

FEATURES

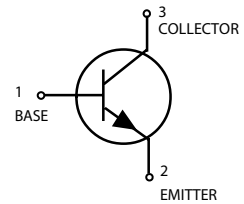
- High Current
- Low Voltage
- General Purpose Switching and Amplification



Package: SOT-23

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector–Emitter Voltage | V_{CE0} | 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) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 225 1.8 | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 556 | $^\circ\text{C}/\text{W}$ |
| Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 300 2.4 | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---------------|--------|--------|------------|---------------------|
| OFF CHARACTERISTICS | | | | | |
| Collector–Emitter Breakdown Voltage ($I_C = 10\text{ mA}$) | $V_{(BR)CEO}$ | 45 | — | — | V |
| Collector–Emitter Breakdown Voltage ($V_{EB} = 0, I_C = 10\ \mu\text{A}$) | $V_{(BR)CES}$ | 50 | — | — | V |
| Emitter–Base Breakdown Voltage ($I_E = 1.0\ \mu\text{A}$) | $V_{(BR)EBO}$ | 5.0 | — | — | V |
| Collector Cutoff Current ($V_{CB} = 20\text{ V}$) ($V_{CB} = 20\text{ V}, T_A = 150^\circ\text{C}$) | I_{CBO} | — — | — — | 100 5.0 | nA μA |

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°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|----------------------|-----|------|-----|------|
| ON CHARACTERISTICS | | | | | |
| DC Current Gain (I _C = 100 mA, V _{CE} = 1.0 V) | h _{FE} | 100 | —250 | | |
| SBC817-16 | | 160 | —400 | | |
| SBC817-25 | | 250 | —600 | | |
| (I _C = 500 mA, V _{CE} = 1.0 V) | | 40 | — | — | |
| Collector-Emitter Saturation Voltage (I _C = 500 mA, I _B = 50 mA) | V _{CE(sat)} | — | — | 0.7 | V |
| Base-Emitter On Voltage (I _C = 500 mA, V _{CE} = 1.0 V) | V _{BE(on)} | — | — | 1.2 | V |
| SMALL-SIGNAL CHARACTERISTICS | | | | | |
| Current-Gain — Bandwidth Product (I _C = 10 mA, V _{CE} = 5.0 V _{dc} , f = 100 MHz) | f _T | 100 | — | — | MHz |
| Output Capacitance (V _{CB} = 10 V, f = 1.0 MHz) | C _{obo} | — | 1 | 0 | pF |

MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|---------------|---------|-----------------|
| SBC817-16LT1G | 6A | 3000/Tape&Reel |
| SBC817-16LT3G | 6A | 10000/Tape&Reel |
| SBC817-25LT1G | 6B | 3000/Tape&Reel |
| SBC817-25LT3G | 6B | 10000/Tape&Reel |
| SBC817-40LT1G | 6C | 3000/Tape&Reel |
| SBC817-40LT3G | 6C | 10000/Tape&Reel |

