

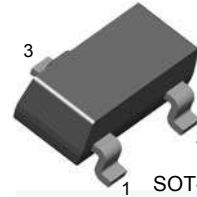


November 2014

BC817 / BC818 NPN Epitaxial Silicon Transistor

Features

- Switching and Amplifier Applications
- Suitable for AF-Driver Stages and Low Power Output Stages
- Complement to BC807 / BC808



SOT-23
1. Base 2. Emitter 3. Collector

Ordering Information⁽¹⁾

| Part Number | Marking | Package | Packing Method |
|-------------|---------|-----------|----------------|
| BC81716MTF | 8FA | SOT-23 3L | Tape and Reel |
| BC81725MTF | 8FB | SOT-23 3L | Tape and Reel |
| BC81740MTF | 8FC | SOT-23 3L | Tape and Reel |
| BC81816MTF | 8GA | SOT-23 3L | Tape and Reel |
| BC81825MTF | 8GB | SOT-23 3L | Tape and Reel |
| BC81840MTF | 8GC | SOT-23 3L | Tape and Reel |

Note:

1. Affix "-16,-25,-40" means h_{FE} classification. Affix "-M" means the matte type package. Affix "-TF" means the tape and reel type packing.

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | | Value | Unit |
|-----------|---------------------------|-------|-------------|------------------|
| V_{CBO} | Collector-Base Voltage | BC817 | 50 | V |
| | | BC818 | 30 | |
| V_{CEO} | Collector-Emitter Voltage | BC817 | 45 | V |
| | | BC818 | 25 | |
| V_{EBO} | Emitter-Base Voltage | | 5 | V |
| I_C | Collector Current (DC) | | 800 | mA |
| T_J | Junction Temperature | | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | | -65 to +150 | $^\circ\text{C}$ |

Thermal Characteristics⁽¹⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|-----------------|---|-------|---------------------------|
| P_D | Power Dissipation | 310 | mW |
| | Derate Above 25°C | 2.48 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 403 | $^\circ\text{C}/\text{W}$ |

Note:

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics⁽²⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------|--------------------------------------|--|-----------------------------------|------|------|------|
| BV_{CEO} | Collector-Emitter Breakdown Voltage | BC817 | $I_C = 10\text{ mA}, I_B = 0$ | | | V |
| | | BC818 | | | | |
| BV_{CES} | Collector-Emitter Breakdown Voltage | BC817 | $I_C = 0.1\text{ mA}, V_{BE} = 0$ | | | V |
| | | BC818 | | | | |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E = 0.1\text{ mA}, I_C = 0$ | 5 | | | V |
| I_{CES} | Collector Cut-Off Current | $V_{CE} = 25\text{ V}, V_{BE} = 0$ | | | 100 | nA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 4\text{ V}, I_C = 0$ | | | 100 | nA |
| h_{FE1} | DC Current Gain | $V_{CE} = 1\text{ V}, I_C = 100\text{ mA}$ | 100 | | 630 | |
| h_{FE2} | | $V_{CE} = 1\text{ V}, I_C = 300\text{ mA}$ | 60 | | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 500\text{ mA}, I_B = 50\text{ mA}$ | | | 0.7 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE} = 1\text{ V}, I_C = 300\text{ mA}$ | | | 1.2 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = 5\text{ V}, I_C = 10\text{ mA}, f = 50\text{ MHz}$ | | 100 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | | | 12 | pF |

Note:

2. Pulse test: pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

h_{FE} Classification

| Classification | 16 | 25 | 40 |
|----------------|-----------|-----------|-----------|
| h_{FE1} | 100 ~ 250 | 160 ~ 400 | 250 ~ 630 |
| h_{FE2} | 60 ~ | 100 ~ | 170 ~ |

