# MMBT5551-AU

## NPN HIGH VOLTAGE TRANSISTOR

**VOLTAGE** 160 Volt **POWER** 250 mWatt

### 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
- AEC-Q101 qualified

### MECHANICAL DATA

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

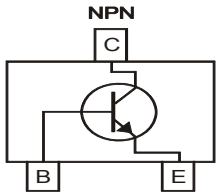
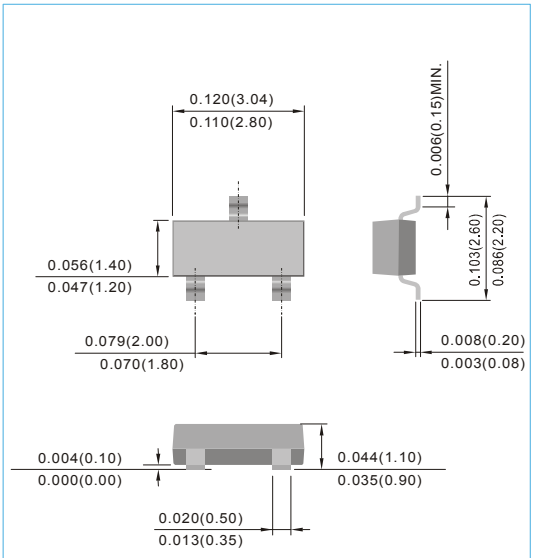



Fig.34(TOP VIEW)

**SOT-23** Unit : inch(mm)




### ABSOLUTE MAXIMUM RATINGS ($T_A$=25°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°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 | °C/W |
| Operating Junction Temperature and Storage Temperature Range | $T_J$,$T_{STG}$ | -55 to +150 | °C |

NOTES :

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

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## ELECTRICAL CHARACTERISTICS ($T_A$=25°C unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|
| Collector - Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=1mA,$I_B$=0A | 160 | - | - | V |
| Collector - Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=100uA,$I_E$=0A | 180 | - | - | V |
| Emitter - Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$=10uA,$I_C$=0A | 6 | - | - | V |
| Collector - Base Cut-off Current | $I_{CBO}$ | $V_{CB}$=120V,$I_E$=0A | - | - | 50 | nA |
| Emitter - Base Cut-off Current | $I_{EBO}$ | $V_{EB}$=4V,$I_C$=0A | - | - | 50 | nA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=5V,$I_C$=1mA<br>$V_{CE}$=5V,$I_C$=10mA<br>$V_{CE}$=5V,$I_C$=50mA | 80<br>80<br>30 | -<br>-<br>- | -<br>250<br>- | - |
| Collector - Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C$=10mA,$I_B$=1mA<br>$I_C$=50mA,$I_B$=5mA | -<br>- | -<br>- | 150<br>200 | mV |
| Base - Emitter Satruation Voltage | $V_{BE(SAT)}$ | $I_C$=10mA,$I_B$=1mA<br>$I_C$=50mA,$I_B$=5mA | -<br>- | -<br>- | 1<br>1 | V |
| Collector-Base Capacitance | $C_{CBO}$ | $V_{CB}$=10V,$I_E$=0A,f=1MHz | - | - | 6 | pF |
| Emitter-Base Capacitance | $C_{EBO}$ | $V_{EB}$=500mV,$I_C$=0A,f=1MHz | - | - | 30 | pF |
| Transition frequency | $F_T$ | $I_C$=10mA,$V_{CE}$=10V f=100MH$_Z$ | 100 | - | 300 | MHz |

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## RATING AND CHARACTERISTIC CURVES

