



MMBT2369A

NPN GENERAL PURPOSE SWITCHING TRANSISTOR

VOLTAGE 15 Volts **POWER** 225 mWatts

SOT-23 Unit: inch (mm)

FEATURES

- NPN epitaxial silicon, planar design
- Collector-emitter voltage $V_{CE} = 15V$
- Collector current $I_C = 200mA$
- Lead free in comply with EU RoHS 2011/65/EU directives.
- Green molding compound as per IEC61249 Std. . (Halogen Free)

MECHANICAL DATA

- Case: SOT-23, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0084 grams
- Marking: M3B

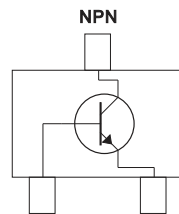
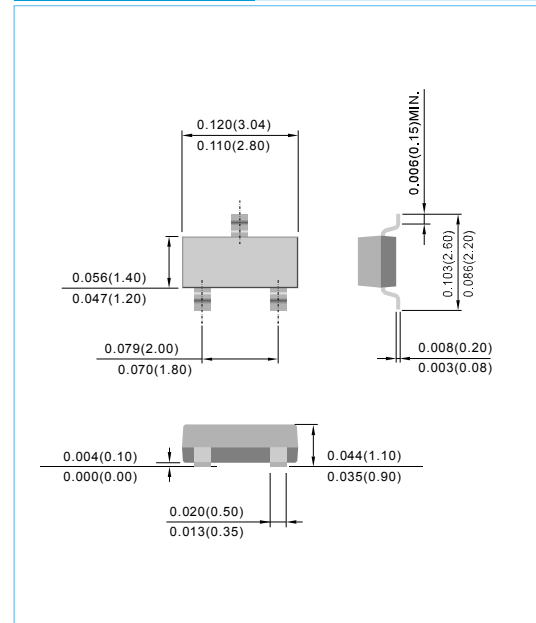


Fig.34



ABSOLUTE RATINGS

| PARAMETER | Symbol | Value | Units |
|--------------------------------|-----------|-------|-------|
| Collector - Emitter Voltage | V_{CEO} | 15 | V |
| Collector - Base Voltage | V_{CBO} | 40 | V |
| Emitter - Base Voltage | V_{EBO} | 4.5 | V |
| Collector Current - Continuous | I_C | 200 | mA |

THERMAL CHARACTERISTICS

| PARAMETER | Symbol | Value | Units |
|--|-----------------|------------|---------------|
| Max Power Dissipation (Note 1) | P_{TOT} | 225 | mW |
| Thermal Resistance , Junction to Ambient | $R_{\theta JA}$ | 556 | $^{\circ}C/W$ |
| Junction Temperature | T_J | -55 to 150 | $^{\circ}C$ |
| Storage Temperature | T_{STG} | -55 to 150 | $^{\circ}C$ |

Note 1: Transistor mounted on FR-4 board 70 x 60 x 1mm.



