



# MMBT5551

## NPN HIGH VOLTAGE TRANSISTOR

**VOLTAGE** 160 Volts **POWER** 250 mWatts

### FEATURES

- NPN Silicon, planar design
- Collector-emitter voltage  $V_{CE} = 160V$
- Collector current  $I_C = 600mA$
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: SOT-23, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams
- Marking: M51

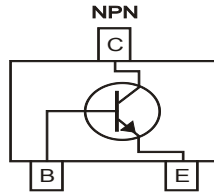
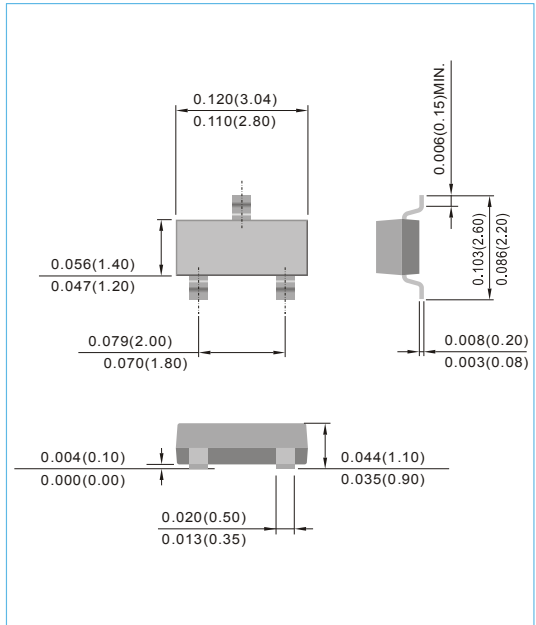


Fig.34(TOP VIEW)

### SOT-23

Unit : inch(mm)



### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ C$ unless otherwise noted)

| PARAMETER                    | SYMBOL    | VALUE | UNITS |
|------------------------------|-----------|-------|-------|
| Collector - Emitter Voltage  | $V_{CEO}$ | 160   | V     |
| Collector - Base Voltage     | $V_{CBO}$ | 180   | V     |
| Emitter - Base Voltage       | $V_{EBO}$ | 6     | V     |
| Collector Current Continuous | $I_C$     | 600   | mA    |

### THERMAL CHARACTERISTICS ( $T_A=25^\circ C$ unless otherwise noted)

| PARAMETER  | SYMBOL          | VALUE       | UNITS        |
|--|-----------------|-------------|--------------|
| Max Power Dissipation (Note 1)                               | $P_D$           | 250         | mW           |
| Thermal Resistance ,Junction to Ambient (Note 1)             | $R_{\theta JA}$ | 325         | $^\circ C/W$ |
| Operating Junction Temperature and Storage Temperature Range | $T_J, T_{STG}$  | -55 to +150 | $^\circ C$   |

