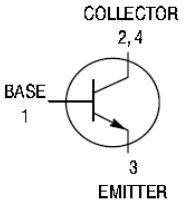
# NPN Silicon Epitaxial Planar Transistor

## TFMMT495R

## Features

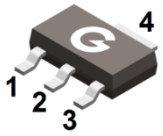
- $BV_{CEO}$ > 150V
- $I_C$ = 1A continuous collector current
- $I_{CM}$ = 2A peak pulse current
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 standards for high reliability

HF




## Mechanical Data

- Case: SOT-223
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208




SOT-223

## Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|---|---|---|---|
| TFMMT495R | SOT-223 | 4000 pcs / Tape & Reel | 495 |

## Maximum Ratings (@ $T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{CBO}$ | 170 | V |
| Collector-Emitter Breakdown Voltage | $V_{CEO}$ | 150 | V |
| Emitter-Base Breakdown Voltage | $V_{EBO}$ | 7 | V |
| Collector Current (Continuous) | $I_C$ | 1 | A |
| Peak Pulse Current | $I_{CM}$ | 2 | A |
| Base Current | $I_B$ | 0.2 | A |

## Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation *1 | $P_D$ | 2.5 | W |
| Thermal Resistance Junction-to-Air *1 | $R_{\theta JA}$ | 50 | °C/W |
| Thermal Resistance Junction-to-Case *1 | $R_{\theta JC}$ | 25 | °C/W |
| Junction Temperature | $T_J$ | -55 ~ +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | °C |

Note 1: The data tested by surface mounted on a 1 inch$^2$ FR-4 board with 2OZ copper

## Electrical Characteristics (@ $T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$ = 100μA, $I_E$ = 0 | 170 | - | - | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$ = 10mA, $I_B$ = 0 | 150 | - | - | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 100μA, $I_C$ = 0 | 7 | - | - | V |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$ = 150V, $I_E$ = 0 | - | - | 0.1 | μA |
| Collector Cut-off Current | $I_{CES}$ | $V_{CE}$ = 150V | - | - | 0.1 | μA |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB}$ = 5V, $I_C$ = 0 | - | - | 0.1 | μA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$ = 10V, $I_C$ = 1mA | 100 | - | - | - |
| | | $V_{CE}$ = 10V, $I_C$ = 250mA | 100 | - | 300 | - |
| | | $V_{CE}$ = 10V, $I_C$ = 500mA | 50 | - | - | - |
| | | $V_{CE}$ = 10V, $I_C$ = 1A | 10 | - | - | - |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$ = 250mA, $I_B$ = 25mA | - | - | 0.2 | V |
| | | $I_C$ = 500mA, $I_B$ = 50mA | - | - | 0.3 | V |
| Base-emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C$ = 500mA, $I_B$ = 50mA | - | - | 1.0 | V |
| Base-emitter Voltage | $V_{BE(on)}$ | $I_C$ = 500mA, $V_{CE}$ = 10V | - | - | 1.0 | V |
| Transition Frequency | $f_T$ | $V_{CE}$ = 10V, $I_C$ = 50mA<br>F = 100MHz | 100 | - | - | MHz |
| Output Capacitance | $C_{ob}$ | $V_{CB}$ = 10V, f = 1MHz | - | - | 10 | pF |