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ELECTRICAL CHARACTERISTICS

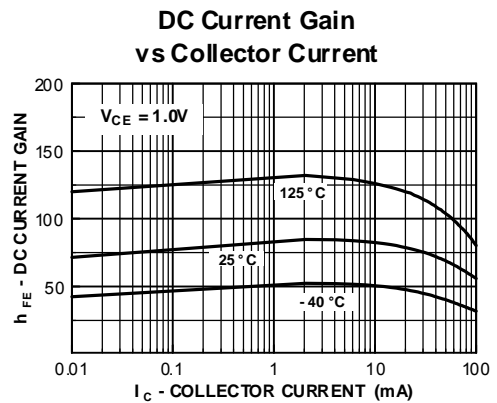
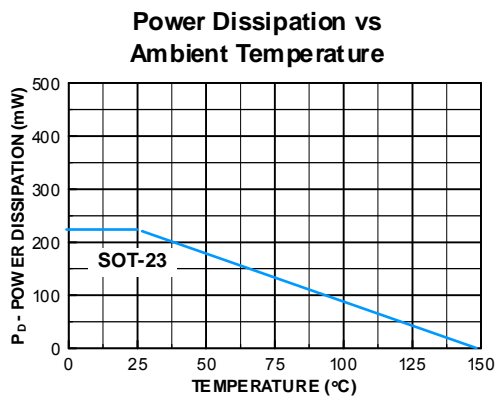
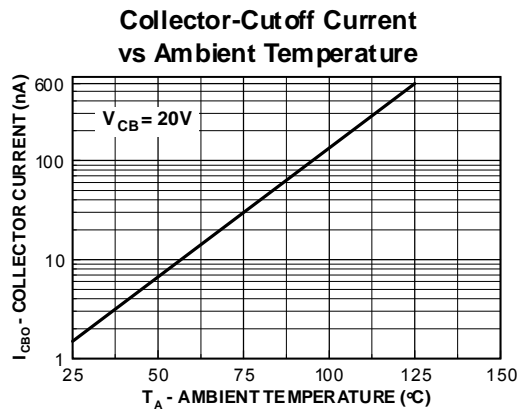
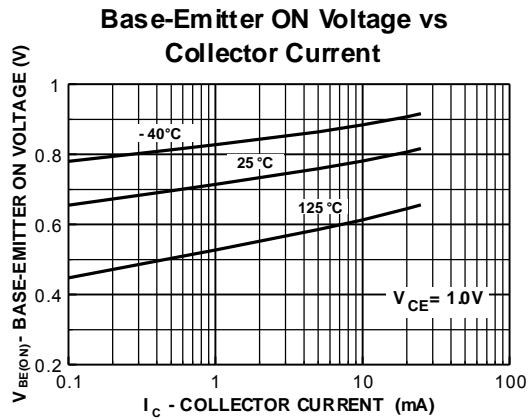
| PARAMETER | Symbol | Test Condition | MIN. | MAX. | Units |
|---|---------------|---|----------------------|-----------------------------|--------------------|
| OFF CHARACTERISTICS | | | | | |
| Collector - Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=10mA, I_B=0$ | 15 | - | V |
| Collector - Emitter Breakdown Voltage | $V_{(BR)CES}$ | $I_C=10\mu A, I_B=0$ | 40 | - | V |
| Collector - Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$ | 40 | - | V |
| Emitter - Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$ | 4.5 | - | V |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=20V, I_E=0$ $V_{CB}=20V, I_E=0, T_A=125^\circ C$ | | 0.4 30 | μA μA |
| ON CHARACTERISTICS | | | | | |
| DC Current Gain (Note 2) | h_{FE} | $I_C=10mA, V_{CE}=1.0V$ $I_C=10mA, V_{CE}=0.35V, T_A=-55^\circ C$ $I_C=30mA, V_{CE}=0.4V$ $I_C=100mA, V_{CE}=1.0V$ | 40 40 30 20 | 120 | - |
| Collector - Emitter Saturation Voltage (Note 2) | $V_{CE(SAT)}$ | $I_C=10mA, I_B=1.0mA$ $I_C=10mA, I_B=1.0mA, T_A=125^\circ C$ $I_C=30mA, I_B=3.0mA$ $I_C=100mA, I_B=10mA$ | - | 0.2 0.3 0.25 0.5 | V |
| Base - Emitter Saturation Voltage (Note 2) | $V_{BE(SAT)}$ | $I_C=10mA, I_B=1.0mA$ $I_C=10mA, I_B=1.0mA, T_A=-55^\circ C$ $I_C=10mA, I_B=1.0mA, T_A=125^\circ C$ $I_C=30mA, I_B=3.0mA$ $I_C=100mA, I_B=10mA$ | 0.7 0.59 | 0.85 1.02 1.15 1.6 | V |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| Output Capacitance | C_{OBO} | $V_{CB}=5V, I_E=0, f=1MHz$ | - | 4.0 | pF |
| Input Capacitance | C_{IBO} | $V_{CB}=0.5V, I_C=0, f=1MHz$ | - | 5.0 | pF |
| Small-Signal Current Gain | h_{FE} | $I_C=10mA, V_{CE}=10V,$ $R_G=2.0k\Omega, f=100MHz$ | 5.0 | - | - |
| SWITCHING CHARACTERISTICS | | | | | |
| Storage Time | t_s | $I_{B1}=I_{B2}=I_C=10mA$ | - | 13 | ns |
| Turn-On Time | t_{on} | $V_{CC}=3V, I_C=10mA$ $I_{B1}=3.0mA$ | - | 12 | ns |
| Turn-Off Time | t_{off} | $V_{CC}=3V, I_C=10mA$ $I_{B1}=3.0mA, I_{B2}=1.5mA$ | - | 18 | ns |