**NOTES:**

1. Mounted on FR-4 PCB, single sided copper, mini pad.



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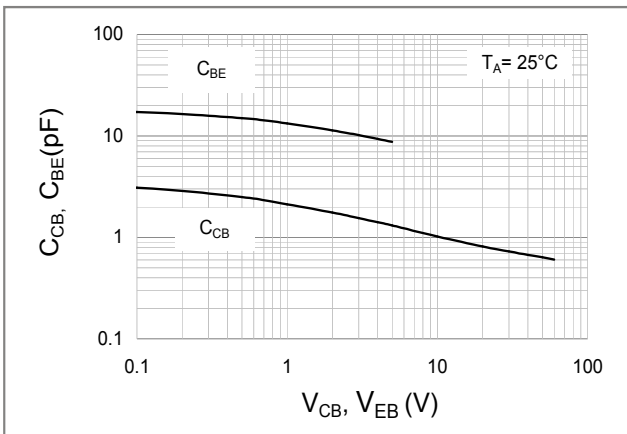
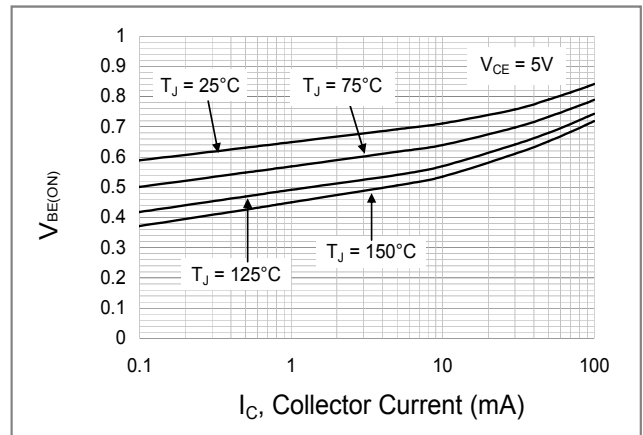
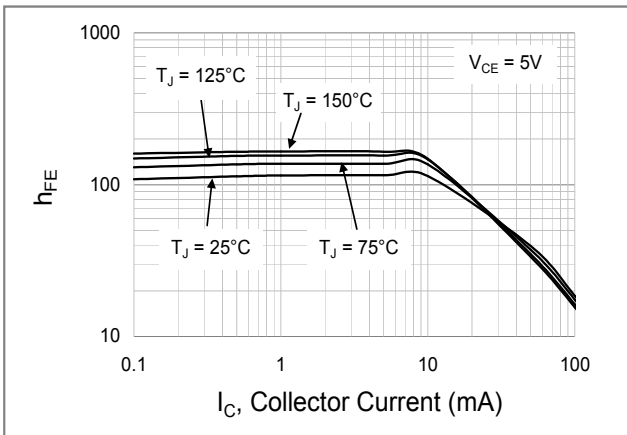
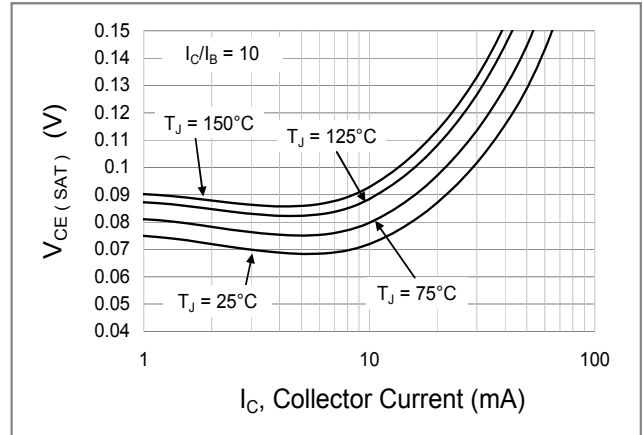
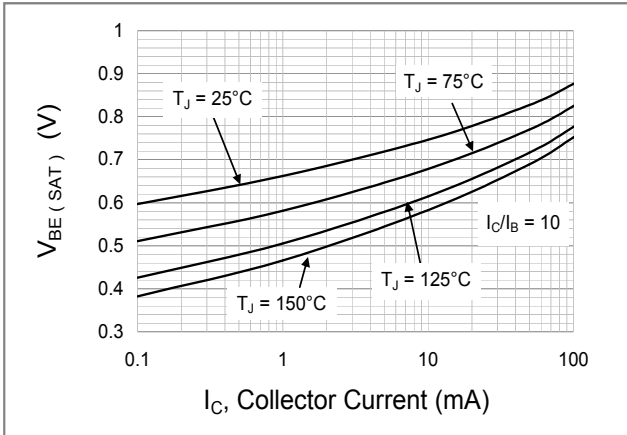
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                              | SYMBOL               | TEST CONDITION   | MIN.           | TYP.        | MAX.          | UNITS |
|--|----------------------|--|----------------|-------------|---------------|-------|
| Collector - Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> =1mA, I <sub>B</sub> =0A  | 160            | -           | -             | V     |
| Collector - Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =100μA, I <sub>E</sub> =0A  | 180            | -           | -             | V     |
| Emitter - Base Breakdown Voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> =10μA, I <sub>C</sub> =0A   | 6              | -           | -             | V     |
| Collector - Base Cut-off Current       | I <sub>CBO</sub>     | V <sub>CB</sub> =120V, I <sub>E</sub> =0A  | -              | -           | 50            | nA    |
| Emitter - Base Cut-off Current         | I <sub>EBO</sub>     | V <sub>EB</sub> =4V, I <sub>C</sub> =0A  | -              | -           | 50            | nA    |
| DC Current Gain                        | h <sub>FE</sub>      | V <sub>CE</sub> =5V, I <sub>C</sub> =1mA<br>V <sub>CE</sub> =5V, I <sub>C</sub> =10mA<br>V <sub>CE</sub> =5V, I <sub>C</sub> =50mA | 80<br>80<br>30 | -<br>-<br>- | -<br>250<br>- | -     |
| Collector - Emitter Saturation Voltage | V <sub>CE(SAT)</sub> | I <sub>C</sub> =10mA, I <sub>B</sub> =1mA<br>I <sub>C</sub> =50mA, I <sub>B</sub> =5mA   | -<br>-         | -<br>-      | 150<br>200    | mV    |
| Base - Emitter Saturation Voltage      | V <sub>BE(SAT)</sub> | I <sub>C</sub> =10mA, I <sub>B</sub> =1mA<br>I <sub>C</sub> =50mA, I <sub>B</sub> =5mA   | -<br>-         | -<br>-      | 1<br>1        | V     |
| Collector-Base Capacitance             | C <sub>CBO</sub>     | V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz   | -              | -           | 6             | pF    |
| Emitter-Base Capacitance               | C <sub>EBO</sub>     | V <sub>EB</sub> =500mV, I <sub>C</sub> =0A, f=1MHz   | -              | -           | 30            | pF    |
| Transition frequency                   | F <sub>T</sub>       | I <sub>C</sub> =10mA, V <sub>CE</sub> =10V, f=100MHz   | 100            | -           | 300           | MHz   |



