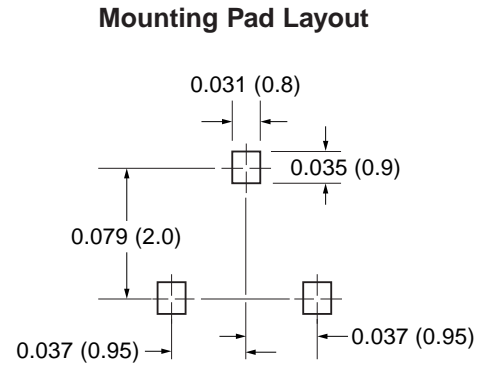
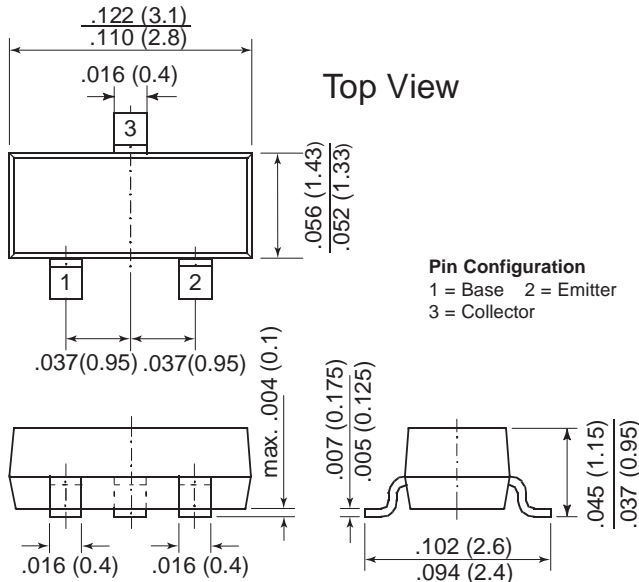




Small Signal Transistor (PNP)

TO-236AB (SOT-23)



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.

Mechanical Data

- Case:** SOT-23 Plastic Package
- Weight:** approx. 0.008g
- Marking Code:** 2F
- Packaging Codes/Options:**
E8/10K per 13" reel (8mm tape), 30K/box
E9/3K per 7" reel (8mm tape), 30K/box

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
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⁾	P_{tot}	225 1.8	mW mW/°C
Power Dissipation ⁽²⁾	P_{tot}	300 2.4	mW mW/°C
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	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.

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

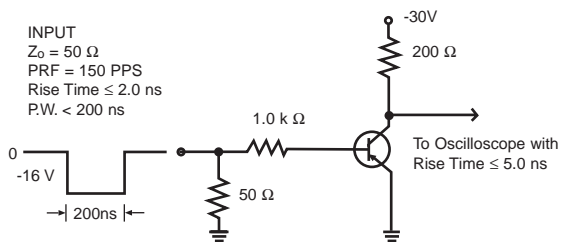
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain	hFE	-V _{CE} = 10V, -I _C = 0.1mA	75	—	—	—
		-V _{CE} = 10V, -I _C = 1mA	100	—	—	
		-V _{CE} = 10V, -I _C = 10mA	100	—	—	
		-V _{CE} = 10V, -I _C = 150mA ⁽¹⁾	100	—	300	
		-V _{CE} = 10V, -I _C = 500mA ⁽¹⁾	50	—	—	
Collector Cutoff Current	-I _{CEV}	-V _{EB} = 0.5V, -V _{CE} = 30V	—	—	50	nA
Collector Cutoff Current	-I _{CBO}	-V _{CB} = 50V, I _E = 0 -V _{CB} = 50V, I _E = 0, T _A = 125°C	—	—	0.01 10	μA
Emitter-Base Cutoff Current	-I _{BL}	-V _{EB} = 0.5V, -V _{CE} = 30V	—	—	50	nA
Collector-Emitter Saturation Voltage ⁽¹⁾	-V _{CEsat}	-I _C = 150mA, -I _B = 15mA -I _C = 500mA, -I _B = 50mA	—	—	0.4 1.6	V
Base-Emitter Saturation Voltage ⁽¹⁾	-V _{BEsat}	-I _C = 150mA, -I _B = 15mA -I _C = 500mA, -I _B = 50mA	—	—	1.3 2.6	V
Collector-Emitter Breakdown Voltage ⁽¹⁾	-V _{(BR)CEO}	-I _C = 10mA, I _B = 0	60	—	—	V
Collector-Base Breakdown Voltage	-V _{(BR)CBO}	-I _C = 10μA, I _E = 0	60	—	—	V
Emitter-Base Breakdown Voltage	-V _{(BR)EBO}	-I _E = 10μA, I _C = 0	5.0	—	—	V
Current Gain-Bandwidth Product	f _T	-V _{CE} = 20V, -I _C = 50mA f = 100MHz	200	—	—	MHz
Output Capacitance	C _{obo}	-V _{CB} = 10V, f = 1.0MHz I _E = 0	—	—	8	pF
Input Capacitance	C _{ibo}	-V _{EB} = 2.0V, f = 1.0MHz I _C = 0	—	—	30	pF

Note:

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

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

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

Switching Time Equivalent Test Circuit
Figure 1 - Delay and Rise Time Test Circuit

Figure 2 - Storage and Fall Time Test Circuit
