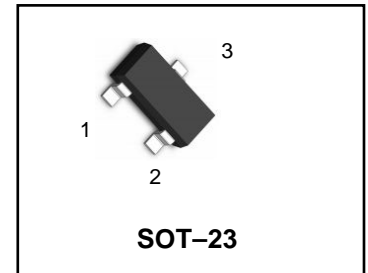


## General Purpose Transistors PNP Silicon

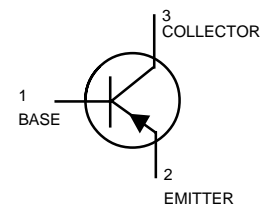
### FEATURE

- Collector current capability  $I_C = -500$  mA.
- Collector-emitter voltage  $V_{CEO(max)} = -45$  V.
- General purpose switching and amplification.
- PNP complement: LBC807 Series.
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



### DEVICE MARKING AND ORDERING INFORMATION

| Device                 | Marking | Shipping       |
|------------------------|---------|----------------|
| BC807-16<br>S-BC807-16 | 5A1     | 3000/Tape&Reel |
| BC807-25<br>S-BC807-25 | 5B1     | 3000/Tape&Reel |
| BC807-40<br>S-BC807-40 | 5C1     | 3000/Tape&Reel |



### MAXIMUM RATINGS

| Rating                         | Symbol    | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector–Emitter Voltage      | $V_{CEO}$ | -45   | V    |
| Collector–Base Voltage         | $V_{CBO}$ | -50   | V    |
| Emitter–Base Voltage           | $V_{EBO}$ | -5.0  | V    |
| Collector Current — Continuous | $I_C$     | -500  | mAdc |

### THERMAL CHARACTERISTICS

| Characteristic   | Symbol           | Max         | Unit                       |
|--|------------------|-------------|----------------------------|
| Total Device Dissipation FR-5 Board, (1)<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$        | $P_D$            | 225<br>1.8  | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient  | $R_{\theta JA}$  | 556         | $^\circ\text{C/W}$         |
| Total Device Dissipation<br>Alumina Substrate, (2) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$            | 300<br>2.4  | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient  | $R_{\theta JA}$  | 417         | $^\circ\text{C/W}$         |
| Junction and Storage Temperature   | $T_{J, T_{stg}}$ | -55 to +150 | $^\circ\text{C}$           |

1. FR-5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

**OFF CHARACTERISTICS**

|   |               |      |   |      |               |
|---|---------------|------|---|------|---------------|
| Collector–Emitter Breakdown Voltage<br>( $I_C = -10\text{ mA}$ )                | $V_{(BR)CEO}$ | -45  | — | —    | V             |
| Collector–Emitter Breakdown Voltage<br>( $V_{EB} = 0, I_C = -10\ \mu\text{A}$ ) | $V_{(BR)CES}$ | -50  | — | —    | V             |
| Emitter–Base Breakdown Voltage<br>( $I_E = -1.0\ \mu\text{A}$ )                 | $V_{(BR)EBO}$ | -5.0 | — | —    | V             |
| Collector Cutoff Current<br>( $V_{CB} = -20\text{ V}$ )                         | $I_{CBO}$     | —    | — | -100 | nA            |
| ( $V_{CB} = -20\text{ V}, T_J = 150^\circ\text{C}$ )                            |               | —    | — | -5.0 | $\mu\text{A}$ |

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

**ON CHARACTERISTICS**

|   |               |     |   |      |   |
|---|---------------|-----|---|------|---|
| DC Current Gain<br>( $I_C = -100\text{ mA}, V_{CE} = -1.0\text{ V}$ )                   | $h_{FE}$      |     |   |      | — |
|   | BC807-16      | 100 | — | 250  |   |
|   | BC807-25      | 160 | — | 400  |   |
|   | BC807-40      | 250 | — | 600  |   |
| ( $I_C = -500\text{ mA}, V_{CE} = -1.0\text{ V}$ )                                      |               | 40  | — | —    |   |
| Collector–Emitter Saturation Voltage<br>( $I_C = -500\text{ mA}, I_B = -50\text{ mA}$ ) | $V_{CE(sat)}$ | —   | — | -0.7 | V |
| Base–Emitter On Voltage<br>( $I_C = -500\text{ mA}, V_{CE} = -1.0\text{ V}$ )           | $V_{BE(on)}$  | —   | — | -1.2 | V |

