# PNP Transistor
# -200V , -300V 0.35W SOT-23

MMBTA9x Series

MERITEK

## FEATURES

- PNP Silicone Design for High Voltage Application
- Miniature Surface Mount Package for SMT process
- Application: Switching and Amplification Circuit

## MAXIMUM RATINGS and ELECTRICAL CHARACTERISTICS

RoHS

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector Base Voltage | MMBTA92 | $V_{CBO}$ | -300 | V |
| | MMBTA93 | | -200 | |
| Collector Emitter Voltage | MMBTA92 | $V_{CEO}$ | -300 | V |
| | MMBTA93 | | -200 | |
| Emitter Base Voltage | | $V_{EBO}$ | -5.0 | V |
| Collector Current | | $I_C$ | 500 | mA |
| Power Dissipation | | $P_{tot}$ | 350 | mW |
| Operating and Storage Junction Temperature | | $T_J$, $T_{STG}$ | -55~+150 | ºC |

| Parameter | | Conditions | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|---|
| DC Current Gain | | $V_{CE}$= -10V, $I_C$= -1mA | $h_{FE}$ | 25 | -- | -- |
| | | $V_{CE}$= -10V, $I_C$= -10mA | | 80 | 200 | -- |
| | | $V_{CE}$= -10V, $I_C$= -30mA | | 40 | -- | -- |
| Collector Base Cutoff Current | MMBTA92 | $V_{CB}$= -200V | $I_{CBO}$ | -- | 100 | nA |
| | MMBTA93 | $V_{CB}$= -160V | | -- | 100 | |
| Emitter Base Cutoff Current | | $V_{EB}$= -3V | $I_{EBO}$ | -100 | | nA |
| Collector Base Breakdown Voltage | MMBTA92 | $I_C$= -100µA | $V_{(BR)CBO}$ | -300 | -- | V |
| | MMBTA93 | | | -200 | | |
| Collector Emitter Breakdown Voltage | MMBTA92 | $I_C$= -1mA | $V_{(BR)CEO}$ | -300 | -- | V |
| | MMBTA93 | | | -200 | | |
| Emitter Base Breakdown Voltage | | $I_E$= -100µA | $V_{(BR)EBO}$ | -5 | -- | V |
| Collector Emitter Saturation Voltage | | $I_C$= -20mA, $I_B$= -2mA | $V_{CE(sat)}$ | -- | -0.50 | V |
| Base Emitter Saturation Voltage | | $I_C$= -20mA, $I_B$= -2mA | $V_{BE(sat)}$ | -- | -0.90 | V |
| Gain Bandwidth Product | | $V_{CE}$= -20V, $I_C$=-10mA, f=100MHz | $f_T$ | 50 | -- | MHz |
| Collector Capacitance | MMBTA92 | $V_{CB}$= -20V, f=1MHz | C | -- | 6 | pF |
| | MMBTA93 | | | -- | 8 | |

Notes: $T_A$ =25 ºC Unless Otherwise Specified

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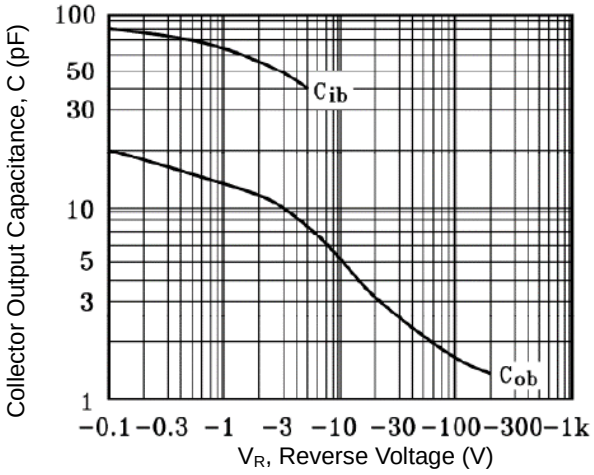
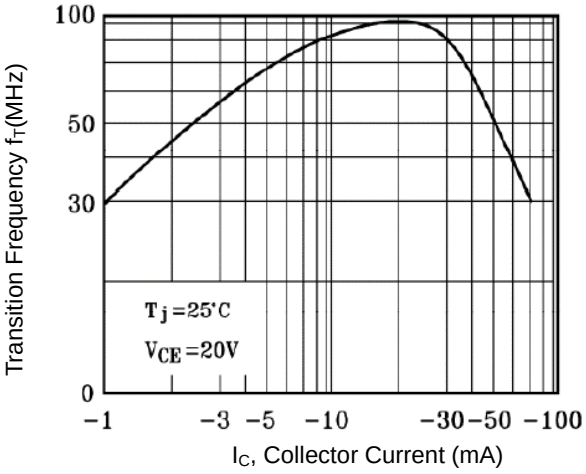
## CHARACTERISTIC CURVES

