FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

PN4356

TO-92

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 67. See TN4033A for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	80	V
V_{CBO}	Collector-Base Voltage	80	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	1.0	A
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
		PN4356	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	°C/W

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	80		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	80		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	5.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 50 V, I_E = 0 V_{CB} = 50 V, I_E = 0, T_A = 75 °C		50 5.0	nA µA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 5.0 V, I_C = 0 V_{EB} = 4.0 V, I_C = 0		10 100	µA nA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	V_{CE} = 10 V, I_C = 100 µA V_{CE} = 10 V, I_C = 1.0 mA V_{CE} = 10 V, I_C = 10 mA V_{CE} = 10 V, I_C = 100 mA V_{CE} = 10 V, I_C = 500 mA	25 40 50 40 30	 250 	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA		0.15 0.50	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		0.90 1.10	V V
SMALL SIGNAL CHARACTERISTICS					
C_{ob}	Output Capacitance	V_{CB} = 10 V, f = 1.0 MHz		30	pF
C_{ib}	Input Capacitance	V_{EB} = 0.5 V, f = 1.0 MHz		110	pF
h_{fe}	Small-Signal Current Gain	I_C = 50 mA, V_{CE} = 10 V, f = 100 MHz	1.0	5.0	
NF	Noise Figure	V_{CE} = 10 V, I_C = 100 µA, R_S = 1.0 kΩ, f = 1.0 kHz, B_W = 1.0 Hz		3.0	dB
SWITCHING CHARACTERISTICS					
t_{on}	Turn-on Time	V_{CC} = 30 V, I_C = 500 mA, I_{B1} = I_{B2} = 50 mA		100	ns
t_{off}	Turn-off Time			400	ns

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