**SMALL-SIGNAL CHARACTERISTICS**

|  |           |     |    |   |     |
|--|-----------|-----|----|---|-----|
| Current–Gain — Bandwidth Product<br>( $I_C = -10\text{ mA}, V_{CE} = -5.0\text{ V}_{dc}, f = 100\text{ MHz}$ ) | $f_T$     | 100 | —  | — | MHz |
| Output Capacitance<br>( $V_{CB} = -10\text{ V}, f = 1.0\text{ MHz}$ )  | $C_{obo}$ | —   | 10 | — | pF  |

TYPICAL CHARACTERISTICS –BC807 –16

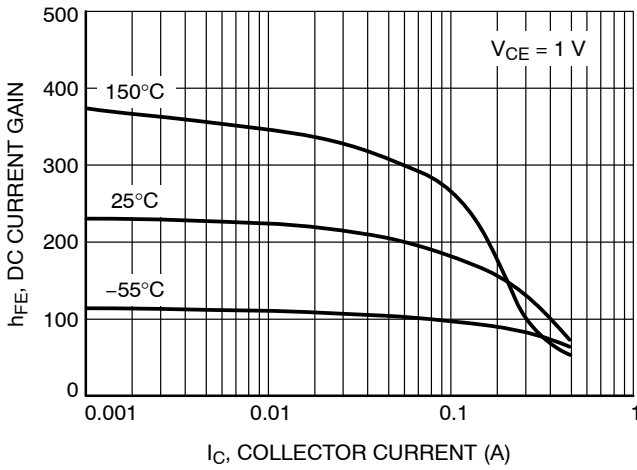


Figure 1. DC Current Gain vs. Collector Current