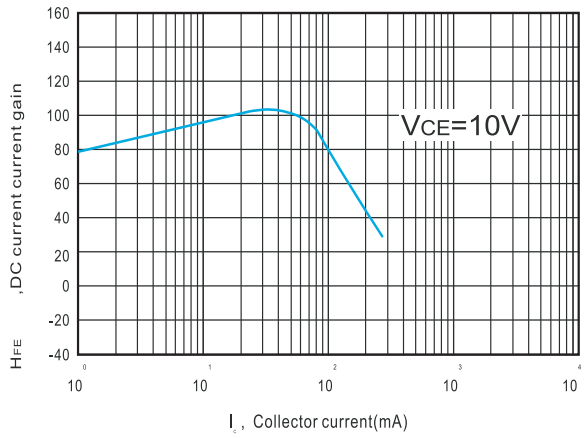


Fig.1 DC current gain

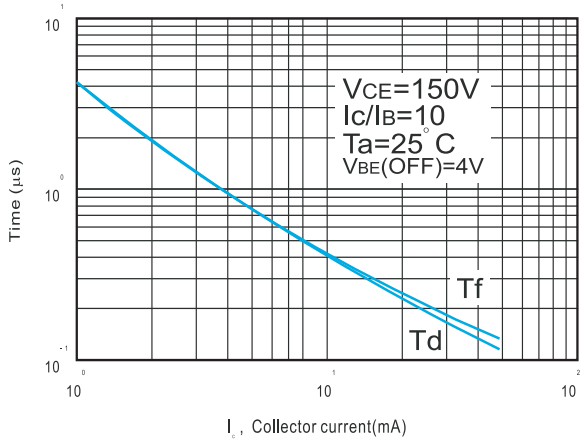


Fig.2 Turn-on switching time

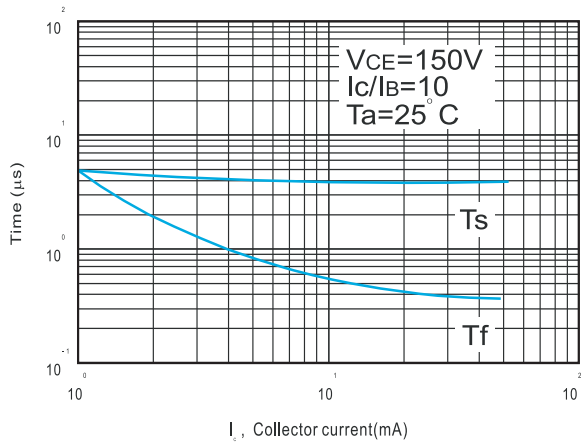


Fig.3 Turn-off switching time

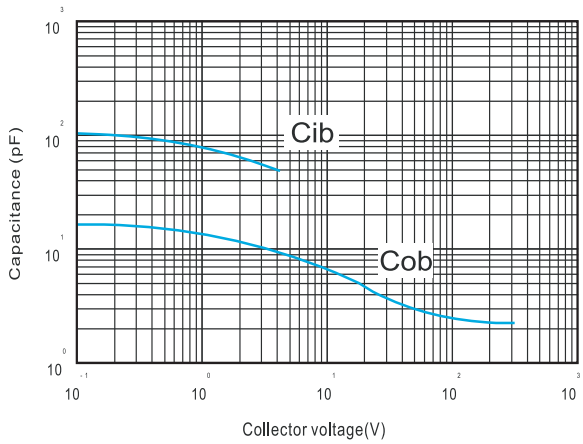


Fig.4 Capacitance

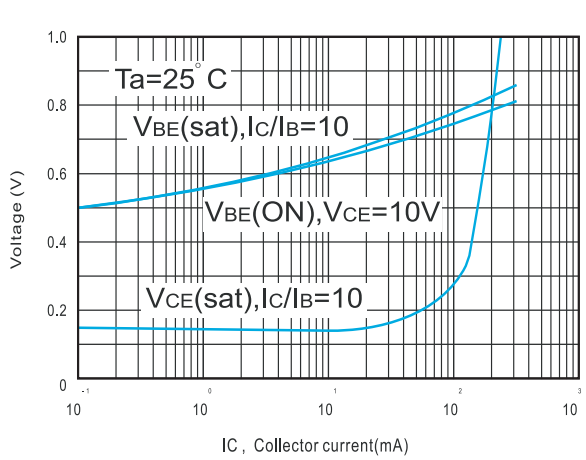


Fig.5 ON Voltage

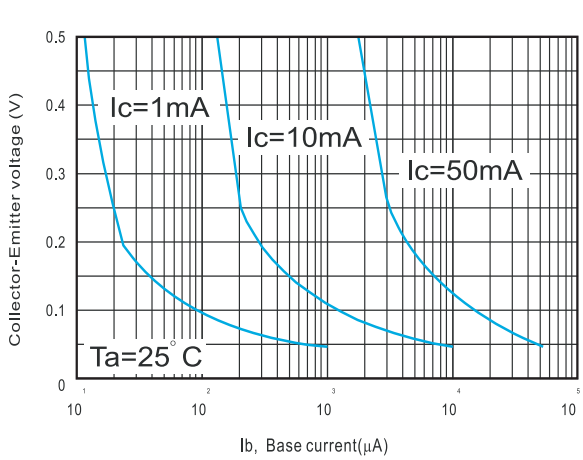


Fig.6 Collector saturation region

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## RATING AND CHARACTERISTIC CURVES

