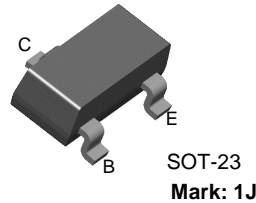


MMBT2369

NPN Switching Transistor

- This device is designed for high speed saturated switching at collector currents of 10mA to 100mA.
- Sourced from process 21.



Absolute Maximum Ratings * $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Ratings | Units |
|----------------|--|-----------|------------------|
| V_{CEO} | Collector-Emitter Voltage | 15 | V |
| V_{CBO} | Collector-Base Voltage | 40 | V |
| V_{EBO} | Emitter-Base Voltage | 4.5 | V |
| I_C | Collector Current - Continuous | 200 | mA |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 ~ 150 | $^\circ\text{C}$ |

* This ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These rating are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|-------------------------------------|--|---|----------|-----------|--------------------------------|
| Off Characteristics | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage * | $I_C = 10\text{mA}, I_B = 0$ | 15 | | V |
| $V_{(BR)CES}$ | Collector-Emitter Breakdown Voltage | $I_C = 10\mu\text{A}, V_{BE} = 0$ | 40 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 10\mu\text{A}, I_E = 0$ | 40 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 10\mu\text{A}, I_C = 0$ | 4.5 | | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 20\text{V}, I_E = 0$ $V_{CB} = 20\text{V}, I_E = 0, T_a = 125^\circ\text{C}$ | | 0.4 30 | μA μA |
| On Characteristics | | | | | |
| h_{FE} | DC Current Gain * | $I_C = 10\text{mA}, V_{CE} = 1.0\text{V}$ $I_C = 100\text{mA}, V_{CE} = 2.0\text{V}$ | 40 20 | 120 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage * | $I_C = 10\text{mA}, I_B = 1.0\text{mA}$ | | 0.25 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 10\text{mA}, I_B = 1.0\text{mA}$ | 0.7 | 0.85 | V |
| Small Signal Characteristics | | | | | |
| C_{obo} | Output Capacitance | $V_{CB} = 5.0\text{V}, I_E = 0, f = 1.0\text{MHz}$ | | 4.0 | pF |
| C_{ibo} | Input Capacitance | $V_{EB} = 0.5\text{V}, I_C = 0, f = 1.0\text{MHz}$ | | 5.0 | pF |
| h_{fe} | Small -Signal Current Gain | $I_C = 10\text{mA}, V_{CE} = 10\text{V}, R_G = 2.0\text{k}\Omega,$ $f = 100\text{MHz}$ | 5.0 | | |

Electrical Characteristics (Continued) $T_a = 25^\circ\text{C}$ unless otherwise note

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|----------------------------------|---------------|---|------|------|-------|
| Switching Characteristics | | | | | |
| t_s | Storage Time | $I_{B1} = I_{B2} = I_C = 10\text{mA}$ | | 13 | ns |
| t_{on} | Turn-On Time | $V_{CC} = 3.0\text{V}, I_C = 10\text{mA}, I_{B1} = 3.0\text{mA}$ | | 12 | ns |
| t_{off} | Turn-Off Time | $V_{CC} = 3.0\text{V}, I_C = 10\text{mA}, I_{B1} = 3.0\text{mA}, I_{B2} = 1.5\text{mA}$ | | 18 | ns |

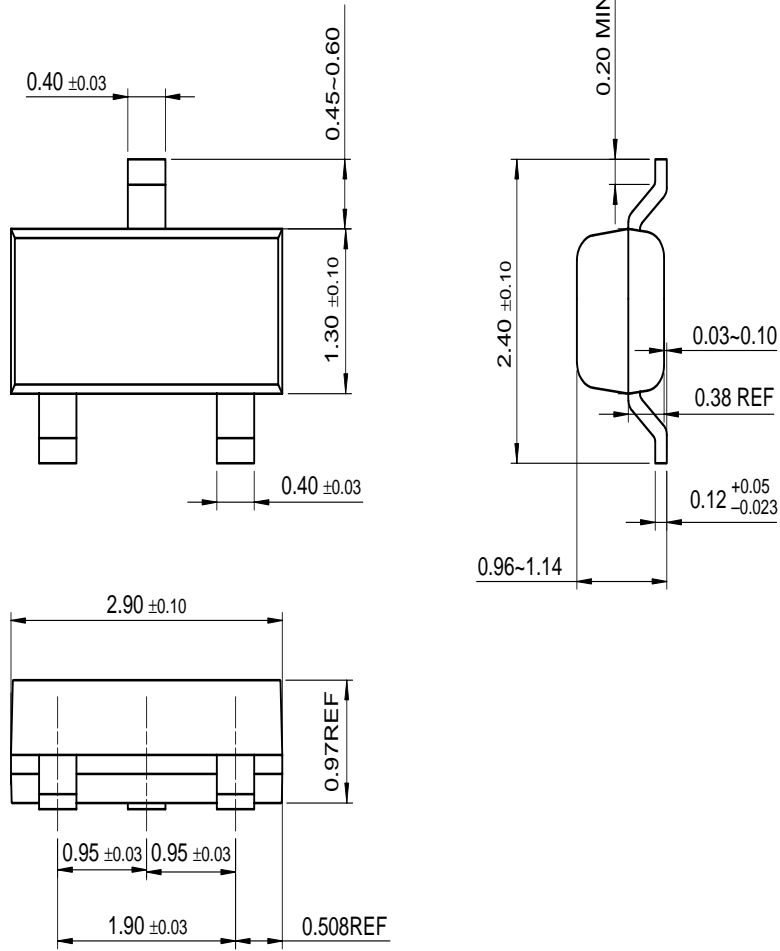
* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$ **Thermal Characteristics** $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Max. | Units |
|-----------------|---|------|----------------------------|
| P_D | Total Device Dissipation | 350 | mW |
| | Derate above 25°C | 2.8 | $\text{mW}/^\circ\text{C}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 125 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 357 | $^\circ\text{C}/\text{W}$ |

* Device mounted on FR-4PCB $1.6" \times 1.6" \times 0.06"$.

Mechanical Dimensions

SOT-23



Dimensions in Millimeters

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| | | | | |
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PRODUCT STATUS DEFINITIONS

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|--------------------------|------------------------|---|
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