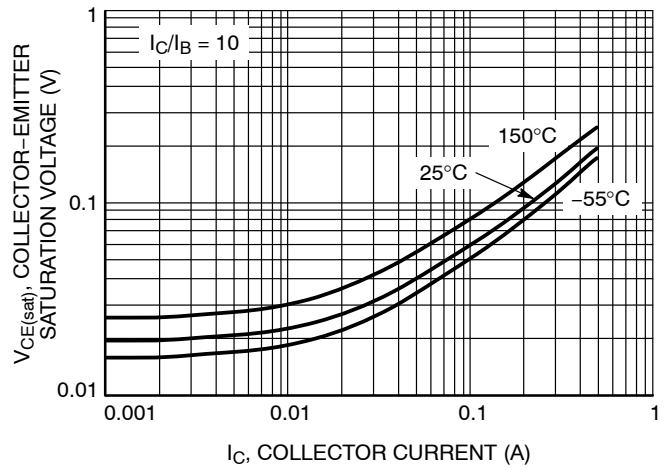


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

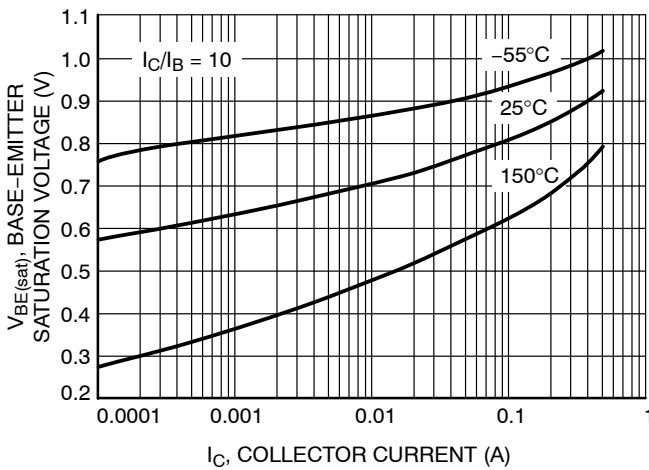


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

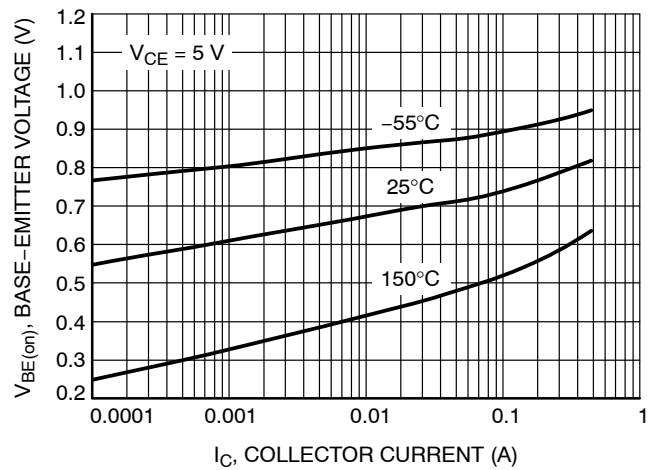


Figure 4. Base Emitter Voltage vs. Collector Current

TYPICAL CHARACTERISTICS -BC807 -16

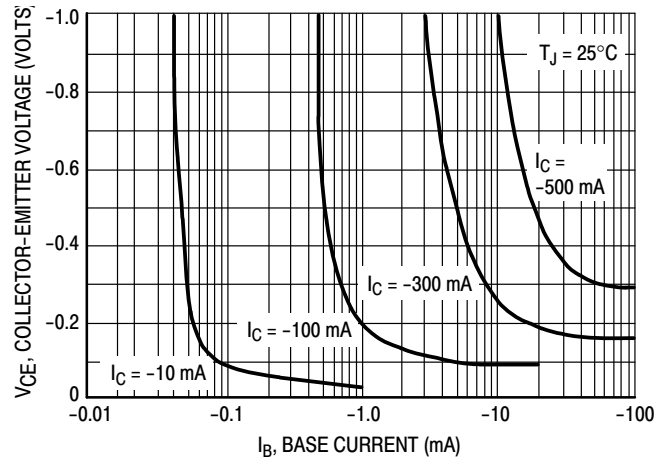


Figure 5. Saturation Region

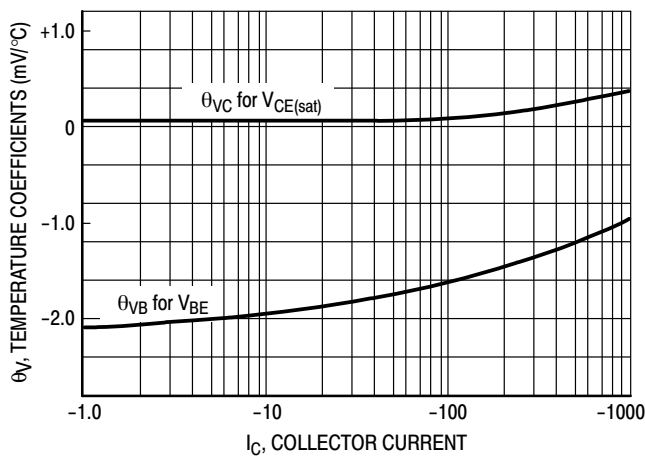


Figure 6. Temperature Coefficients

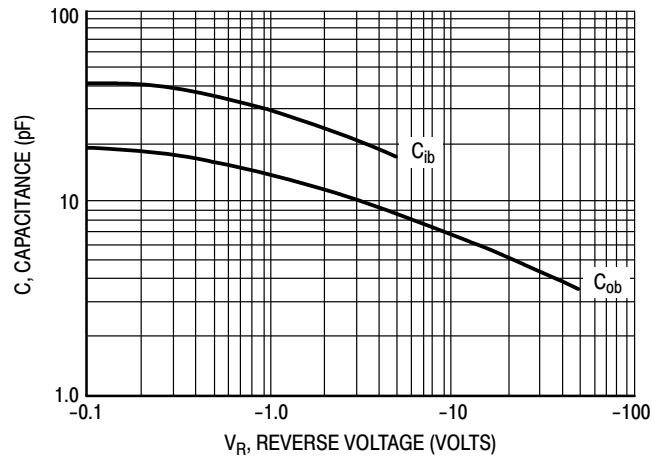