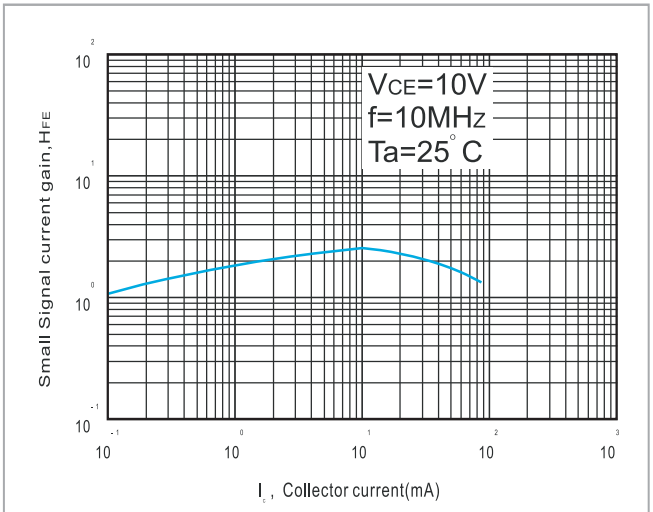


Fig.7 High Frequency current gain

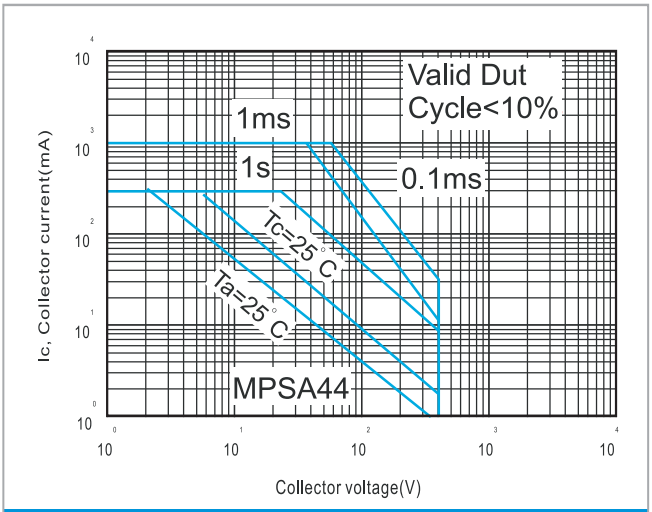


Fig.8 Safe operating area

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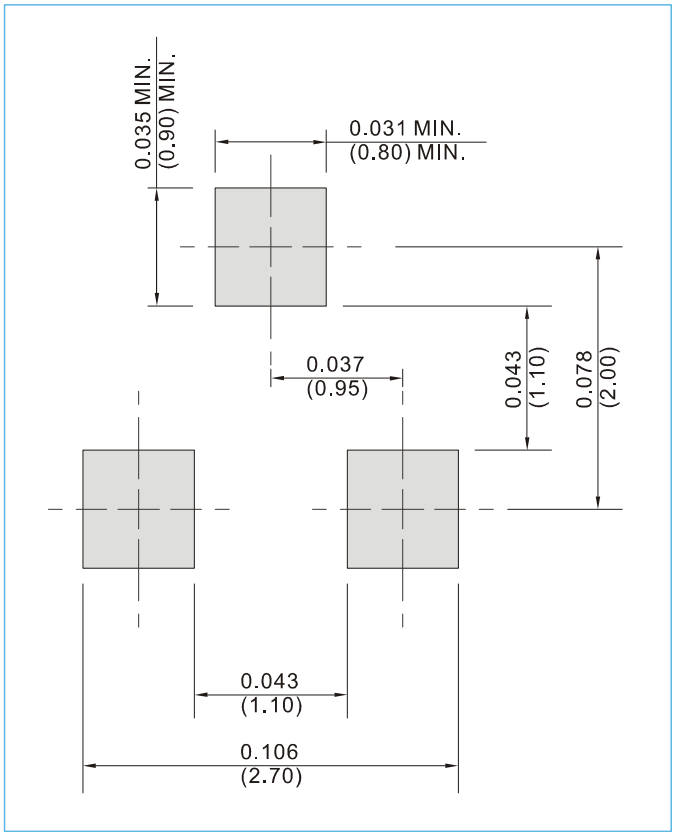
## MOUNTING PAD LAYOUT

SOT-23 Unit : inch(mm)




## 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-AU_R1_000A1
MMBT5551-AU_R2_000A1

## For example :

**RB500V-40_R2_00001**

- RB500V-40 — Part No.
- R2 — Packing type means T/R
- R2 — Packing size code means 13"
- 00001 — Version code means HF
- 00001 — Serial number

| Packing Code XX | | | | Version Code XXXXX | | |
|---|---|---|---|---|---|---|
| Packing type | 1st Code | Packing size code | 2nd Code | HF or RoHS | 1st Code | 2nd~5th 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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