TYPICAL CHARACTERISTICS CURVES- SBC817-16LT1G

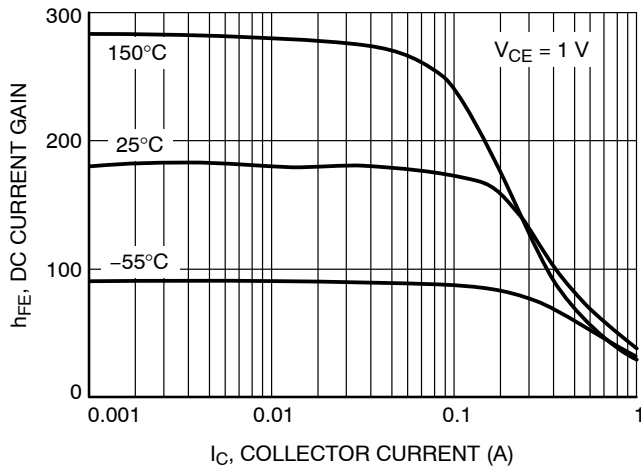


Figure 1. DC Current Gain vs. Collector Current

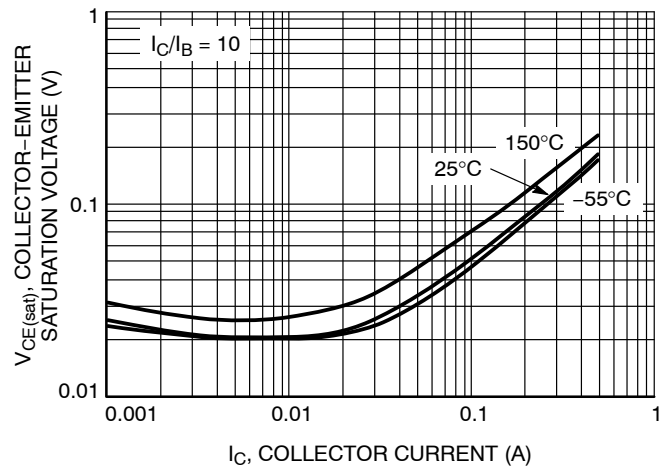


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

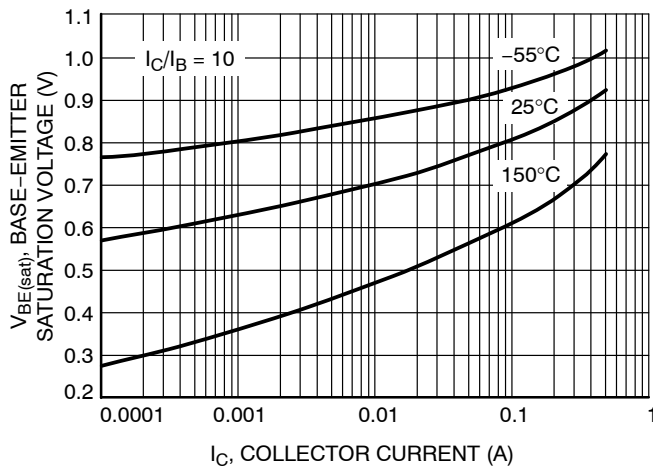


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

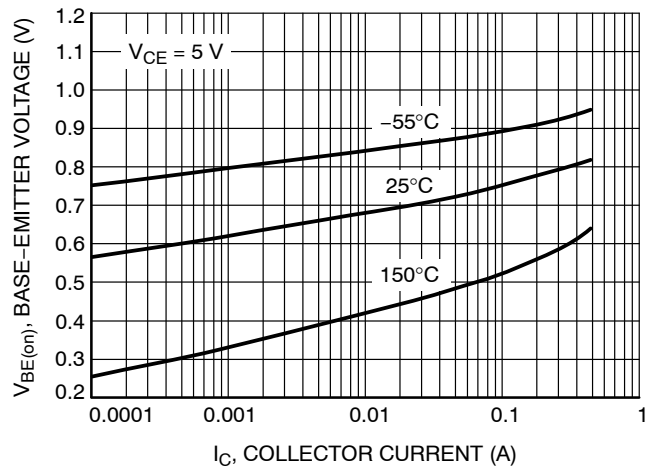


Figure 4. Base Emitter Voltage vs. Collector Current