Figure 7. Capacitances

TYPICAL CHARACTERISTICS –BC807 –25

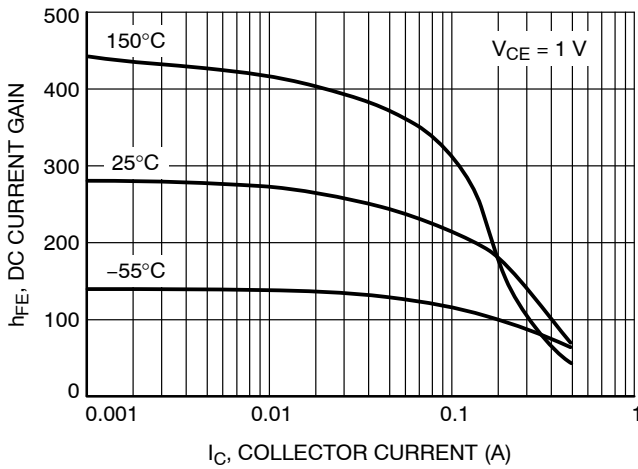


Figure 8. DC Current Gain vs. Collector Current

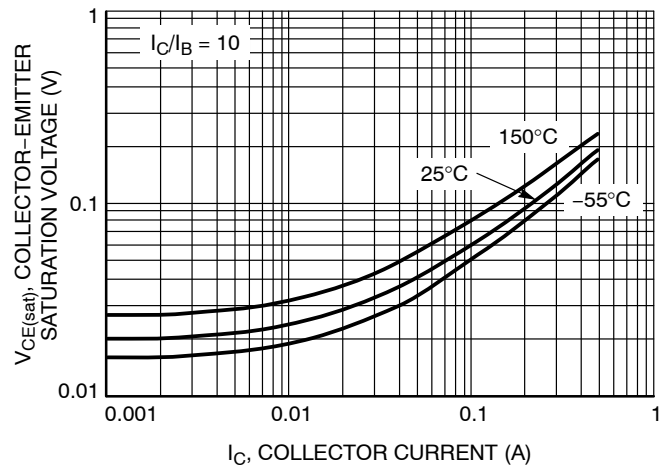


Figure 9. Collector Emitter Saturation Voltage vs. Collector Current

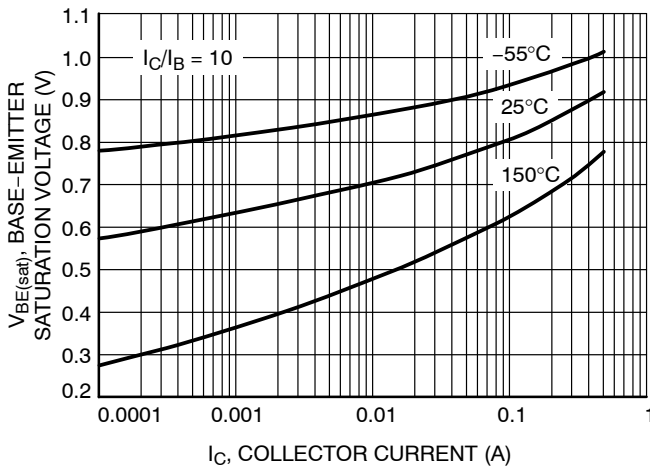


Figure 10. Base Emitter Saturation Voltage vs. Collector Current

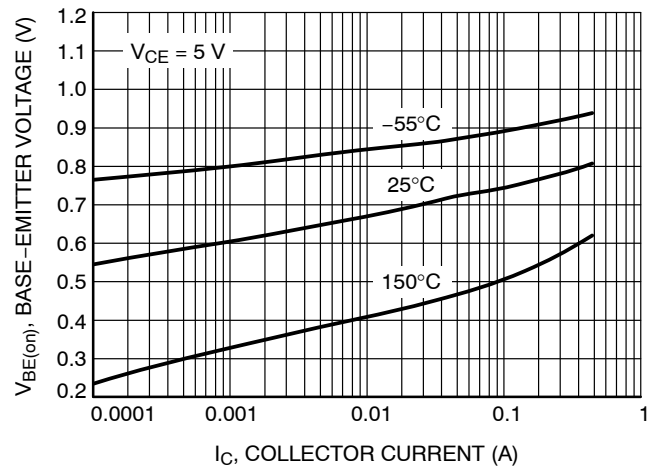


Figure 11. Base Emitter Voltage vs. Collector Current

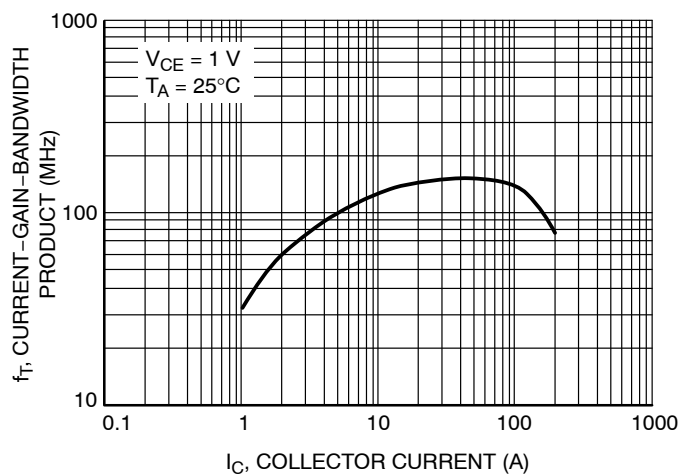


