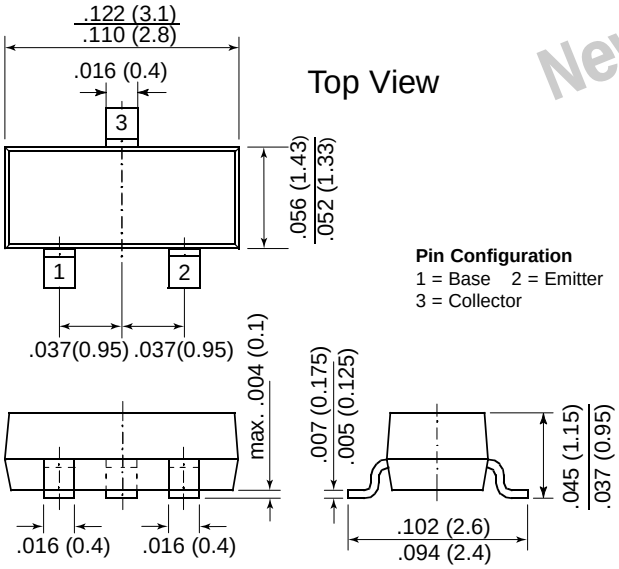
GENERAL SEMICONDUCTOR®

MMBT2907A

Small Signal Transistor (PNP)

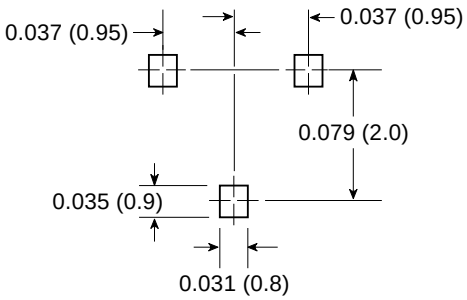
TO-236AB (SOT-23)

New Product



Dimensions in inches and (millimeters)

Mounting Pad Layout



Mechanical Data

Case: SOT-23 Plastic Package
Weight: approx. 0.008g
Marking Code: 2F
Packaging Codes/Options:
E8/10K per 13” reel (8mm tape)
E9/3K per 7” reel (8mm tape)

Features

- PNP Silicon Epitaxial Planar Transistor for switching and amplifier applications.
- This transistor is also available in the TO-92 case with the type designation MPS2907A.

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameters		Symbols	Value	Units
Collector-Emitter Voltage		$-V_{CEO}$	60	V
Collector-Base Voltage		$-V_{CBO}$	60	V
Emitter-Base Voltage		$-V_{EBO}$	5.0	V
Collector Current		$-I_C$	600	mA
Power Dissipation(1)	T_A = 25°C Derate above 25°C	P_{tot}	225 1.8	mW mW/°C
Power Dissipation(2)	T_A = 25°C Derate above 25°C	P_{tot}	300 2.4	mW mW/°C
Thermal Resistance Junction to Ambient Air	FR-5 Board Alumina Substrate	$R_{\Theta JA}$	556 417	°C/W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_S	– 55 to +150	°C

Notes:
(1) FR-5 Board = 1.0 x 0.75 x 0.062 in.
(2) Alumina Substrate = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

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Electrical Characteristics (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain	h_{FE}	$-V_{CE}$ = 10 V, $-I_C$ = 0.1 mA $-V_{CE}$ = 10 V, $-I_C$ = 1 mA $-V_{CE}$ = 10 V, $-I_C$ = 10 mA $-V_{CE}$ = 10 V, $-I_C$ = 150 mA(1) $-V_{CE}$ = 10 V, $-I_C$ = 500 mA(1)	75 100 100 100 50	— — — — —	— — — 300 —	—
Collector Cutoff Current	$-I_{CEX}$	$-V_{EB}$ = 0.5 V, $-V_{CE}$ = 30 V	—	—	50	nA
Collector Cutoff Current	$-I_{CBO}$	$-V_{CB}$ = 50 V, I_E = 0 $-V_{CB}$ = 50 V, I_E = 0, T_A = 125°C	— —	— —	0.01 10	µA
Emitter-Base Cutoff Current	$-I_{BL}$	$-V_{EB}$ = 0.5 V, $-V_{CE}$ = 30 V	—	—	50	nA
Collector-Emitter Saturation Voltage(1)	$-V_{CEsat}$	$-I_C$ = 150 mA, $-I_B$ = 15 mA $-I_C$ = 500 mA, $-I_B$ = 50 mA	— —	— —	0.4 1.6	V
Base-Emitter Saturation Voltage(1)	$-V_{BEsat}$	$-I_C$ = 150 mA, $-I_B$ = 15 mA $-I_C$ = 500 mA, $-I_B$ = 50 mA	— —	— —	1.3 2.6	V
Collector-Emitter Breakdown Voltage(1)	$-V_{(BR)CEO}$	$-I_C$ = 10 mA, I_B = 0	60	—	—	V
Collector-Base Breakdown Voltage	$-V_{(BR)CBO}$	$-I_C$ = 10 µA, I_E = 0	60	—	—	V
Emitter-Base Breakdown Voltage	$-V_{(BR)EBO}$	$-I_E$ = 10 µA, I_C = 0	5.0	—	—	V
Current Gain-Bandwidth Product	f_T	$-V_{CE}$ = 20 V, $-I_C$ = 50 mA f = 100 MHz	200	—	—	MHz
Output Capacitance	C_{obo}	$-V_{CB}$ = 10 V, f = 1.0 MHz I_E = 0	—	—	8	pF
Input Capacitance	C_{ibo}	$-V_{EB}$ = 2.0 V, f = 1.0 MHz I_C = 0	—	—	30	pF

Notes:
(1) Pulse test: Pulse width ≤ 300 µs, duty cycle ≤ 2.0%

Electrical Characteristics (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Turn-ON Time	t_{on}	$-I_{B1}$ = 15 mA, $-I_C$ = 150 mA $-V_{CC}$ = 30 V	—	—	45	ns
Delay Time	t_d	$-I_{B1}$ = 15 mA, $-I_C$ = 150 mA $-V_{CC}$ = 30 V	—	—	10	ns
Rise Time	t_r	$-I_{B1}$ = 15 mA, $-I_C$ = 150 mA, $-V_{CC}$ = 30 V	—	—	40	ns
Turn-OFF Time	t_{off}	$-I_{B1}$ = 15 mA, $-I_C$ = 150 mA $-V_{CC}$ = 6.0 V	—	—	100	ns
Storage Time	t_s	$-I_{B1} = -I_{B2}$ = 15 mA, $-I_C$ = 150 mA , $-V_{CC}$ = 6.0 V	—	—	80	ns
Fall Time	t_f	$-I_{B1} = -I_{B2}$ = 15 mA, $-I_C$ = 150 mA , $-V_{CC}$ = 6 V	—	—	30	ns

Switching Time Equivalent Test Circuit

Figure 1 - Delay and Rise Time Test Circuit

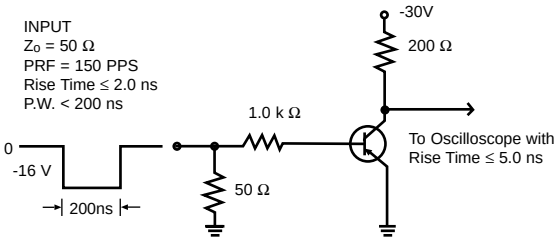

Figure 2 - Storage and Fall Time Test Circuit