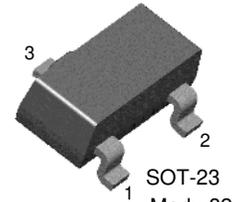# FAIRCHILD
SEMICONDUCTOR®

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 Derate above 25°C	350 2.8	mW 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			-50	nA
		V_{CB} = -50V, I_E = 0, T_A = 75°C			-5.0	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	25			
		V_{CE} = -10V, I_C = -1.0mA	40			
		V_{CE} = -10V, I_C = -10mA	50		250	
		V_{CE} = -10V, I_C = -100mA	40			
		V_{CE} = -10V, I_C = -500mA	30			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = -150mA, I_B = -15mA			-0.15	V
		I_C = -500mA, I_B = -50mA			-0.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	I_C = -150mA, I_B = -15mA			-0.9	V
		I_C = -500mA, I_B = -50mA			-1.1	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 R_S = 1kΩ, f = 1kHz B_W = 1Hz			3.0	dB
Switching Characteristics						
t_{on}	Turn-On Time	V_{CC} = -30V, I_C = -500mA			100	ns
t_{off}	Turn-Off Time	I_{B1} = I_{B2} = -50mA			400	ns

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

Package Dimensions

SOT-23

0.40 ±0.03

0.45~0.60

1.30 ±0.10

0.40 ±0.03

0.20 MIN

2.40 ±0.10

0.03~0.10

0.38 REF

$0.12 \begin{smallmatrix} +0.05 \\ -0.023 \end{smallmatrix}$

0.96~1.14

2.90 ±0.10

0.97REF

0.95 ±0.03 0.95 ±0.03

1.90 ±0.03

0.508REF
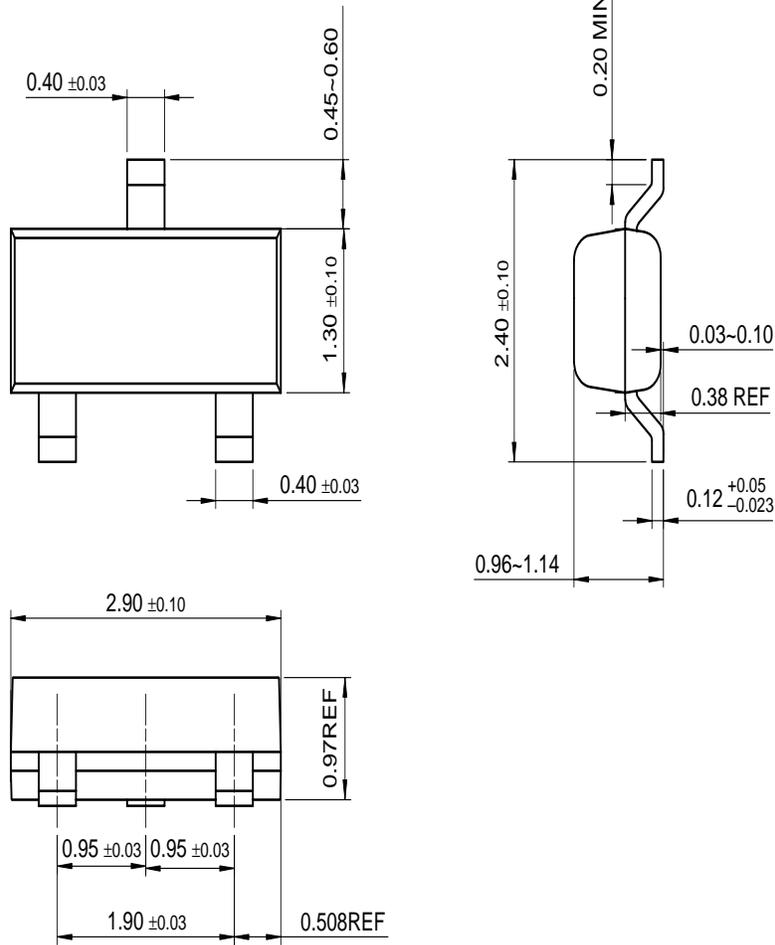
Dimensions in Millimeters

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EnSigna™	I²C™	OCX™	RapidConfigure™	UHC™
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Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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