Figure 12. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS -BC807 -25

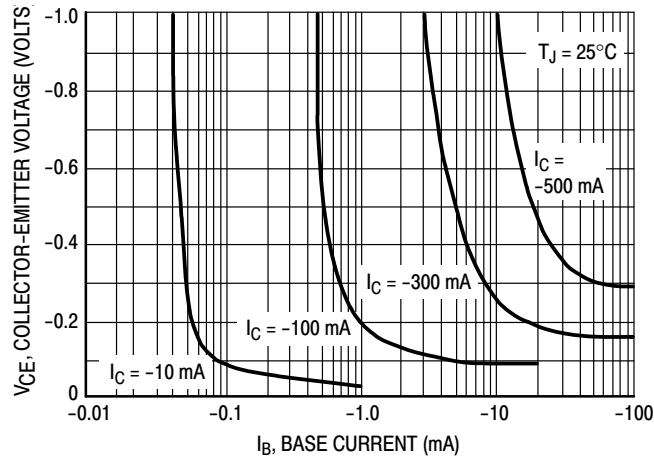


Figure 13. Saturation Region

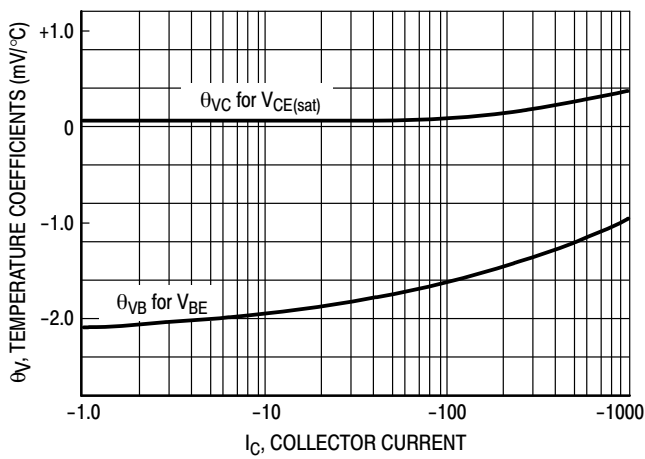


Figure 14. Temperature Coefficients

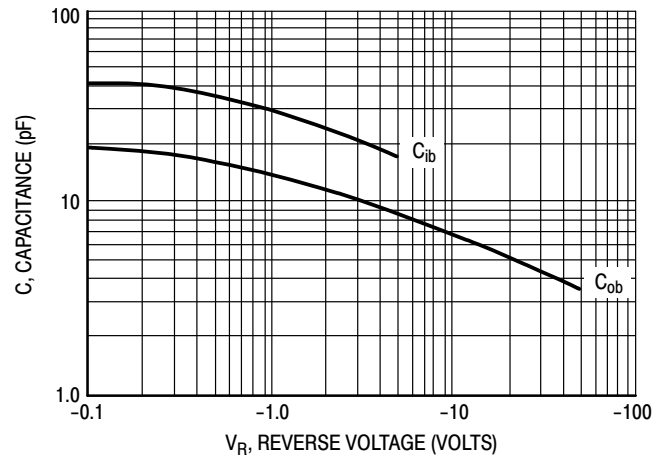


Figure 15. Capacitances

TYPICAL CHARACTERISTICS -BC807 -40

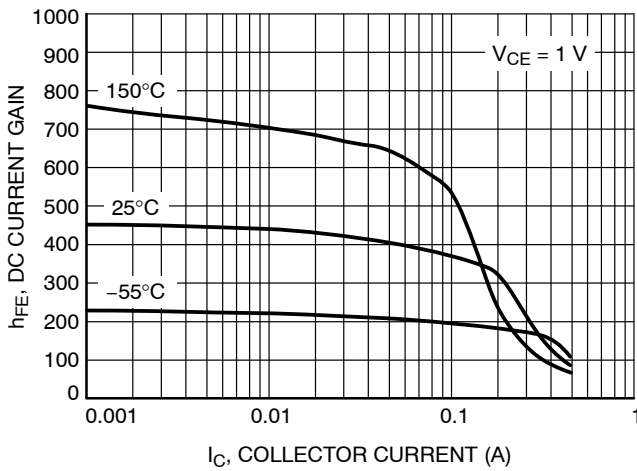


Figure 16. DC Current Gain vs. Collector Current

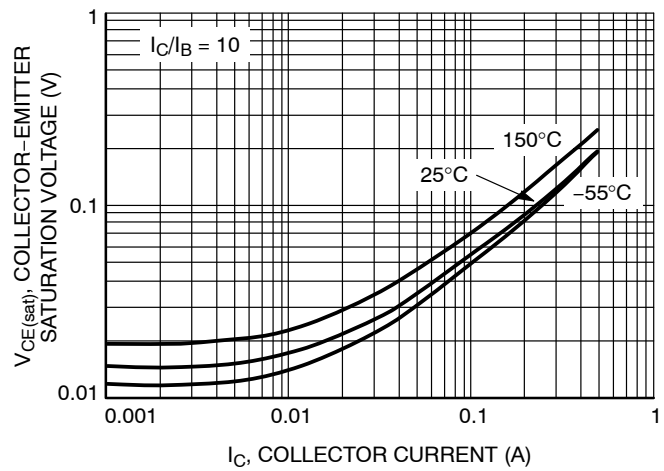


