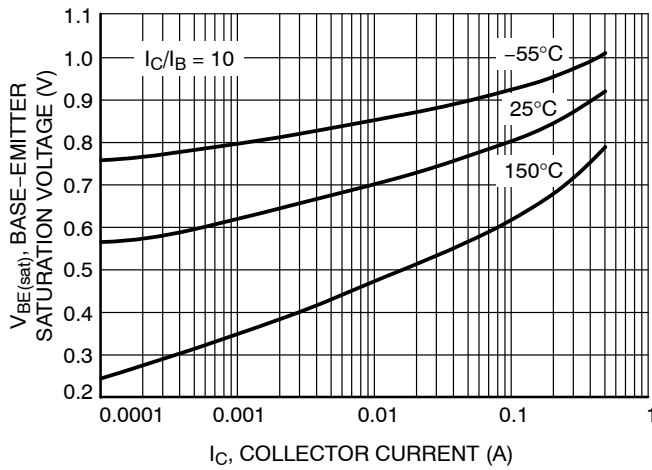
## TYPICAL CHARACTERISTICS – BC807-40LT1



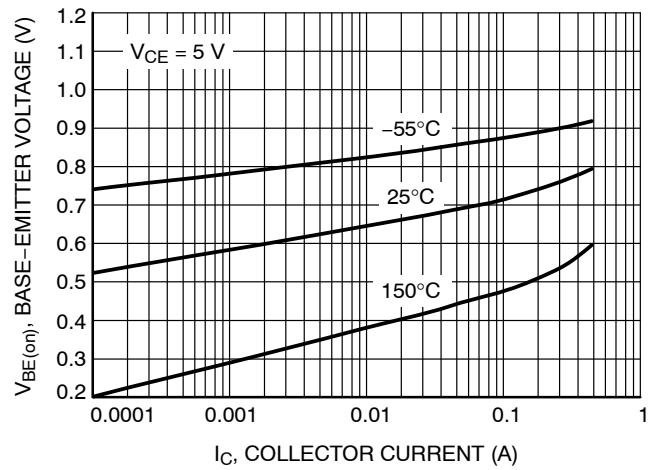
**Figure 17. DC Current Gain vs. Collector Current**



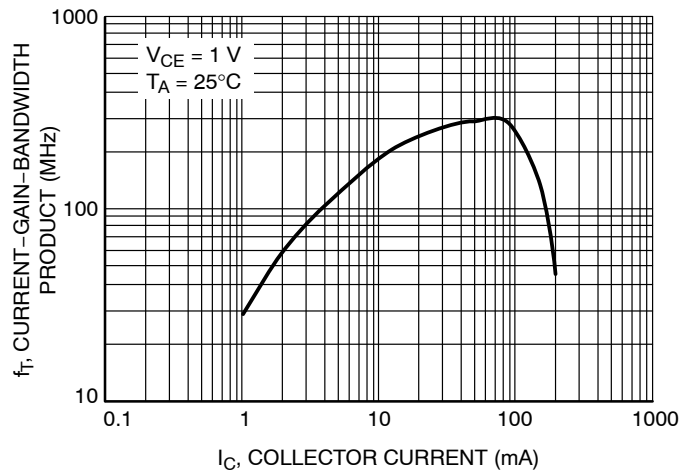
**Figure 18. Collector Emitter Saturation Voltage vs. Collector Current**



