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June 2016

BC638 PNP Epitaxial Silicon Transistor

Features

- Switching and Amplifier Applications
- Complement to BC637



Ordering Information

| Part Number | Top Mark | Package | Packing Method |
|-------------|----------|----------|----------------|
| BC638TA | BC638 | TO-92 3L | Ammo |

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_{CER} | Collector-Emitter Voltage at $R_{\text{BE}} = 1 \text{ K}\Omega$ | -60 | V |
| V_{CES} | Collector-Emitter Voltage | -60 | V |
| V_{CEO} | Collector-Emitter Voltage | -60 | V |
| V_{EBO} | Emitter-Base Voltage | -5 | V |
| I_{C} | Collector Current | -1 | A |
| I_{CP} | Peak Collector Current | -1.5 | A |
| I_{B} | Base Current | -100 | 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 | 1 | W |
| | Derate Above 25°C | 8 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 125 | $^\circ\text{C}/\text{W}$ |

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

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 | $I_C = -10\text{ mA}$, $I_B = 0$ | -60 | | | V |
| I_{CBO} | Collector Cut-Off Current | $V_{CB} = -30\text{ V}$, $I_E = 0$ | | | -0.1 | μA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = -5\text{ V}$, $I_C = 0$ | | | -10 | μA |
| h_{FE1} | DC Current Gain | $V_{CE} = -2\text{ V}$, $I_C = -5\text{ mA}$ | 25 | | | |
| h_{FE2} | | $V_{CE} = -2\text{ V}$, $I_C = -150\text{ mA}$ | 40 | | 160 | |
| h_{FE3} | | $V_{CE} = -2\text{ V}$, $I_C = -500\text{ mA}$ | 25 | | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -500\text{ mA}$, $I_B = -50\text{ mA}$ | | | -0.5 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE} = -2\text{ V}$, $I_C = -500\text{ mA}$ | | | -1 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = -5\text{ V}$, $I_C = -10\text{ mA}$, $f = 50\text{ MHz}$ | | 100 | | MHz |

