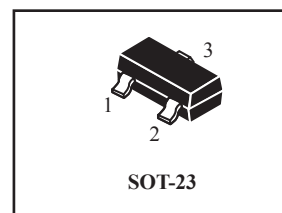
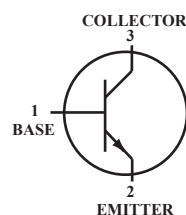


General Purpose Transistor

NPN Silicon

 Lead(Pb)-Free



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

| Rating | Symbol | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Emitter Voltage | V_{CE0} | 45 | Vdc |
| Collector-Base Voltage | V_{CB0} | 50 | Vdc |
| Emitter-Base Voltage | V_{EB0} | 5.0 | Vdc |
| Collector Current-Continuous | I_C | 500 | mAdc |

Thermal Characteristics

| Characteristics | 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 (Note 1.) | $R_{\theta JA}$ | 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 (Note 2.) | $R_{\theta JA}$ | 417 | $^{\circ}\text{C}/\text{W}$ |
| Junction and Storage, Temperature Range | T_J, T_{stg} | -55 to +150 | $^{\circ}\text{C}$ |

Device Marking

| |
|---------------------------------------|
| BC817-16=6A, BC817-25=6B, BC817-40=6C |
|---------------------------------------|

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

BC817-16/BC817-25
BC817-40



Electrical Characteristics (TA=25°C Unless Otherwise noted)

| Characteristics | Symbol | Min | Typ | Max | Unit |
|-----------------|--------|-----|-----|-----|------|
|-----------------|--------|-----|-----|-----|------|

Off Characteristics

| | | | | | |
|---|----------|-----|---|------------|----------|
| Collector-Emitter Breakdown Voltage (IC= 10mA) | V(BR)CEO | 45 | - | - | V |
| Collector-Emitter Breakdown Voltage (IC=10 μA ,VEB=0) | V(BR)CES | 50 | - | - | V |
| Emitter-Base Breakdown Voltage (IE=1.0 μA) | V(BR)EBO | 5.0 | - | - | V |
| Collector Cutoff Current (VCB=20V) (VCB=20V, TA=150°C) | ICBO | - | - | 100 5.0 | nA mA |

On Characteristics

| | | | | | | |
|--|----------------------------------|----------|-------------------|-------------|-------------------|---|
| DC Current Gain (IC= 100mA, VCE=1.0V) | BC817-16 BC817-25 BC817-40 | hFE | 100 160 250 | - - - | 250 400 600 | - |
| (IC= 500mA, VCE=1.0V) | | | 40 | | | |
| Collector-Emitter Saturation Voltage (IC= 500mA, IB=50mA) | | VCE(sat) | - | - | 0.7 | V |
| Base-Emitter On Voltage (IC= 500mA, VCE=1.0V) | | VBE(on) | - | - | 1.2 | V |

Small-signal Characteristics

| | | | | | | |
|---|--|------|-----|----|---|-----|
| Current-Gain-Bandwidth Product (IC= 10mA, VCE= 5.0Vdc, f=100MHz) | | fT | 100 | - | - | MHz |
| Output Capacitance (VCB= 10V, f=1.0MHz) | | Cobo | - | 10 | - | pF |

