

BC817-16LT1, BC817-25LT1, BC817-40LT1

General Purpose Transistors

NPN Silicon

Features

- Pb-Free Packages are Available

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, (Note 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, (Note 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 | $^\circ\text{C}$ |

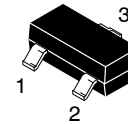
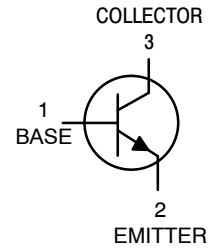
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

- FR-5 = 1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.024 in 99.5% alumina.



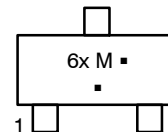
ON Semiconductor®

<http://onsemi.com>



SOT-23
CASE 318
STYLE 6

MARKING DIAGRAM



- 6x = Device Code
x = A, B, 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 in the package dimensions section on page 2 of this data sheet.

BC817-16LT1, BC817-25LT1, BC817-40LT1

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|----------------------|-----|-----|------------|----------|
| OFF CHARACTERISTICS | | | | | |
| Collector - Emitter Breakdown Voltage (I _C = 10 mA) | V _{(BR)CEO} | 45 | - | - | V |
| Collector - Emitter Breakdown Voltage (V _{EB} = 0, I _C = 10 μA) | V _{(BR)CES} | 50 | - | - | V |
| Emitter - Base Breakdown Voltage (I _E = 1.0 μA) | V _{(BR)EBO} | 5.0 | - | - | V |
| Collector Cutoff Current (V _{CB} = 20 V) (V _{CB} = 20 V, T _A = 150°C) | I _{CBO} | - | - | 100 5.0 | nA μA |

ON CHARACTERISTICS

| | | | | | | |
|---|----------------------------------|----------------------|-----|---|-----|---|
| DC Current Gain (I _C = 100 mA, V _{CE} = 1.0 V) | BC817-16 BC817-25 BC817-40 | h _{FE} | 100 | - | 250 | - |
| (I _C = 500 mA, V _{CE} = 1.0 V) | | | 160 | - | 400 | - |
| | | | 250 | - | 600 | - |
| | | | 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 Vdc, f = 100 MHz) | f _T | 100 | - | - | MHz |
| Output Capacitance (V _{CB} = 10 V, f = 1.0 MHz) | C _{obo} | - | 10 | - | pF |

ORDERING INFORMATION

| Device | Specific Marking | Package | Shipping [†] |
|--------------|------------------|---------------------|-----------------------|
| BC817-16LT1G | 6A | SOT-23 (Pb-Free) | 3000/Tape & Reel |
| BC817-16LT3G | | SOT-23 (Pb-Free) | 10,000/Tape & Reel |
| BC817-25LT1 | 6B | SOT-23 | 3000/Tape & Reel |
| BC817-25LT1G | | SOT-23 (Pb-Free) | 3000/Tape & Reel |
| BC817-25LT3G | | SOT-23 (Pb-Free) | 10,000/Tape & Reel |
| BC817-40LT1 | 6C | SOT-23 | 3000/Tape & Reel |
| BC817-40LT1G | | SOT-23 (Pb-Free) | 3000/Tape & Reel |
| BC817-40LT3G | | SOT-23 (Pb-Free) | 10,000/Tape & Reel |

[†]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.