Typical Performance Characteristics

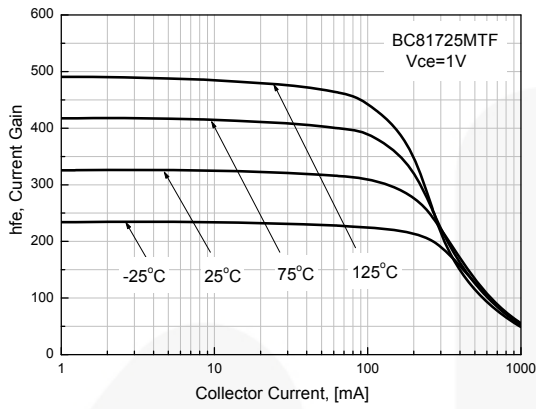


Figure 1. DC Current Gain

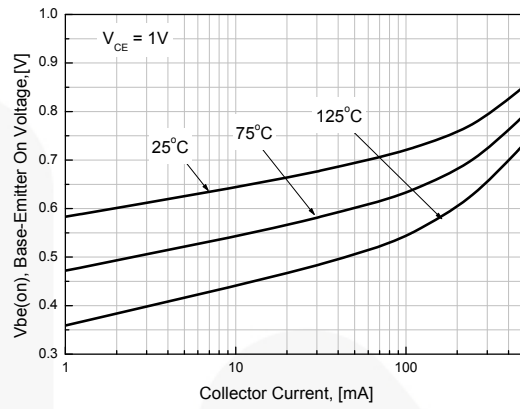


Figure 2. Base-Emitter On Voltage

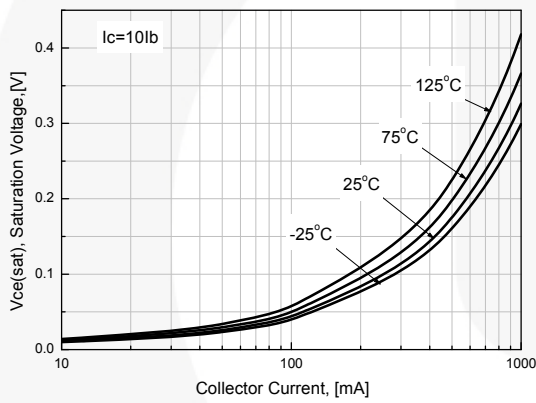


Figure 3. Collector-Emitter Saturation Voltage

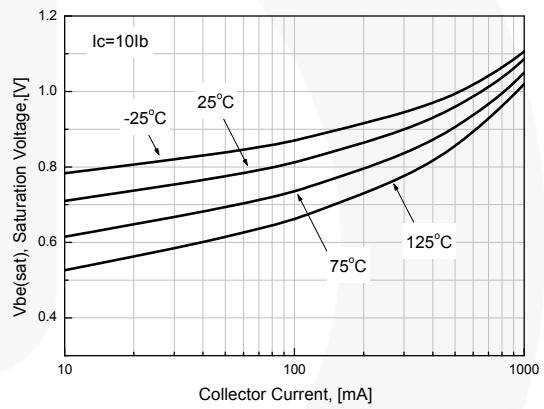


Figure 4. Base-Emitter Saturation Voltage

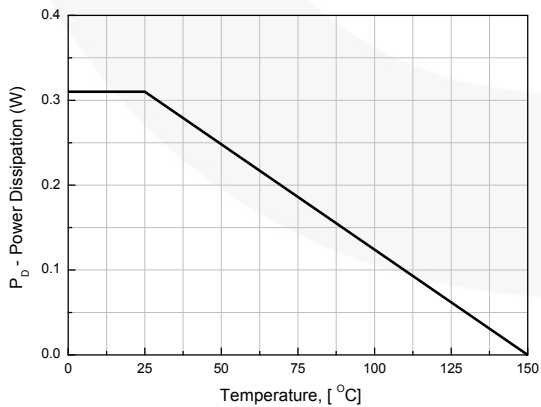
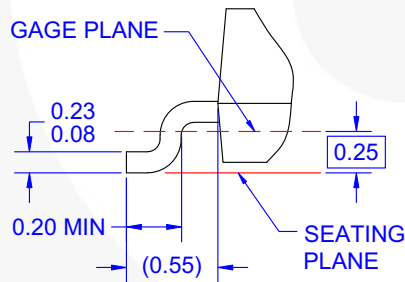
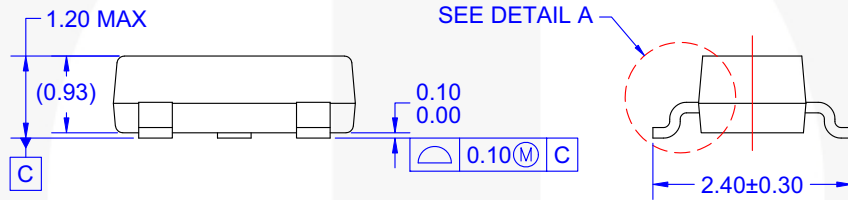
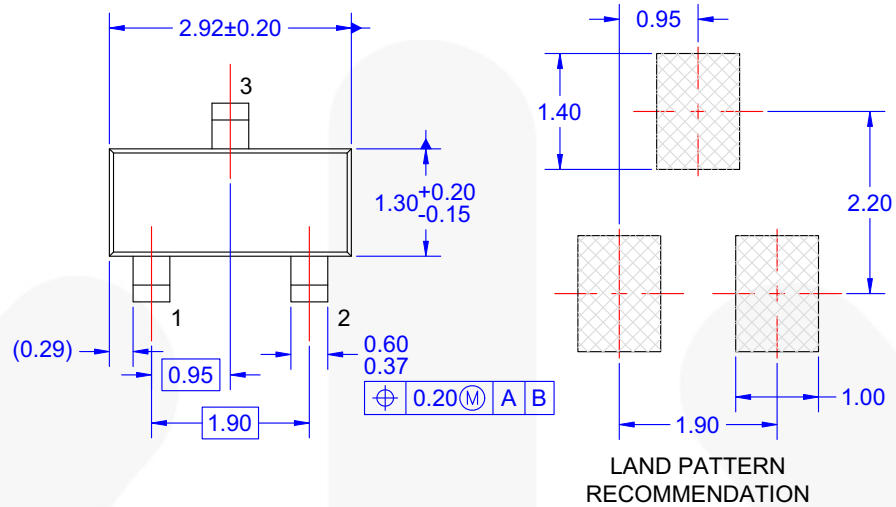


Figure 5. Power Dissipation vs Ambient Temperature

Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.
- E) DRAWING FILE NAME: MA03DREV10






DETAIL A
SCALE: 2X

Figure 6. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE



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