Figure 17. Collector Emitter Saturation Voltage vs. Collector Current

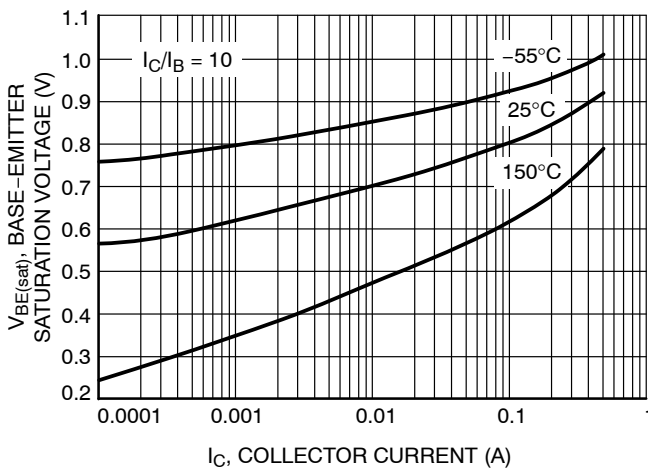


Figure 18. Base Emitter Saturation Voltage vs. Collector Current

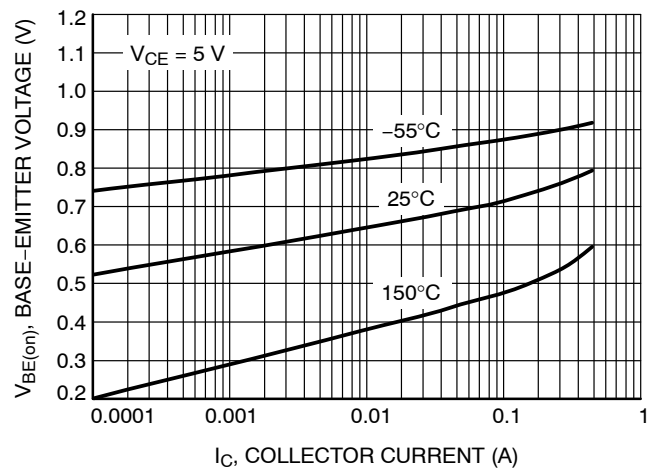


Figure 19. Base Emitter Voltage vs. Collector Current

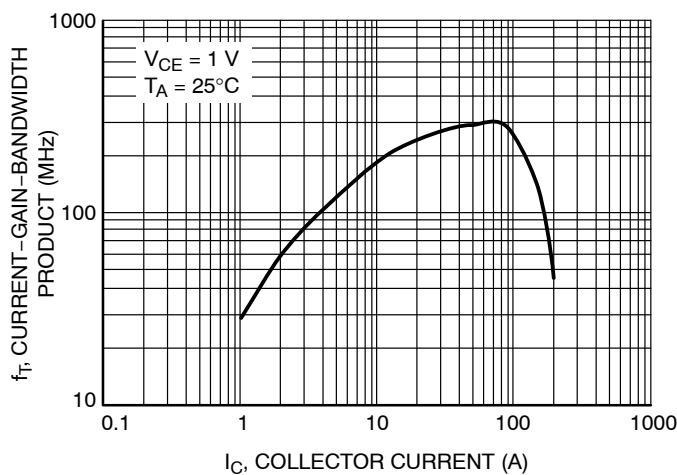


Figure 20. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS -BC807 -40

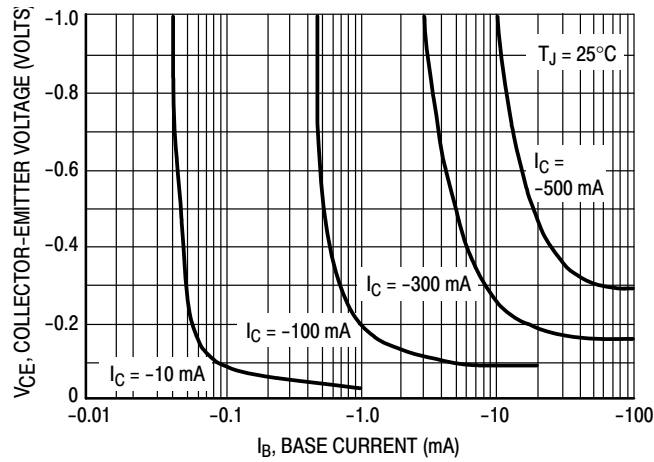


Figure 21. Saturation Region

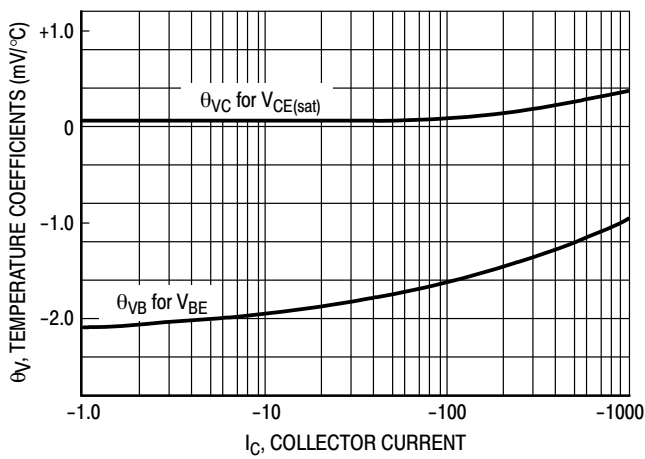


