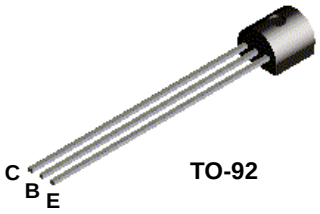
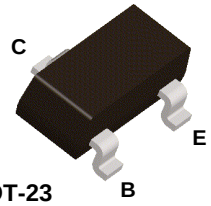
FAIRCHILD SEMICONDUCTOR™

Discrete POWER & Signal Technologies

PN2907 MMBT2907



TO-92



SOT-23
Mark: 2B

PNP General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 500 mA. Sourced from Process 63. See PN2907A for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	40	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	800	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-55 to +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

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max		Units
		PN2907	*MMBT2907	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	357	°C/W

*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

PNP General Purpose Amplifier
(continued)

Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 10 mA, I_B = 0	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	5.0		V
I_{CEX}	Collector Cutoff Current	V_{CE} = 30 V		50	nA
I_B	Base Cutoff Current	V_{BE} = 0.5 V		50	nA
I_{CBO}	Collector Cutoff Current	V_{CB} = 50 V, I_E = 0 V_{CB} = 50 V, I_E = 0, T_A = 150 °C		20 20	nA µA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	V_{CE} = 10 V, I_C = 0.1 mA V_{CE} = 10 V, I_C = 1.0 mA V_{CE} = 10 V, I_C = 10 mA V_{CE} = 10 V, I_C = 150 mA V_{CE} = 10 V, I_C = 500 mA	35 50 75 100 30	 300 	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA		0.4 1.6	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA		1.3 2.6	V V
SMALL SIGNAL CHARACTERISTICS					
C_{ob}	Output Capacitance	V_{CB} = 10 V, f = 1.0 MHz		8.0	pF
C_{ib}	Input Capacitance	V_{EB} = 2.0 V, f = 1.0 MHz		30	pF
h_{fe}	Small-Signal Current Gain	I_C = 50 mA, V_{CE} = 20 V, f = 100 MHz	2.0		
SWITCHING CHARACTERISTICS					
t_{on}	Turn-on Time	V_{CC} = 30 V, I_C = 150 mA,		45	ns
t_d	Delay Time	I_{B1} = 15 mA , PW = 200 ns		10	ns
t_r	Rise Time			40	ns
t_{off}	Turn-off Time	V_{CC} = 6.0 V, I_C = 150 mA		100	ns
t_s	Storage Time	I_{B1} = I_{B2} = 15 mA		80	ns
t_f	Fall Time			30	ns

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

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