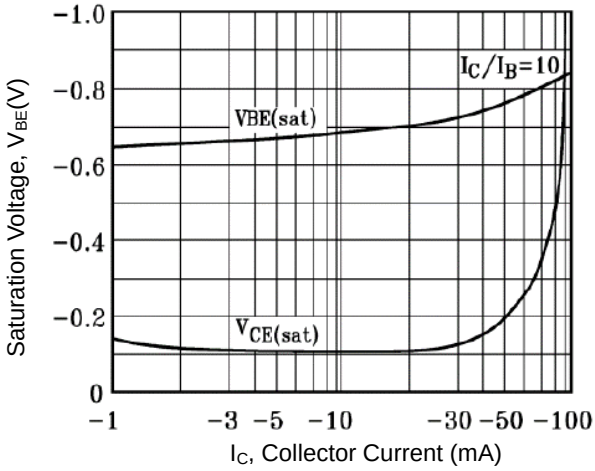
**Capacitance vs. $V_R$**



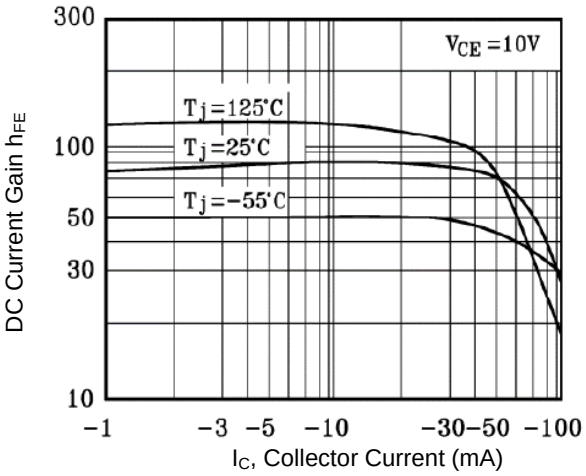

**Frequency vs. Current**




**$V_{BE}$(sat), $V_{CE}$(sat) vs $I_C$**

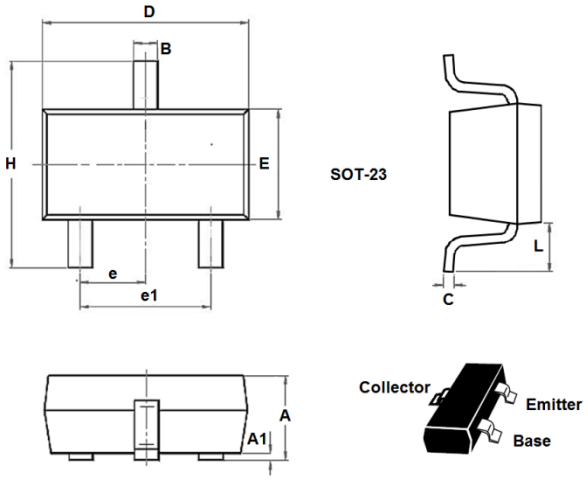



**$h_{FE}$ vs Current**




## DIMENSIONS AND PIN LAYOUT

| Item | Min (mm) | Max (mm) |
|---|---|---|
| A | 0.89 | 1.40 |
| A1 | 0.004 | 0.10 |
| B | 0.30 | 0.50 |
| C | 0.08 | 0.20 |
| D | 2.70 | 3.10 |
| E | 1.20 | 1.60 |
| e | 0.89 | 1.02 |
| e1 | 1.78 | 2.04 |
| L | 0.50 | 0.60 |
| H | 2.10 | 2.80 |




*Specifications subject to change without notice