TYPICAL CHARACTERISTICS CURVES – SBC817-16LT1G

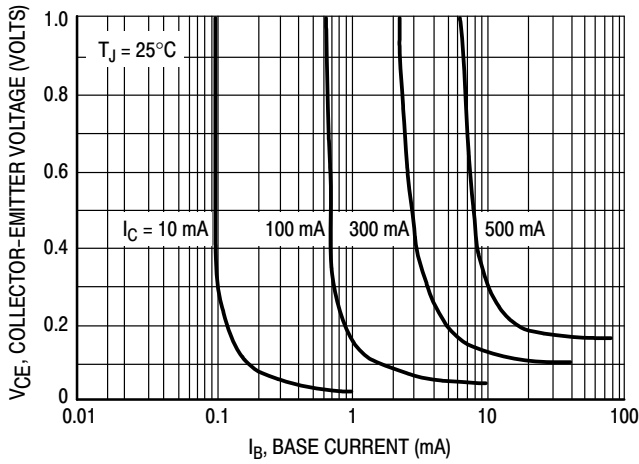


Figure 5. Saturation Region

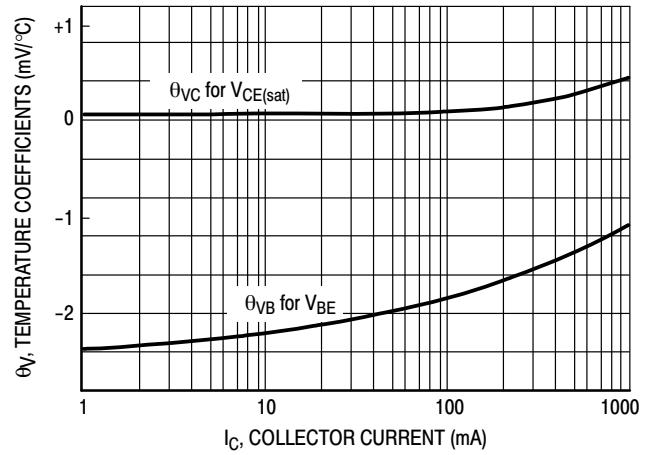


Figure 6. Temperature Coefficients

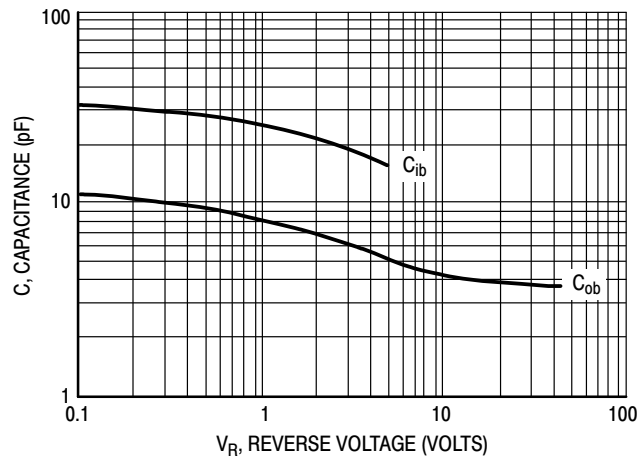


Figure 7. Capacitances

TYPICAL CHARACTERISTICS CURVES-SBC817-25LT1G

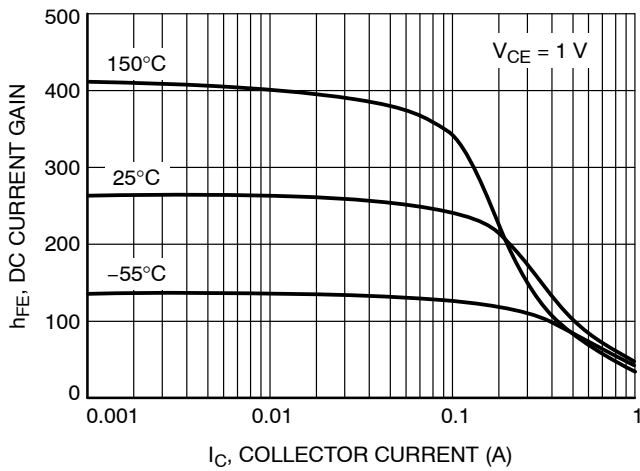


Figure 8. DC Current Gain vs. Collector Current

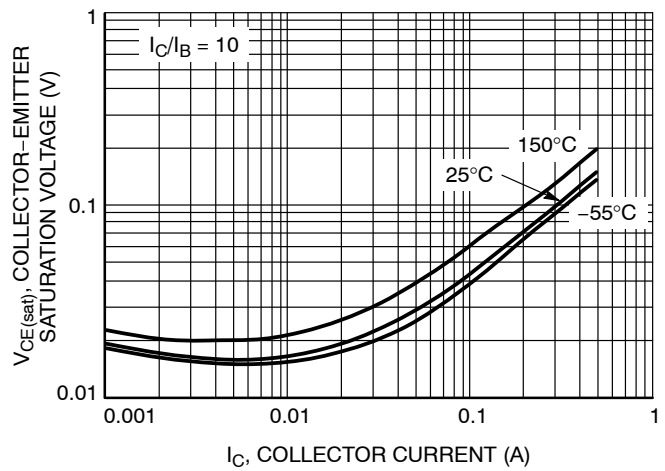


