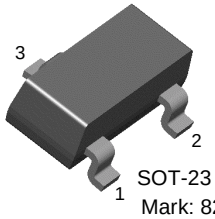
FAIRCHILD
SEMICONDUCTOR®

# MMBT4356

## PNP General Purpose Amplifier

- This device is designed for use as general purpose amplifiers and switches requiring collector currents to 500mA.
- Sourced from process 67.
- See TN4033A for characteristics.




SOT-23
Mark: 82
1. Base 2. Emitter 3. Collector

## Absolute Maximum Ratings * $T_A$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CES}$ | Collector-Emitter Voltage | -80 | V |
| $V_{CBO}$ | Collector-Base Voltage | -80 | V |
| $V_{EBO}$ | Emitter-Base Voltage | -5.0 | V |
| $I_C$ | Collector current - Continuous | -800 | mA |
| $T_J$, $T_{stg}$ | Operating and Storate Junction Temperature Range | -55 ~ +150 | °C |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired

**NOTES:**
1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Thermal Characteristics $T_A$=25°C unless otherwise noted

| Symbol | Parameter | Max. | Units |
|---|---|---|---|
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 350<br>2.8 | mW<br>mW/°C |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 357 | °C/W |

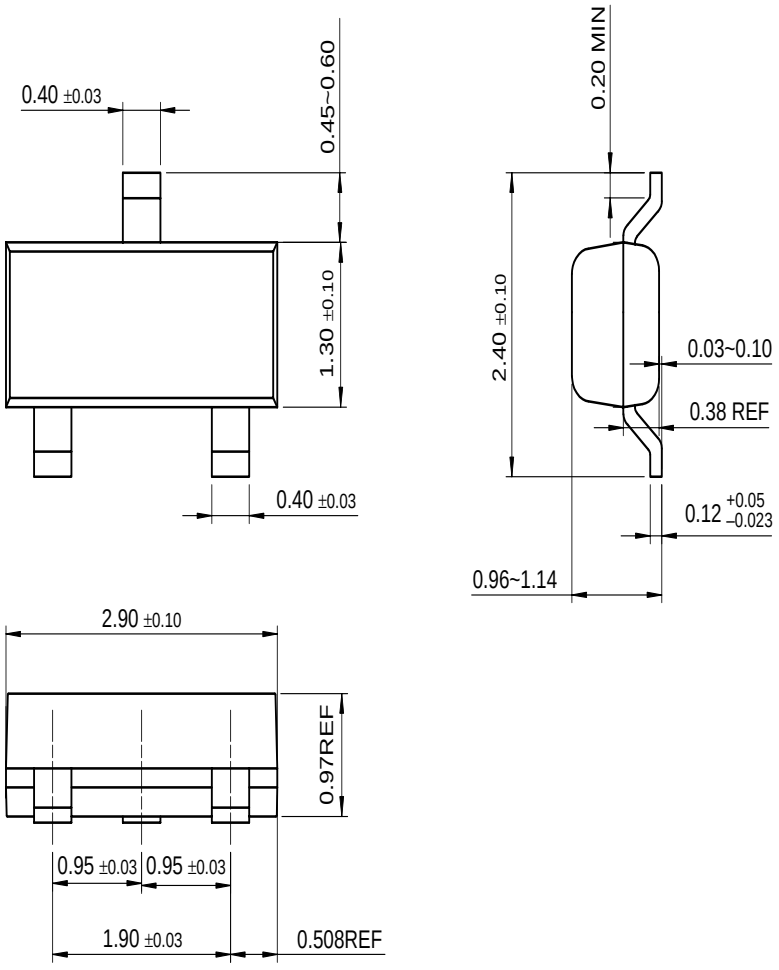
## Electrical Characteristics $T_A$=25°C unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage * | $I_C$ = -10mA, $I_B$ = 0 | -80 | | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = -10µA, $I_E$ = 0 | -80 | | | V |
| $V_{(BR)EBS}$ | Emitter-Base Breakdown Voltage | $I_C$ = -10µA, $I_C$ = 0 | -5.0 | | | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$ = -50V, $I_E$ = 0<br>$V_{CB}$ = -50V, $I_E$ = 0, $T_A$ = 75°C | | | -50<br>-5.0 | nA<br>µA |
| $I_{CES}$ | Collector Cutoff Current | $V_{CB}$ = -50V, $I_E$ = 0 | | | -50 | nA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$ = -4.0V, $I_C$ = 0 | | | -100 | µA |
| **On Characteristics** | | | | | | |
| $h_{FE}$ | DC Current Gain | $V_{CE}$ = -10V, $I_C$ = -100µA<br>$V_{CE}$ = -10V, $I_C$ = -1.0mA<br>$V_{CE}$ = -10V, $I_C$ = -10mA<br>$V_{CE}$ = -10V, $I_C$ = -100mA<br>$V_{CE}$ = -10V, $I_C$ = -500mA | 25<br>40<br>50<br>40<br>30 | | <br><br>250<br><br> | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$ = -150mA, $I_B$ = -15mA<br>$I_C$ = -500mA, $I_B$ = -50mA | | | -0.15<br>-0.5 | V<br>V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C$ = -150mA, $I_B$ = -15mA<br>$I_C$ = -500mA, $I_B$ = -50mA | | | -0.9<br>-1.1 | V<br>V |
| **Small Signal Characteristics** | | | | | | |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = -10V, f = 1MHz | | | 30 | pF |
| $C_{ib}$ | Input Capacitance | $V_{BE}$ = -0.5V, f = 1MHz | | | 110 | pF |
| $h_{fe}$ | Small-Signal Current Gain | $V_{CE}$ = -10V, $I_C$ = -50mA, f = 100MHz | 1.0 | | 5.0 | |
| NF | Noise Figure | $V_{CE}$ = -10V, $I_C$ = -100µA<br>$R_S$ = 1kΩ, f = 1kHz<br>$B_W$ = 1Hz | | | 3.0 | dB |
| **Switching Characteristics** | | | | | | |
| $t_{on}$ | Turn-On Time | $V_{CC}$ = -30V, $I_C$ = -500mA<br>$I_{B1}$ = $I_{B2}$ = -50mA | | | 100 | ns |
| $t_{off}$ | Turn-Off Time | | | | 400 | ns |

* Pulse Test: Pulse Width ≤ 300µs, Duty ≤ 2.0%

## Package Dimensions

SOT-23




Dimensions in Millimeters

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