**Figure 19. Base Emitter Saturation Voltage vs. Collector Current**



**Figure 20. Base Emitter Voltage vs. Collector Current**



**Figure 21. Current Gain Bandwidth Product vs. Collector Current**

TYPICAL CHARACTERISTICS – BC807-40LT1

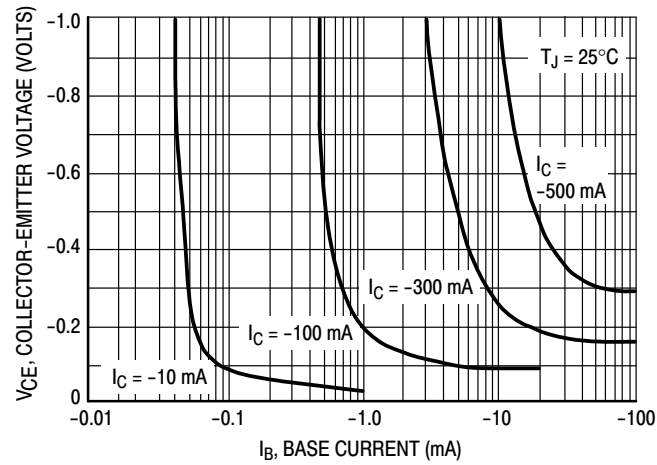


Figure 22. Saturation Region

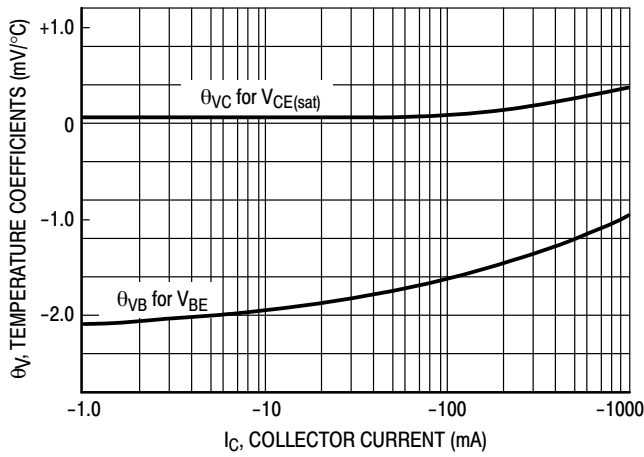


Figure 23. Temperature Coefficients

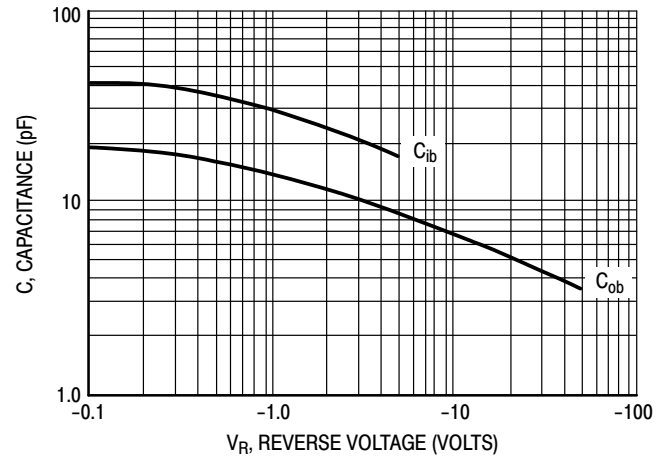
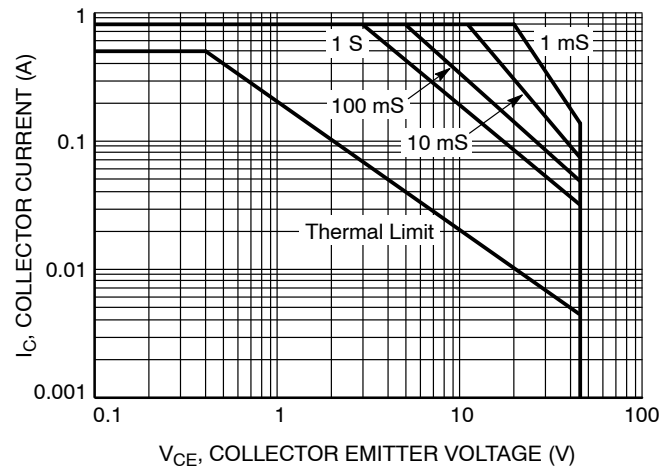


Figure 24. Capacitances

## BC807-16L, BC807-25L, BC807-40L

### TYPICAL CHARACTERISTICS – BC807-16LT1, BC807-25LT1, BC807-40LT1



**Figure 25. Safe Operating Area**

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