## Ratings and Characteristic Curves (@ $T_A$ = 25°C unless otherwise specified)

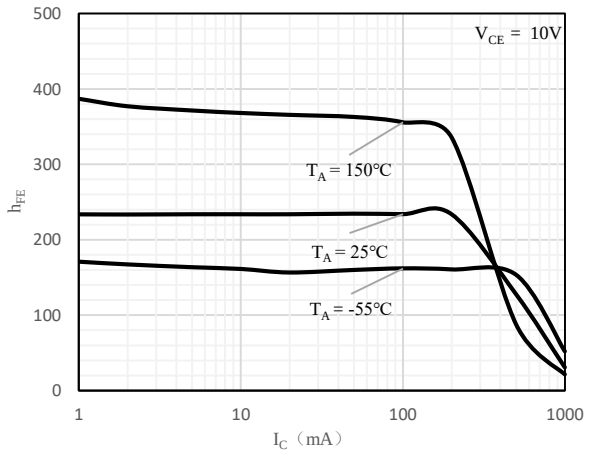



Fig 1 $h_{FE}$ vs. $I_C$

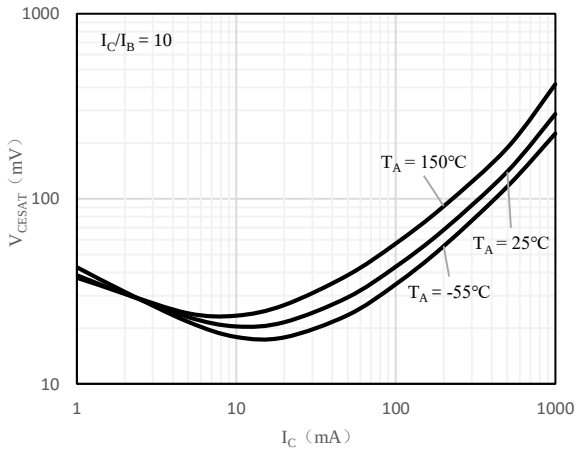



Fig 2 $V_{CE(sat)}$ vs. $I_C$

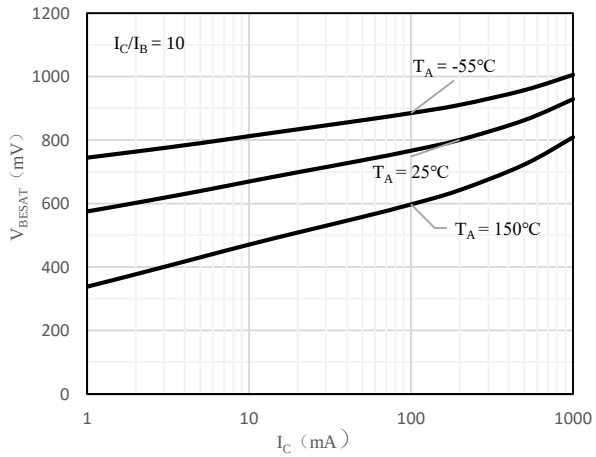



Fig 3 $V_{BE(sat)}$ vs. $I_C$

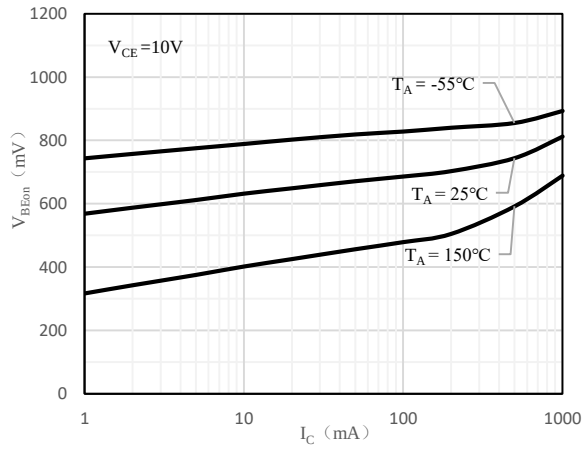



Fig 4 $V_{BE(ON)}$ vs. $I_C$

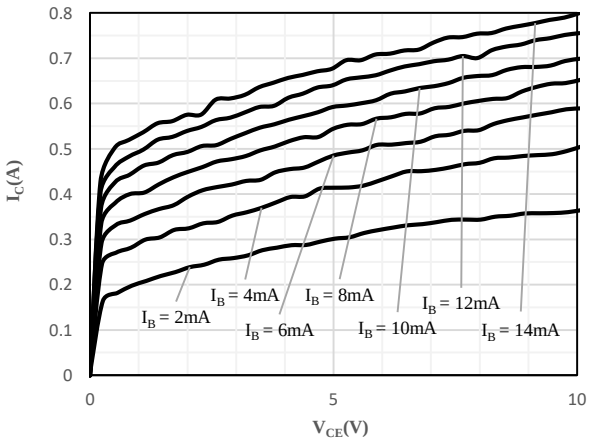



Fig 5 $I_C$ vs. $V_{CE}$

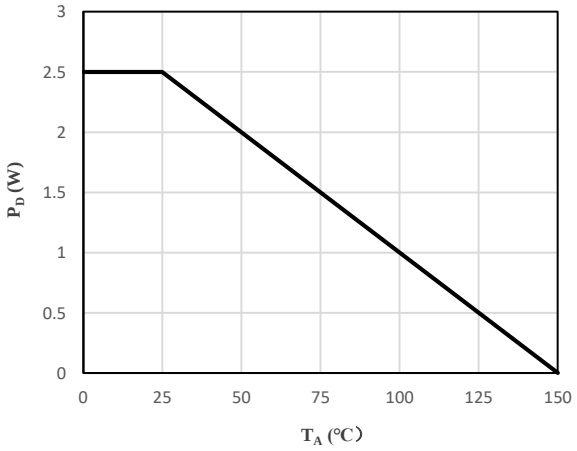



Fig 6 Steady State Power Derating