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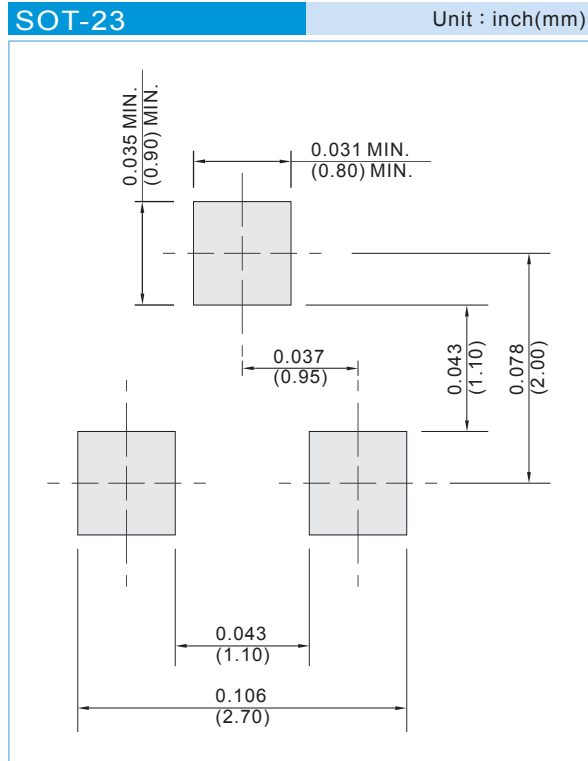
## RATING AND CHARACTERISTIC CURVES





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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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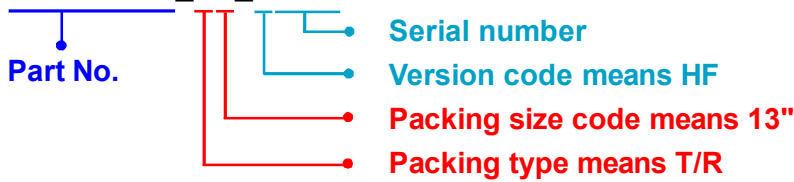
## Part No\_packing code\_Version

MMBT5551\_R1\_00001

MMBT5551\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



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



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