Figure 9. Collector Emitter Saturation Voltage vs. Collector Current

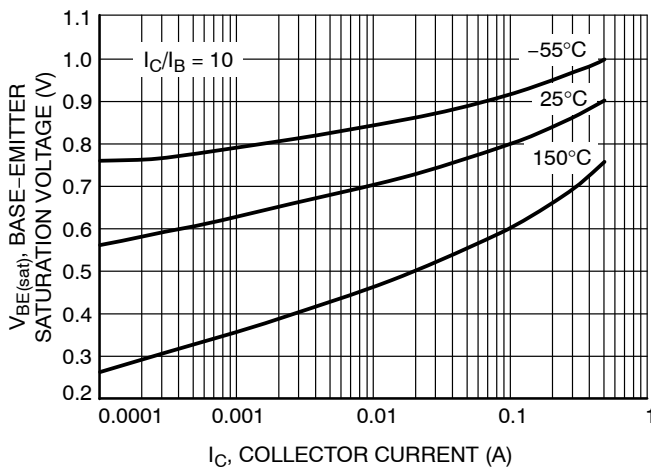


Figure 10. Base Emitter Saturation Voltage vs. Collector Current

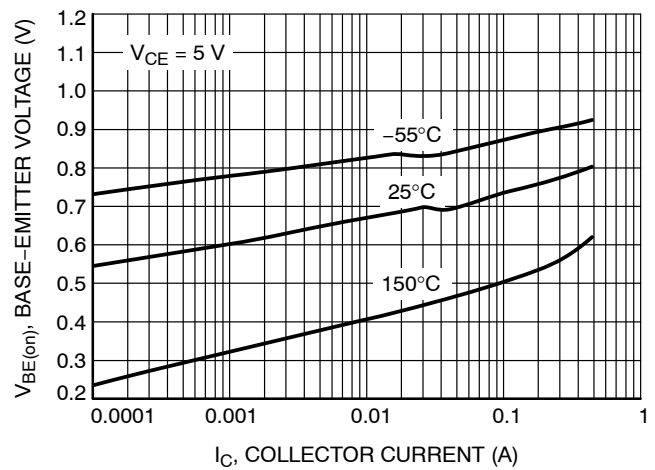


Figure 11. Base Emitter Voltage vs. Collector Current

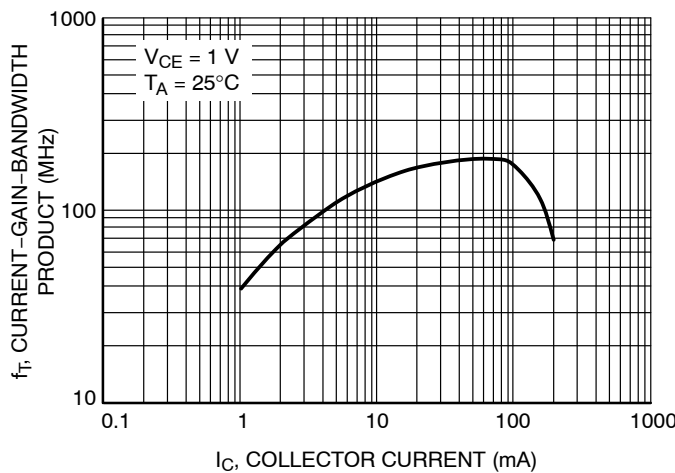


Figure 12. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS CURVES -SBC817-25LT1G

