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[PN3643](#)

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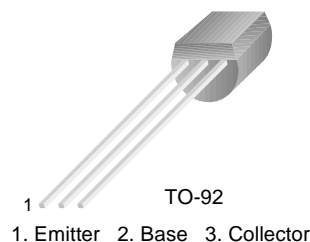
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



## PN3643

### NPN General Purpose Amplifier

- This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300mA.



### Absolute Maximum Ratings\* $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CEO}$	Collector-Emitter Voltage	30	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 ~ 150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

### Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Off Characteristics</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	30		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 Cut-off Current	$V_{CB} = 50\text{V}, I_E = 0$ $V_{CB} = 50\text{V}, I_E = 0, T_A = 65^\circ\text{C}$		50 1.0	nA $\mu\text{A}$
<b>On Characteristics</b>					
$h_{FE}$	DC Current Gain	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$ $V_{CE} = 10\text{V}, I_C = 500\text{mA}$	100 20	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}, I_B = 15\text{mA}$		0.22	V
<b>Small Signal Characteristics</b>					
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, f = 140\text{KHz}$		8.0	pF
$\eta$	Collector Efficiency	$V_{CE} = 15\text{V}, f = 30\text{MHz}$ $R_G = 140\Omega, R_L = 260\Omega$	60		%
$G_{pe}$	Amplifier Power Gain	$V_{CE} = 15\text{V}, f = 30\text{MHz}$ $R_G = 140\Omega, R_L = 260\Omega$	10		dB
$h_{fe}$	Small Signal Current Gain	$I_C = 50\text{mA}, V_{CE} = 5.0\text{V}, f = 100\text{MHz}$	2.5		

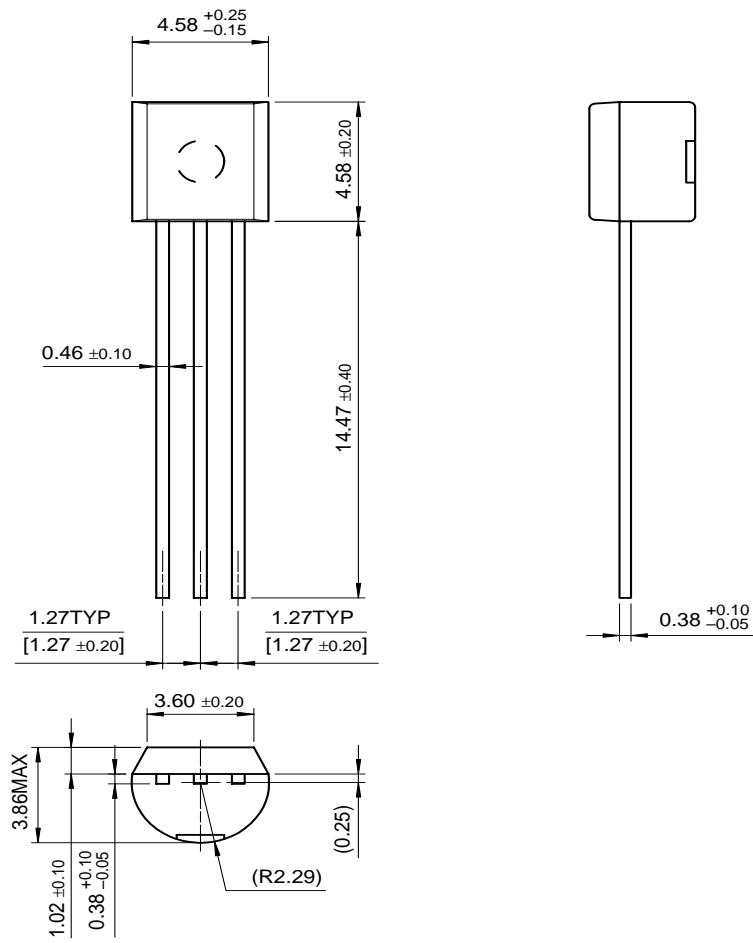
\* Pulse Test: Pulse Width  $\leq 300\text{ms}$ , Duty Cycle  $\leq 2.0\%$

**Thermal Characteristics**  $T_A=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation	625	mW
	Derate above $25^{\circ}\text{C}$	5.0	mW/ $^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	$^{\circ}\text{C}/\text{W}$

Package Dimensions

TO-92



Dimensions in Millimeters

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Datasheet Identification	Product Status	Definition
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