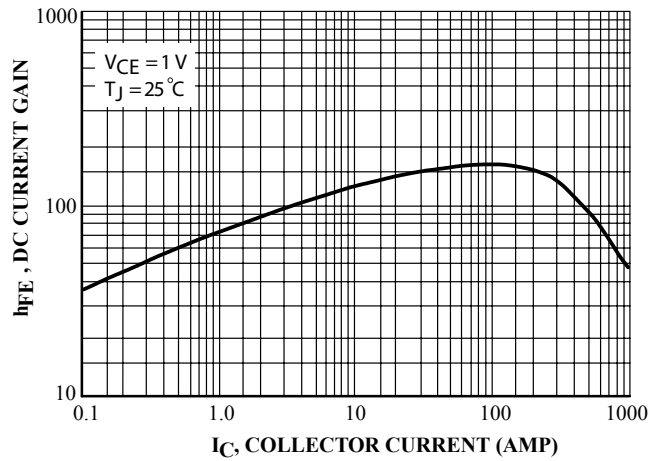


Figure 1. DC Current Gain

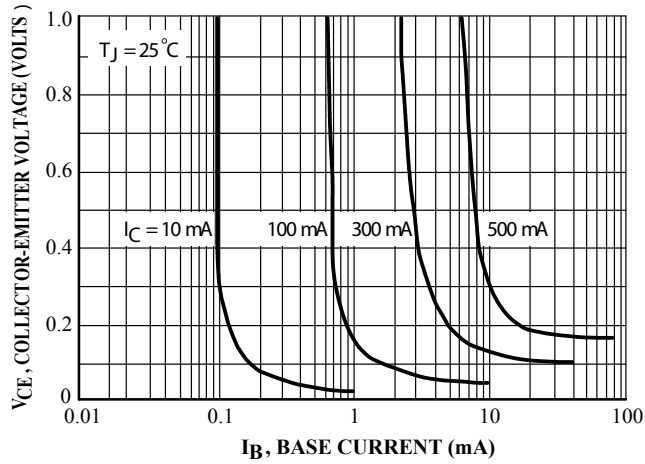


Figure 2. Saturation Region

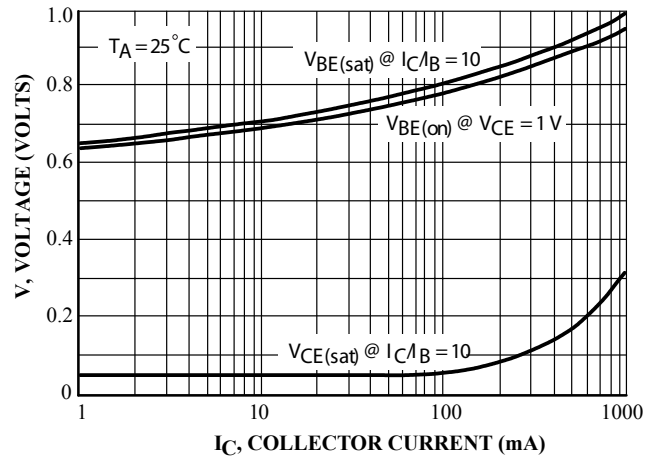


Figure 3. "On" V oltages

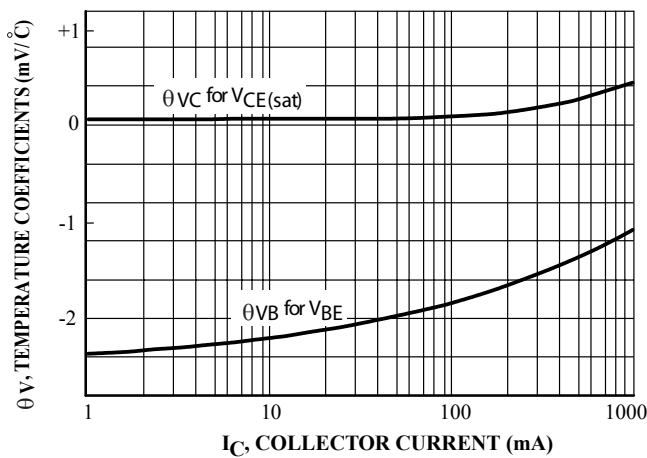


Figure 4. Temperature Coefficients

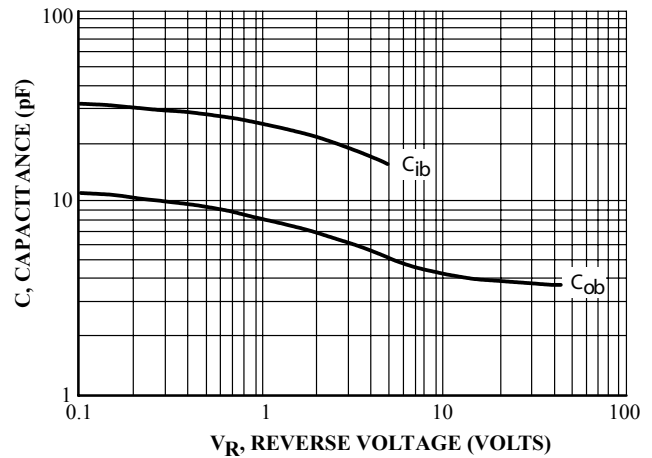
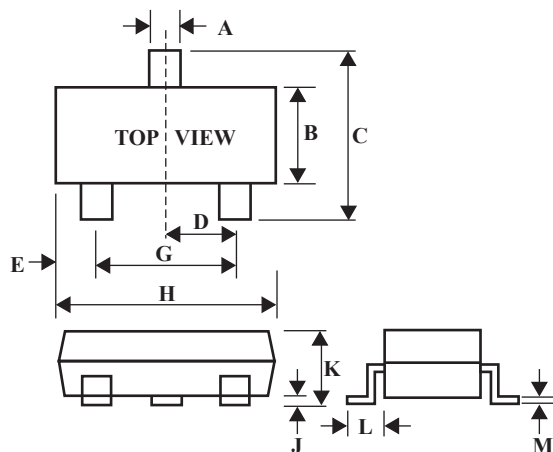


Figure 5. Capacitances

SOT-23 Package Outline Dimension



| SOT-23 | | |
|--------|-------|------|
| Dim | Min | Max |
| A | 0.35 | 0.51 |
| B | 1.19 | 1.40 |
| C | 2.10 | 3.00 |
| D | 0.85 | 1.05 |
| E | 0.46 | 1.00 |
| G | 1.70 | 2.10 |
| H | 2.70 | 3.10 |
| J | 0.01 | 0.13 |
| K | 0.89 | 1.10 |
| L | 0.30 | 0.61 |
| M | 0.076 | 0.25 |