Typical Performance Characteristics

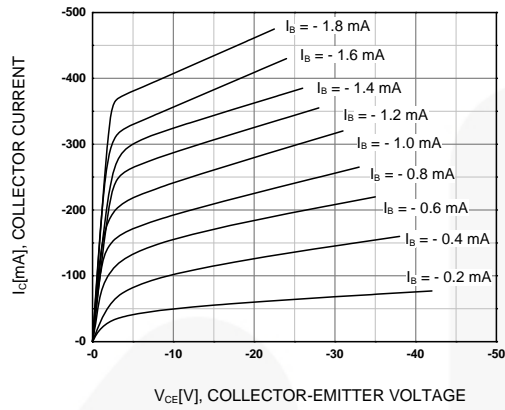


Figure 1. Static Characteristic

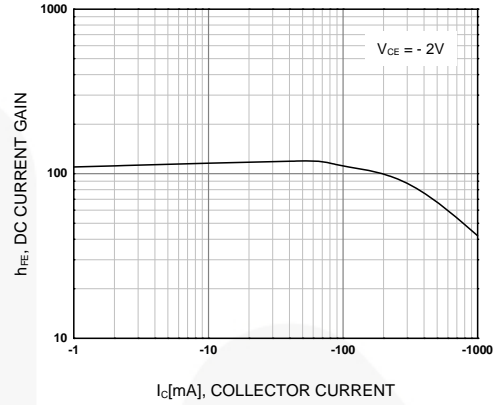


Figure 2. DC Current Gain

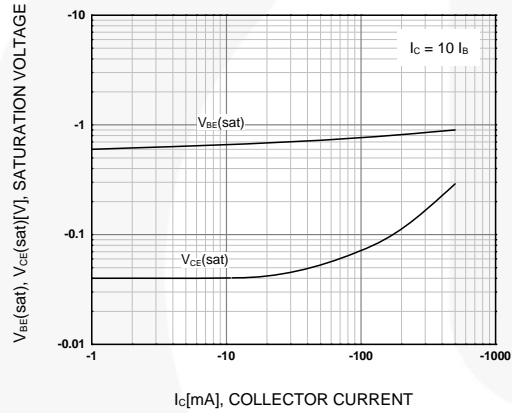


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

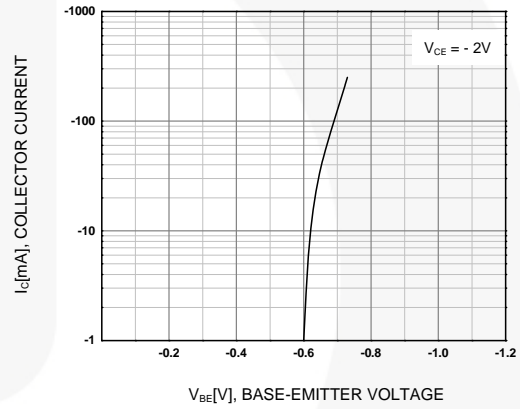


Figure 4. Base-Emitter On Voltage

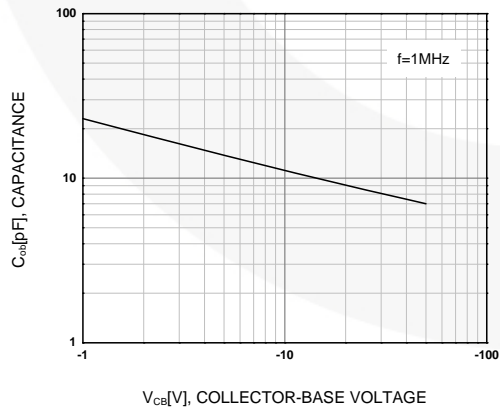
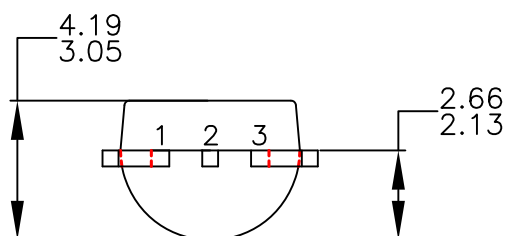
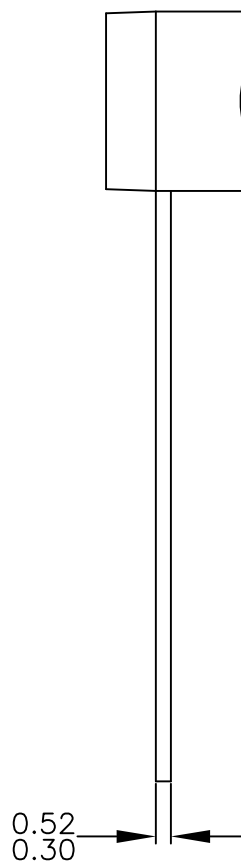
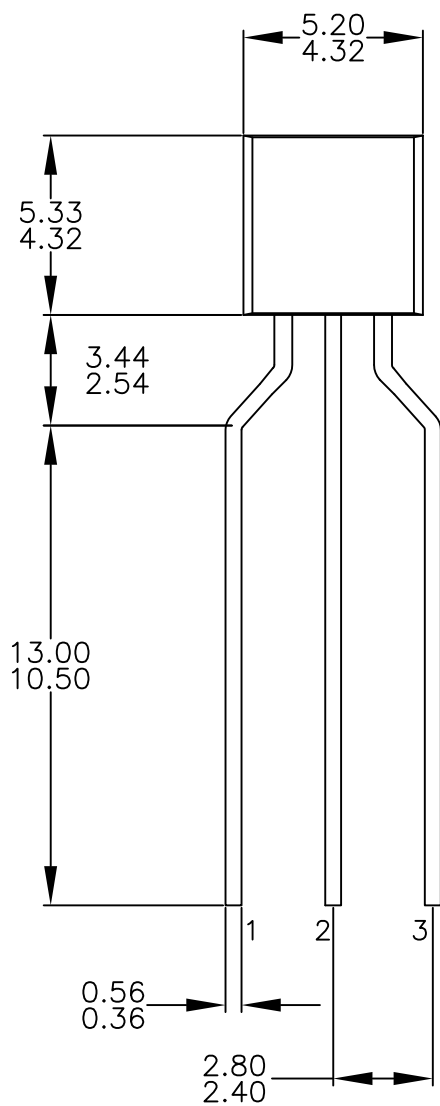


Figure 5. Collector Output Capacitance



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
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