# PNP Transistor
# 250mW SOT-23 AEC-Q101

MMBTA92-A

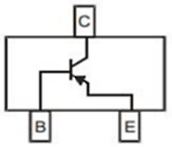
MERITEK

## FEATURE

- Silicon Planar Design For High Voltage Application
- Collector-Emitter Voltage $V_{CE}$=300V
- Collector Current: $I_C$=500mA
- Application: Signal Processing, Switching, Amplification
- AEC-Q101 Qualified

## MECHANICAL DATA

- Case: SOT-23, molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026




RoHS

## MAXIMUM RATING

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector-Base Voltage | | $V_{CBO}$ | -300 | V |
| Collector-Emitter Voltage | | $V_{CEO}$ | -300 | V |
| Emitter-Base Voltage | | $V_{EBO}$ | -5 | V |
| Collector Current | | $I_C$ | -500 | mA |
| Peak Collector Current | | $I_{CM}$ | -600 | mA |
| Peak Collector Current | | $I_{BM}$ | -100 | mA |
| Total Power Dissipation | $T_A$<25˚C | $P_{tot}$ | 250 | mW |
| Typical Thermal Resistance-Junction to Ambient (Note2) | | $R_{\theta JA}$ | 500 | °C/W |
| Junction Temperature and Storage Temperature Range | | $T_J$, $T_{stg}$ | -55 ~+150 | °C |

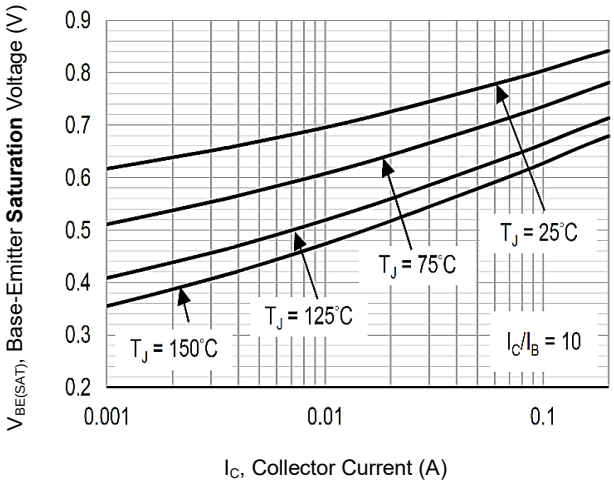
## ELECTRICAL CHARACTERISTICS

| Parameter- ON Characteristic | Conditions | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain | $V_{CE}$=-10V, $I_C$=-1mA | $h_{FE}$ | 25 | - | - |
| | $V_{CE}$=-10V, $I_C$=-10mA | | 40 | - | |
| | $V_{CE}$=-10V, $I_C$=-30mA | | 25 | - | |
| Collector-Emitter Saturation Voltage | $I_C$=-20mA, $I_B$=-2mA | $V_{CE(SAT)}$ | - | -0.5 | V |
| Base-Emitter Saturation Voltage | $I_C$=-20mA, $I_B$=-2mA | $V_{BE(SAT)}$ | - | -0.9 | V |
| **Parameter- OFF Characteristics** | **Conditions** | **Symbol** | **Min.** | **Max.** | **Unit** |
| Collector- Base Breakdown Voltage | $I_C$=-100μA, $I_E$=0 | $V_{(BR)CBO}$ | -300 | - | |
| Collector-Emitter Breakdown Voltage | $I_C$=-1.0mA, $I_B$=0 | $V_{(BR)CEO}$ | -300 | - | V |
| Emitter-Base Breakdown Voltage | $I_E$=-100μA, $I_C$=0 | $V_{(BR)EBO}$ | -5 | - | V |
| Collector Base Cut-Off Current | $V_{CB}$=-200V, $I_E$=0 | $I_{CBO}$ | - | -250 | nA |
| Collector-Emitter Cut-Off Current | $V_{CES}$=-300V | $I_{CES}$ | - | -250 | nA |
| Emitter Base Cut-Off Current | $V_{EB}$=-3V, $I_C$=0 | $I_{EBO}$ | - | -100 | nA |
| Collector Capacitance | $V_{CB}$=-20V, $I_E$=0, f=1MHz | C | - | 6 | pF |
| **Parameter-Small Signal** | **Conditions** | **Symbol** | **Min.** | **Max.** | **Unit** |
| Current-Gain – Bandwidth Product | $I_C$=-10mA, $V_{CE}$=-20V, f=100MHz | $f_T$ | 50 | - | MHz |

