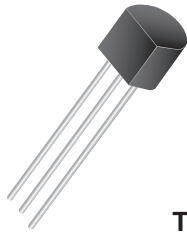
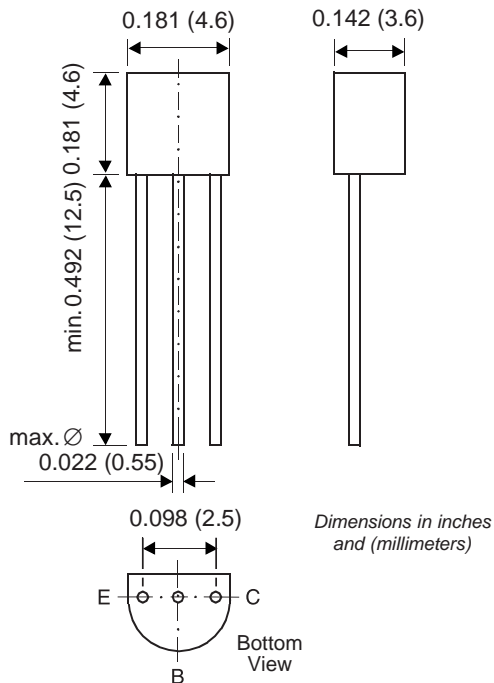


Small Signal Transistor (PNP)


TO-226AA (TO-92)


Features

- PNP Silicon Epitaxial Planar Transistor for switching and amplifier applications.
- On special request, this transistor is also manufactured in the pin configuration TO-18.
- This transistor is also available in the SOT-23 case with the type designation MMBT2907A.

Mechanical Data

Case: TO-92 Plastic Package

Weight: approx. 0.18g

Packaging Codes/Options:

E6/Bulk – 5K per container, 20K/box

E7/4K per Ammo mag., 20K/box

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$-V_{CBO}$	60	V
Collector-Emitter Voltage	$-V_{CEO}$	60	V
Emitter-Base Voltage	$-V_{EBO}$	5.0	V
Collector Current	$-I_C$	600	mA
Power Dissipation	P_{tot}	625 5.0	mW mW/°C
		<small>$T_A = 25^\circ\text{C}$ Derate above 25°C</small>	
Power Dissipation	P_{tot}	1.5 12	mW mW/°C
		<small>$T_C = 25^\circ\text{C}$ Derate above 25°C</small>	
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	200 ⁽¹⁾	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	83.3	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	-55 to +150	°C

Note:

(1) Valid provided that leads are kept at ambient temperature.

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

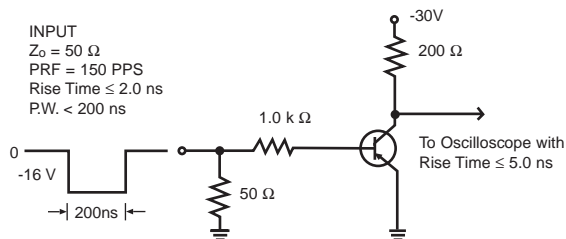
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain	h _{FE}	-V _{CE} = 10V, -I _C = 0.1mA	75	—	—	—
		-V _{CE} = 10V, -I _C = 1mA	100	—	—	—
		-V _{CE} = 10V, -I _C = 10mA	100	—	—	—
		-V _{CE} = 10V, -I _C = 150mA ⁽¹⁾	100	300	—	—
		-V _{CE} = 10V, -I _C = 500mA ⁽¹⁾	50	—	—	—
Collector-Base Breakdown Voltage	-V _{(BR)CBO}	-I _C = 10μA, I _E = 0	60	—	—	V
Collector-Emitter Breakdown Voltage ⁽¹⁾	-V _{(BR)CEO}	-I _C = 10mA, I _B = 0	60	—	—	V
Emitter-Base Breakdown Voltage	-V _{(BR)EBO}	-I _E = 10μA, I _C = 0	5	—	—	V
Collector-Emitter Saturation Voltage ⁽¹⁾	-V _{CEsat}	-I _C = 150mA, -I _B = 15mA	—	—	0.4	V
		-I _C = 500mA, -I _B = 50mA	—	—	1.6	V
Base-Emitter Saturation Voltage ⁽¹⁾	-V _{BEsat}	-I _C = 150mA, -I _B = 15mA	—	—	1.3	V
		-I _C = 500mA, -I _B = 50mA	—	—	2.6	V
Collector Cut-off Current	-I _{CEV}	-V _{EB} = 0.5V, -V _{CE} = 30V	—	—	50	nA
Collector Cut-off Current	-I _{CBO}	-V _{CB} = 50V, I _E = 0	—	—	0.01	μA
		-V _{CB} = 50V, I _E = 0, T _A = 150°C	—	—	10	μA
Base Cut-off Current	-I _{BL}	-V _{EB} = 0.5V, -V _{CE} = 30V	—	—	50	nA
Current Gain-Bandwidth Product	f _T	-V _{CE} = 20V, -I _C = 50mA f = 100MHz	200	—	—	MHz
Output Capacitance	C _{obo}	-V _{CB} = 10V, f = 1MHz, I _E = 0	—	—	8.0	pF
Emitter-Base Capacitance	C _{ibo}	-V _{EB} = 2.0V, f = 1MHz, I _C = 0	—	—	30	pF

Notes:

(1) Pulse Test: Pulse width ≤ 300 μs, 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 (see fig. 1)	t_d	$-I_{B1} = 15\text{mA}$, $-I_C = 150\text{mA}$, $-V_{CC} = 30\text{V}$	—	—	10	ns
Rise Time (see fig. 1)	t_r	$-I_{B1} = 15\text{mA}$, $-I_C = 150\text{mA}$, $-V_{CC} = 30\text{V}$	—	—	40	ns
Turn-OFF Time	t_{off}	$-I_{B1} = -I_{B2} = 15\text{mA}$, $-I_C = 150\text{mA}$, $-V_{CC} = 6\text{V}$	—	—	100	ns
Storage Time (see fig. 2)	t_s	$-I_{B1} = -I_{B2} = 15\text{mA}$, $-I_C = 150\text{mA}$, $-V_{CC} = 6\text{V}$	—	—	80	ns
Fall Time (see fig. 2)	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