BC817-16LT1, BC817-25LT1, BC817-40LT1

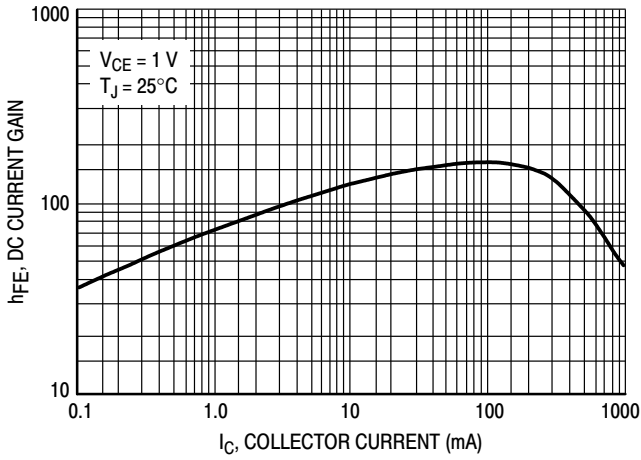


Figure 1. DC Current Gain

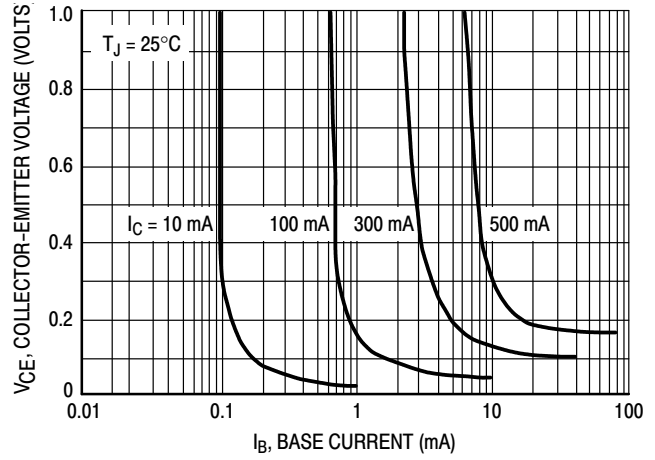


Figure 2. Saturation Region

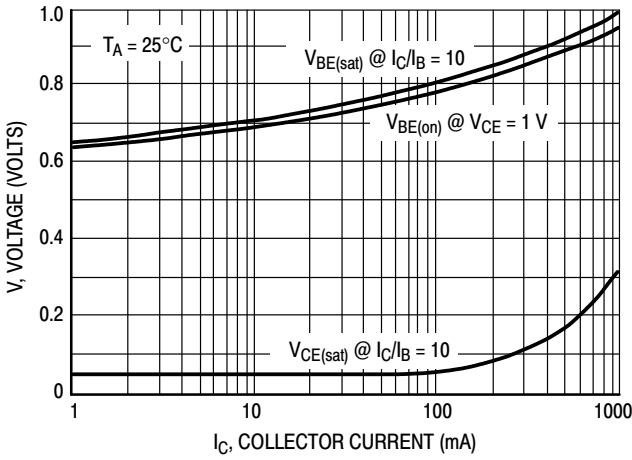


Figure 3. "On" Voltages

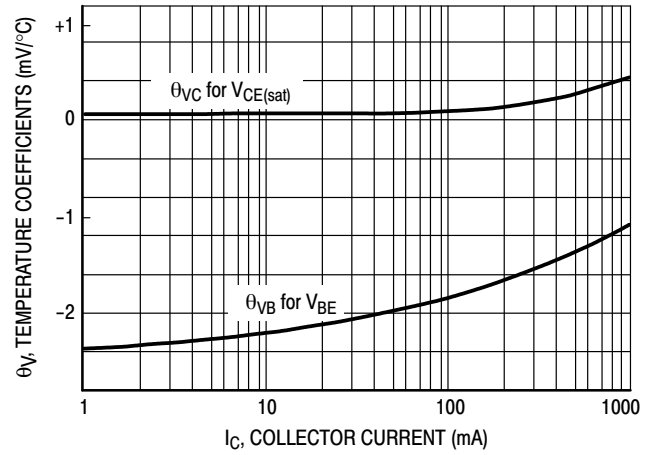


Figure 4. Temperature Coefficients

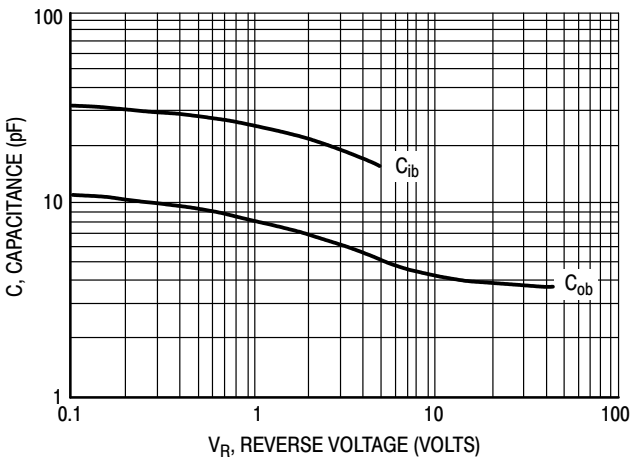


Figure 5. Capacitances

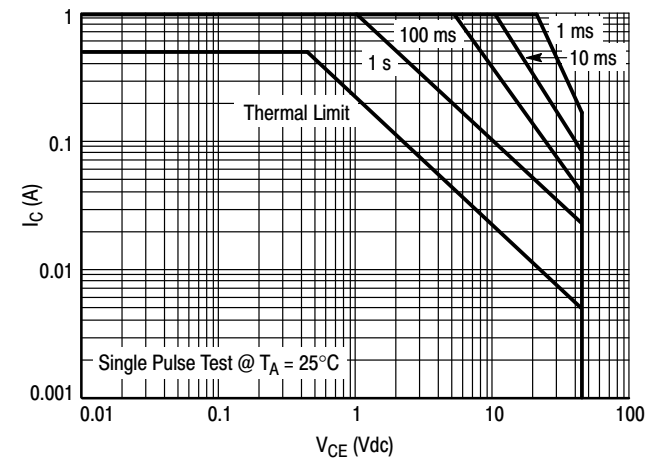
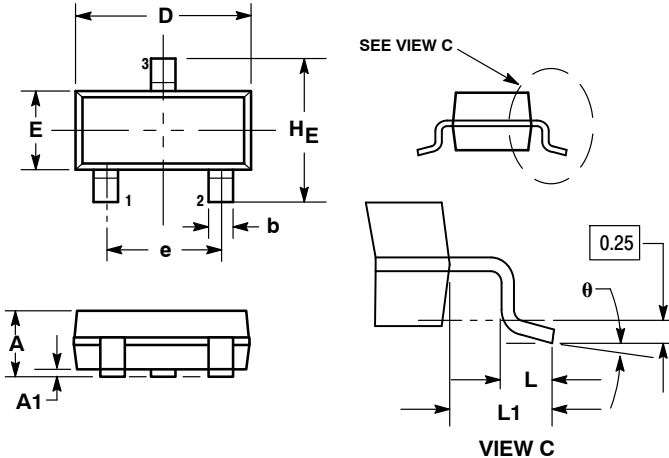


Figure 6. BC817-40L Safe Operating Area

BC817-16LT1, BC817-25LT1, BC817-40LT1

PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AN



NOTES:

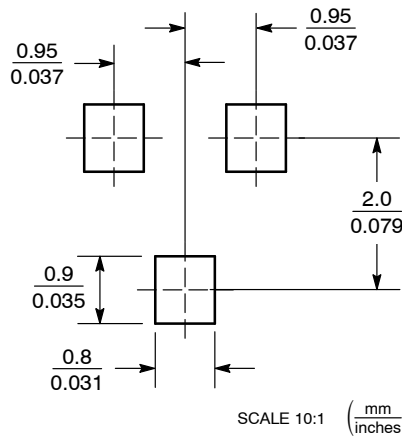
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.89 | 1.00 | 1.11 | 0.035 | 0.040 | 0.044 |
| A1 | 0.01 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.50 | 0.015 | 0.018 | 0.020 |
| c | 0.09 | 0.13 | 0.18 | 0.003 | 0.005 | 0.007 |
| D | 2.80 | 2.90 | 3.04 | 0.110 | 0.114 | 0.120 |
| E | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.90 | 2.04 | 0.070 | 0.075 | 0.081 |
| L | 0.10 | 0.20 | 0.30 | 0.004 | 0.008 | 0.012 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.029 |
| HE | 2.10 | 2.40 | 2.64 | 0.083 | 0.094 | 0.104 |

STYLE 6:

1. BASE
2. EMITTER
3. COLLECTOR

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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