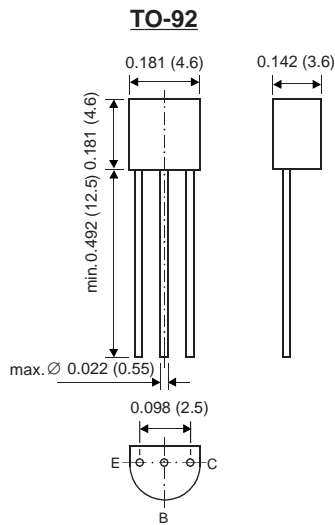


# MPS2907A

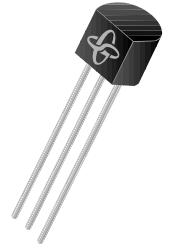
## SMALL SIGNAL TRANSISTORS (PNP)



Dimensions in inches and (millimeters)

### 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

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$-V_{CB0}$	60	Volts
Collector-Emitter Voltage	$-V_{CEO}$	60	Volts
Emitter-Base Voltage	$-V_{EBO}$	5.0	Volts
Collector Current	$-I_C$	600	mA
Power Dissipation at $T_A = 25^\circ\text{C}$ Derate above 25°C	$P_{tot}$	625 5.0	mW mW/°C
Power Dissipation at $T_C = 25^\circ\text{C}$ Derate above 25°C	$P_{tot}$	1.5 12	mW mW/°C
Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	200	°C/W
Thermal Resistance Junction Case	$R_{\theta JC}$	83.3	°C/W
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_s$	-500 to +150	°C

**NOTES:**

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

# MPS2907A

## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>
Collector-Base Breakdown Voltage at $-I_C = 10 \mu A$ , $I_E = 0$	$-V_{(BR)CBO}$	60	–	Volts
Collector-Emitter Breakdown Voltage at $-I_C = 10 \text{ mA}$ , $I_B = 0$	$-V_{(BR)CEO}$	60	–	Volts
Emitter-Base Breakdown Voltage at $-I_E = 10 \mu A$ , $I_C = 0$	$-V_{(BR)EBO}$	5	–	Volts
Collector-Emitter Saturation Voltage at $-I_C = 150 \text{ mA}$ , $-I_B = 15 \text{ mA}$ at $-I_C = 500 \text{ mA}$ , $-I_B = 50 \text{ mA}$	$-V_{CEsat}$ $-V_{CEsat}$	– –	0.4 1.6	Volts Volts
Base-Emitter Saturation Voltage at $-I_C = 150 \text{ mA}$ , $-I_B = 15 \text{ mA}$ at $-I_C = 500 \text{ mA}$ , $-I_B = 50 \text{ mA}$	$-V_{BEsat}$ $-V_{BEsat}$	– –	1.3 2.6	Volts Volts
Collector Cutoff Current at $-V_{EB} = 0.5 \text{ V}$ , $-V_{CE} = 30 \text{ V}$	$-I_{CEX}$	–	50	nA
Collector Cutoff Current at $-V_{CB} = 50 \text{ V}$ , $I_E = 0$ at $-V_{CB} = 50 \text{ V}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$	$-I_{CBO}$	–	0.01 10	$\mu A$
Base Cutoff Current at $-V_{EB} = 0.5 \text{ V}$ , $-V_{CE} = 30 \text{ V}$	$-I_{BL}$	–	50	nA
DC Current Gain at $-V_{CE} = 10 \text{ V}$ , $-I_C = 0.1 \text{ mA}$ at $-V_{CE} = 10 \text{ V}$ , $-I_C = 1 \text{ mA}$ at $-V_{CE} = 10 \text{ V}$ , $-I_C = 10 \text{ mA}$ at $-V_{CE} = 10 \text{ V}$ , $-I_C = 150 \text{ mA}$ at $-V_{CE} = 10 \text{ V}$ , $-I_C = 500 \text{ mA}$	$h_{FE}$ $h_{FE}$ $h_{FE}$ $h_{FE}$ $h_{FE}$	75 100 100 100 50	– – – 300 –	– – – – –
Gain-Bandwidth Product at $-V_{CE} = 20 \text{ V}$ , $-I_C = 50 \text{ mA}$ , $f = 100 \text{ MHz}$	$f_T$	200	–	MHz
Output Capacitance at $-V_{CB} = 10 \text{ V}$ , $f = 1 \text{ MHz}$ , $I_E = 0$	$C_{obo}$	–	8.0	pF
Emitter-Base Capacitance at $-V_{EB} = 2.0 \text{ V}$ , $f = 1 \text{ MHz}$ , $I_E = 0$	$C_{ibo}$	–	30	pF

# MPS2907A

## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>
Turn-On Time at $-I_{B1} = 15 \text{ mA}$ , $-I_C = 150 \text{ mA}$ , $-V_{CC} = 30 \text{ V}$	$t_{on}$	–	45	ns
Delay Time (See Fig. 1) at $-I_{B1} = 15 \text{ mA}$ , $-I_C = 150 \text{ mA}$ , $-V_{CC} = 30 \text{ V}$	$t_d$	–	35	ns
Rise Time (See Fig. 1) at $-I_{B1} = 15 \text{ mA}$ , $-I_C = 150 \text{ mA}$ , $-V_{CC} = 30 \text{ V}$	$t_r$	–	35	ns
Turn-Off Time at $-I_{B1} = -I_{B2} = 15 \text{ mA}$ , $-I_C = 150 \text{ mA}$ , $-V_{CC} = 6 \text{ V}$	$t_{off}$	–	100	ns
Storage Time (See Fig. 2) at $I_{B1} = -I_{B2} = 15 \text{ mA}$ , $-I_C = 150 \text{ mA}$ , $-V_{CC} = 6 \text{ V}$	$t_s$	–	225	ns
Fall Time (See Fig. 2) at $I_{B1} = -I_{B2} = 15 \text{ mA}$ , $-I_C = 150 \text{ mA}$ , $-V_{CC} = 6 \text{ V}$	$t_f$	–	75	ns

### SWITCHING TIME EQUIVALENT TEST CIRCUIT

FIGURE 1 - DELAY AND RISE TIME TEST CIRCUIT

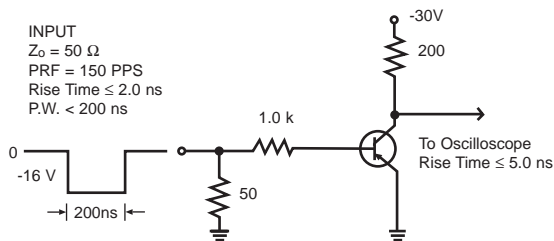


FIGURE 2 - STORAGE AND FALL TIME TEST CIRCUIT