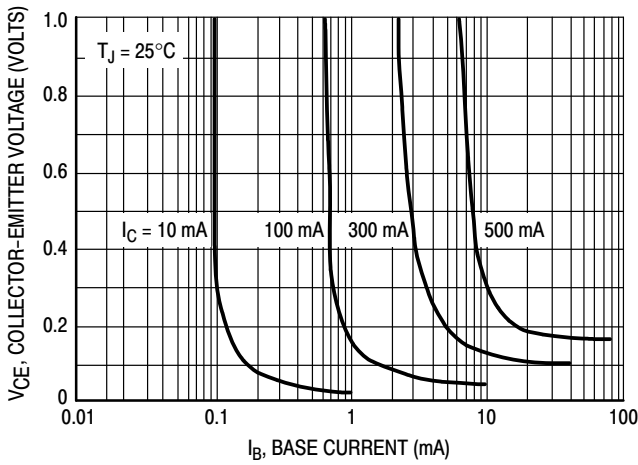


Figure 13. Saturation Region

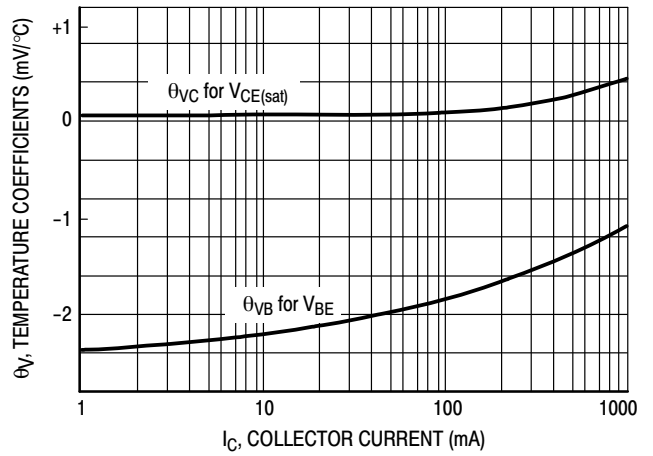


Figure 14. Temperature Coefficients

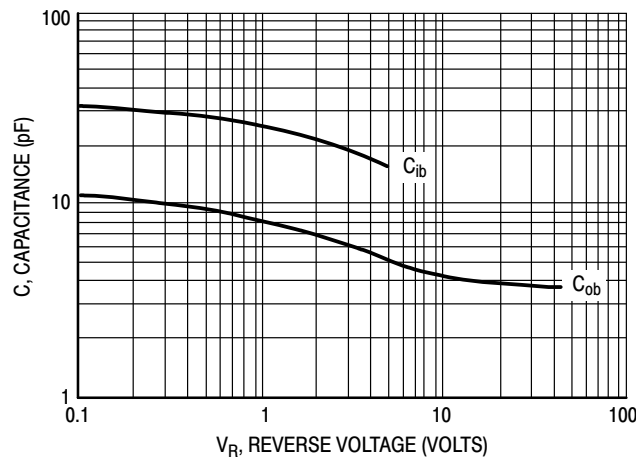


Figure 15. Capacitances

TYPICAL CHARACTERISTICS CURVES- SBC817-40LT1G

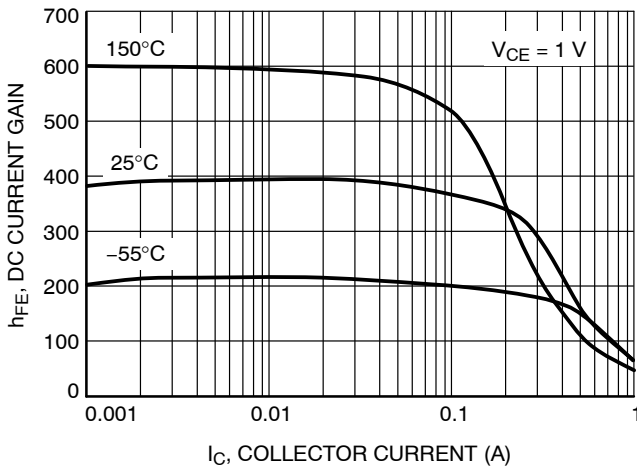


Figure 16. DC Current Gain vs. Collector Current

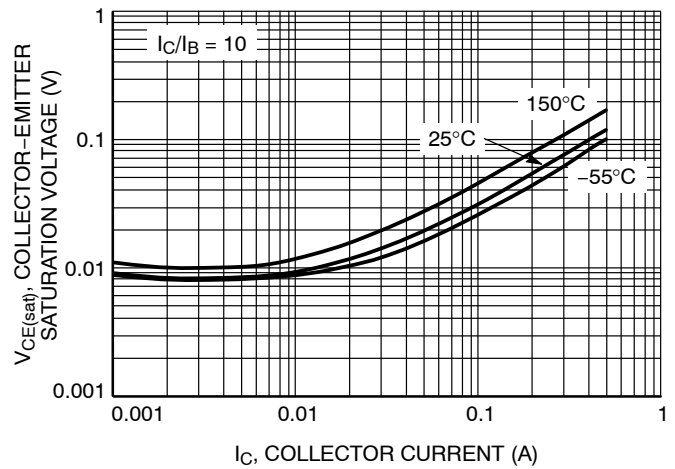