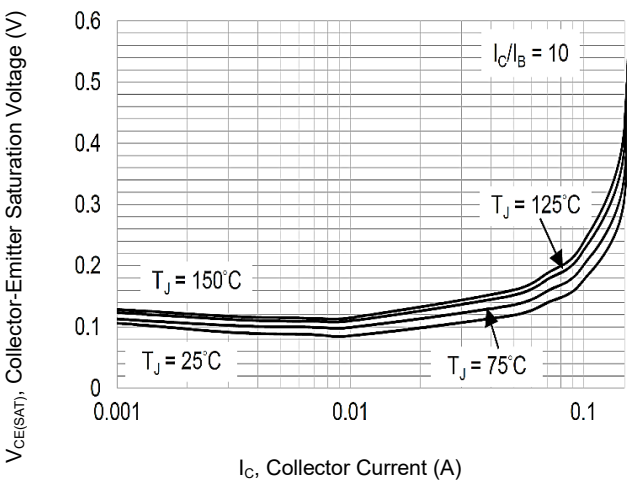
Note:
1. $T_A$=25˚C unless otherwise noted.
2. Device mounted on FR4 PCB at 1 inch square copper pad.
3. Pulse test: tp<300μs;δ <0.02.

## CHARACTERISTIC CURVES

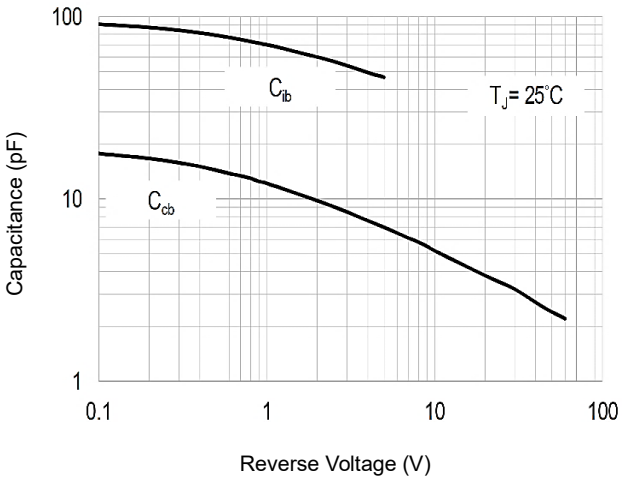
**Base Emitter Saturation Voltage**



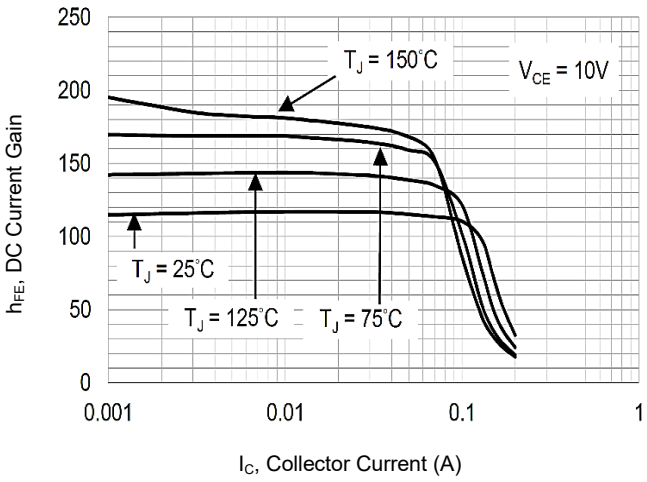

**Collector-Emitter Saturation Voltage**



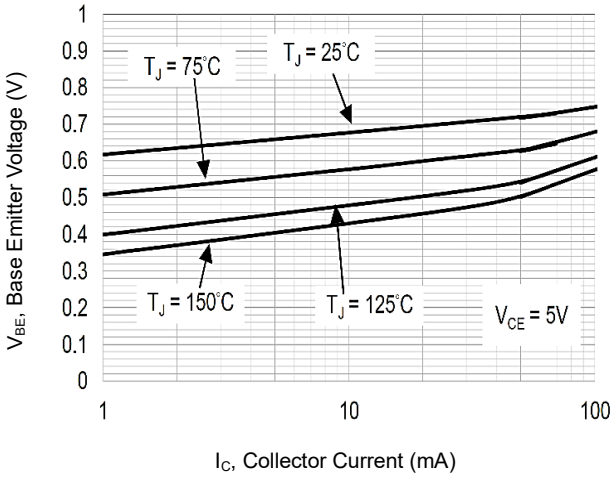

**Capacitance**




**DC Current Gain**




**Base Emitter On Voltage**



## DIMENSIONS

| SOT-23 | Min (mm) | Max (mm) |
|---|---|---|
| **A1** | 0.00 | 0.10 |
| **A2** | 0.80 | 1.10 |
| **b** | 0.35 | 0.50 |
| **c** | 0.08 | 0.20 |
| **D** | 2.80 | 3.04 |
| **e** | 0.90 | 1.00 |
| **e1** | 1.80 | 2.00 |
| **E** | 2.20 | 2.60 |
| **E1** | 1.20 | 1.40 |
| **L** | 0.15 | -- |
| **X** | 0.80 | |
| **X1** | 0.95 | |
| **Y** | 1.10 | |
| **Y1** | 0.90 | |
| **Y2** | 2.90 | |