Figure 22. Temperature Coefficients

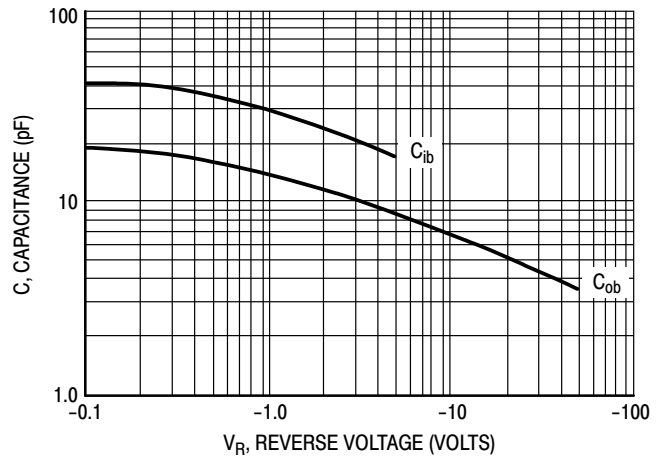


Figure 23. Capacitances

TYPICAL CHARACTERISTICS –BC807 –40

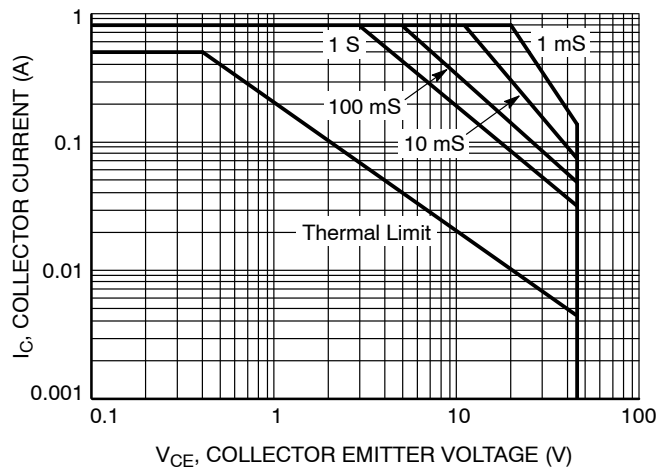
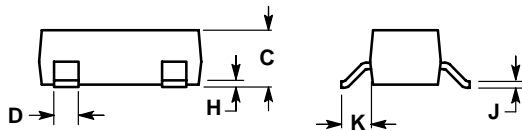
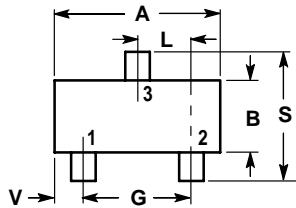


Figure 24. Safe Operating Area

SOT-23



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES |        | MILLIMETERS |       |
|-----|--------|--------|-------------|-------|
|     | MIN    | MAX    | MIN         | MAX   |
| A   | 0.1102 | 0.1197 | 2.80        | 3.04  |
| B   | 0.0472 | 0.0551 | 1.20        | 1.40  |
| C   | 0.0350 | 0.0440 | 0.89        | 1.11  |
| D   | 0.0150 | 0.0200 | 0.37        | 0.50  |
| G   | 0.0701 | 0.0807 | 1.78        | 2.04  |
| H   | 0.0005 | 0.0040 | 0.013       | 0.100 |
| J   | 0.0034 | 0.0070 | 0.085       | 0.177 |
| K   | 0.0140 | 0.0285 | 0.35        | 0.69  |
| L   | 0.0350 | 0.0401 | 0.89        | 1.02  |
| S   | 0.0830 | 0.1039 | 2.10        | 2.64  |
| V   | 0.0177 | 0.0236 | 0.45        | 0.60  |