Figure 17. Collector Emitter Saturation Voltage vs. Collector Current

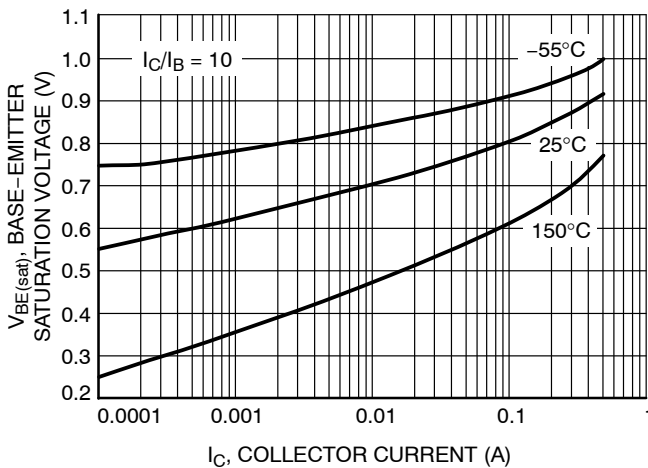


Figure 18. Base Emitter Saturation Voltage vs. Collector Current

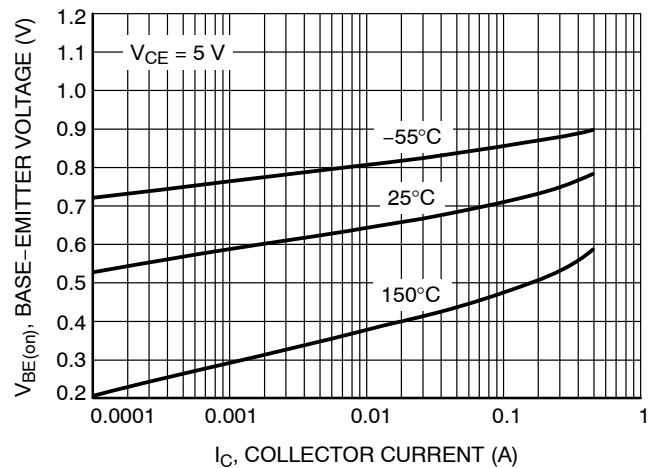


Figure 19. Base Emitter Voltage vs. Collector Current

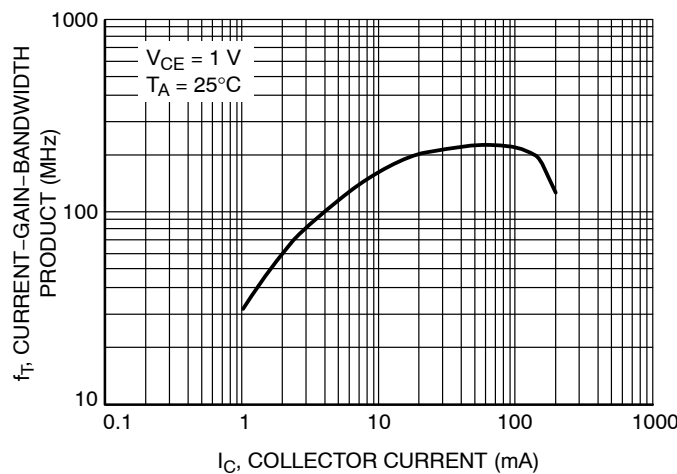


Figure 20. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS CURVES-SBC817-40LT1G