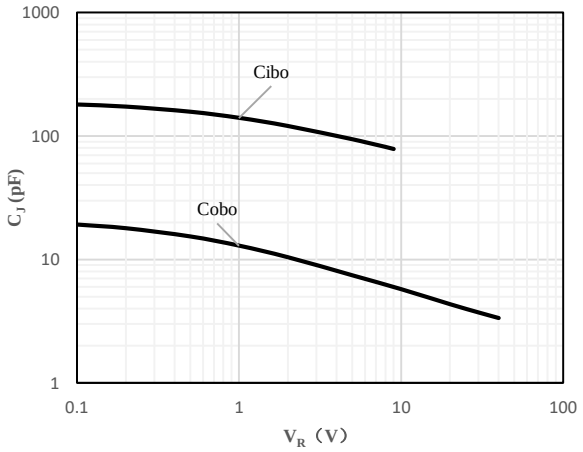
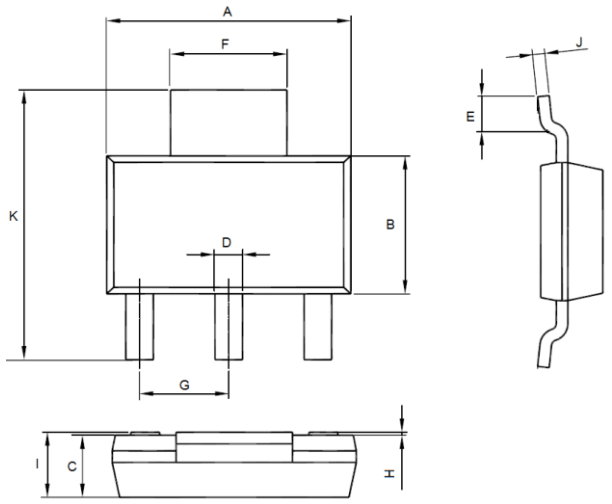



Fig 7 $C_J$ vs. $V_R$

## Package Outline Dimensions (Unit: mm)




| SOT-223 | | |
|---|---|---|
| **Dimension** | **Min.** | **Max.** |
| A | 6.10 | 6.50 |
| B | 3.30 | 3.70 |
| C | 1.50 | 1.70 |
| D | 0.66 | 0.82 |
| E | 0.90 | 1.15 |
| F | 2.90 | 3.10 |
| G | 2.20 | 2.40 |
| H | 0.02 | 0.10 |
| I | 1.52 | 1.80 |
| J | 0.20 | 0.40 |
| K | 6.70 | 7.30 |

## Mounting Pad Layout (Unit: mm)

### SOT-223

