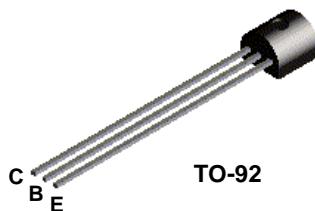


PN3642



NPN General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300 mA. Sourced from Process 10. See PN100 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	45	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	500	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
		PN3642	
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

NPN 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*	$I_C = 10 \text{ mA}, I_B = 0$	45		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \mu\text{A}, I_E = 0$	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	5.0		V
I_{CES}	Collector Cutoff Current	$V_{CE} = 50 \text{ V}, I_E = 0,$ $V_{CE} = 50 \text{ V}, I_E = 0, T_A = 65^\circ\text{C}$		50 1.0	nA μA

ON CHARACTERISTICS*

h_{FE}	DC Current Gain	$V_{CE} = 10 \text{ V}, I_C = 150 \text{ mA}$ $V_{CE} = 10 \text{ V}, I_C = 500 \text{ mA}$	40 15	120	
$V_{CE(\text{sat})}$	Collector-Emitter Saturation Voltage	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$		0.22	V

SMALL SIGNAL CHARACTERISTICS

C_{ob}	Output Capacitance	$V_{CB} = 10 \text{ V}, f = 140 \text{ kHz}$		8.0	pF
h_{fe}	Small-Signal Current Gain	$I_C = 50 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 100 \text{ MHz}$	1.5		
G_{pe}	Amplifier Power Gain	$V_{CE} = 15 \text{ V}, I_C = 0,$ $R_g = 140 \Omega, f = 30 \text{ MHz},$ $RL = 260 \Omega$	10		dB
η	Collector Efficiency	$V_{CE} = 15 \text{ V}, I_C = 0,$ $R_S = 140 \Omega, f = 30 \text{ MHz},$ $RL = 260 \Omega$	60		%

* Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$