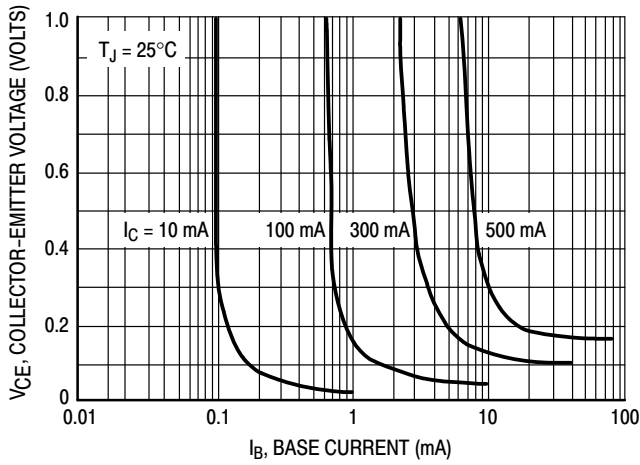


Figure 21. Saturation Region

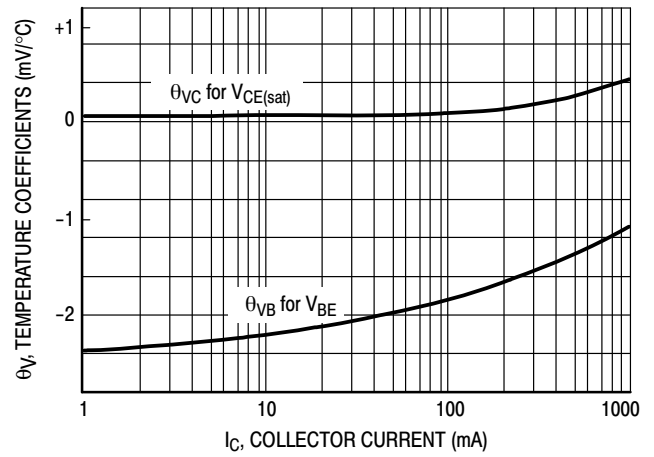


Figure 22. Temperature Coefficients

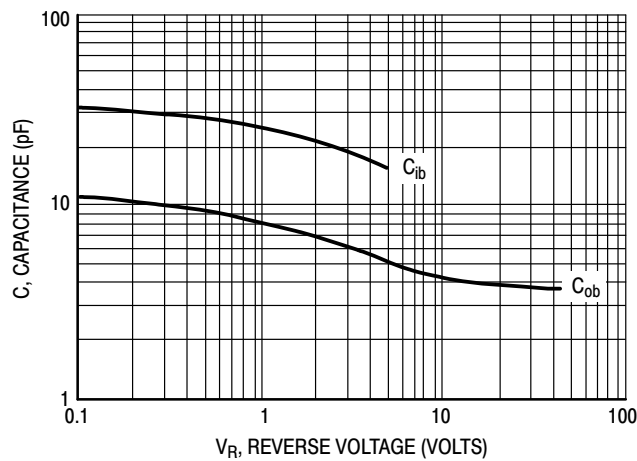


Figure 23. Capacitances

TYPICAL CHARACTERISTICS -SBC817-16LT1G/ SBC817-25LT1G /SBC817-40LT1G

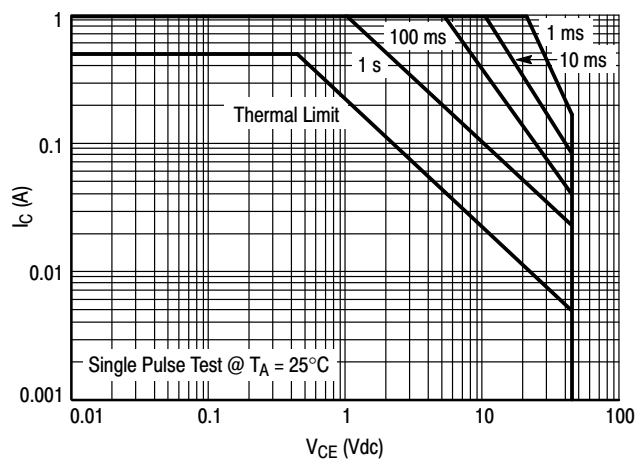
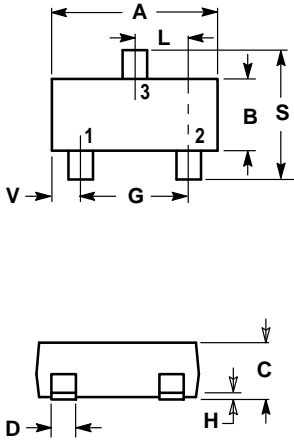


Figure 24. Safe Operating Area

PRODUCT OUTLINE DIMENSION: 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 |

MOUNTING PAD

- PIN 1. BASE
2. EMITTER
3. COLLECTOR