Note 2: Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.



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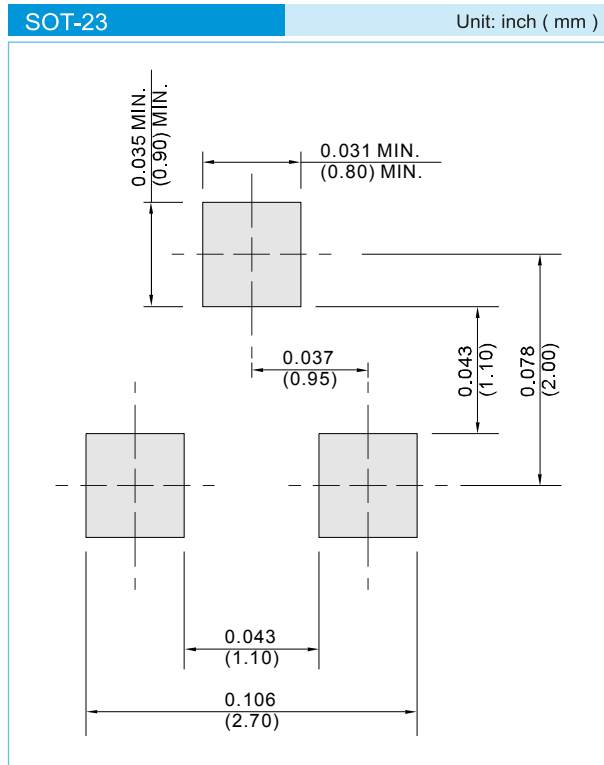
ELECTRICAL CHARACTERISTICS CURVE





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MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
 - T/R - 12K per 13" plastic Reel
 - T/R - 3K per 7" plastic Reel



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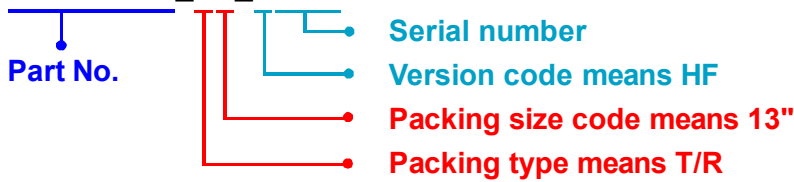
Part No_packing code_Version

MMBT2369A_R1_00001

MMBT2369A_R2_00001

For example :

RB500V-40_R2_00001



| Packing Code XX | | | | Version Code XXXXX | | |
|--------------------------------------|----------------------|----------------------------------|----------------------|---------------------------|----------------------|---------------------------------------|
| Packing type | 1 st Code | Packing size code | 2 nd Code | HF or RoHS | 1 st Code | 2 nd ~5 th Code |
| Tape and Ammunition Box (T/B) | A | N/A | 0 | HF | 0 | serial number |
| Tape and Reel (T/R) | R | 7" | 1 | RoHS | 1 | serial number |
| Bulk Packing (B/P) | B | 13" | 2 | | | |
| Tube Packing (T/P) | T | 26mm | X | | | |
| Tape and Reel (Right Oriented) (TRR) | S | 52mm | Y | | | |
| Tape and Reel (Left Oriented) (TRL) | L | PANASERT T/B CATHODE UP (PBCU) | U | | | |
| FORMING | F | PANASERT T/B CATHODE DOWN (PBCD) | D | | | |



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