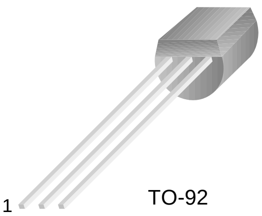
FAIRCHILD
SEMICONDUCTOR®

PN3643

NPN General Purpose Amplifier

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



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1. Emitter   2. Base   3. Collector

Absolute Maximum Ratings* T_A=25°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	°C

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

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

Electrical Characteristics T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	I_C = 10mA, I_B = 0	30		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10μA, I_E = 0	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10μA, I_C = 0	5.0		V
I_{CES}	Collector Cut-off Current	V_{CB} = 50V, I_E = 0 V_{CB} = 50V, I_E = 0, T_A = 65°C		50 1.0	nA μA
On Characteristics					
h_{FE}	DC Current Gain	V_{CE} = 10V, I_C = 150mA V_{CE} = 10V, I_C = 500mA	100 20	300	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 150mA, I_B = 15mA		0.22	V
Small Signal Characteristics					
C_{ob}	Output Capacitance	V_{CB} = 10V, f = 140KHz		8.0	pF
η	Collector Efficientcy	V_{CE} = 15V, f = 30MHz R_G = 140Ω, R_L = 260Ω	60		%
G_{pe}	Amplifier Power Gain	V_{CE} = 15V, f = 30MHz R_G = 140Ω, R_L = 260Ω	10		dB
h_{fe}	Small Signal Current Gain	I_C = 50mA, V_{CE} = 5.0V, f = 100MHz	2.5		

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

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Thermal Characteristics T_A=25°C unless otherwise noted

Symbol	Parameter	Max.	Units
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

Package Dimensions

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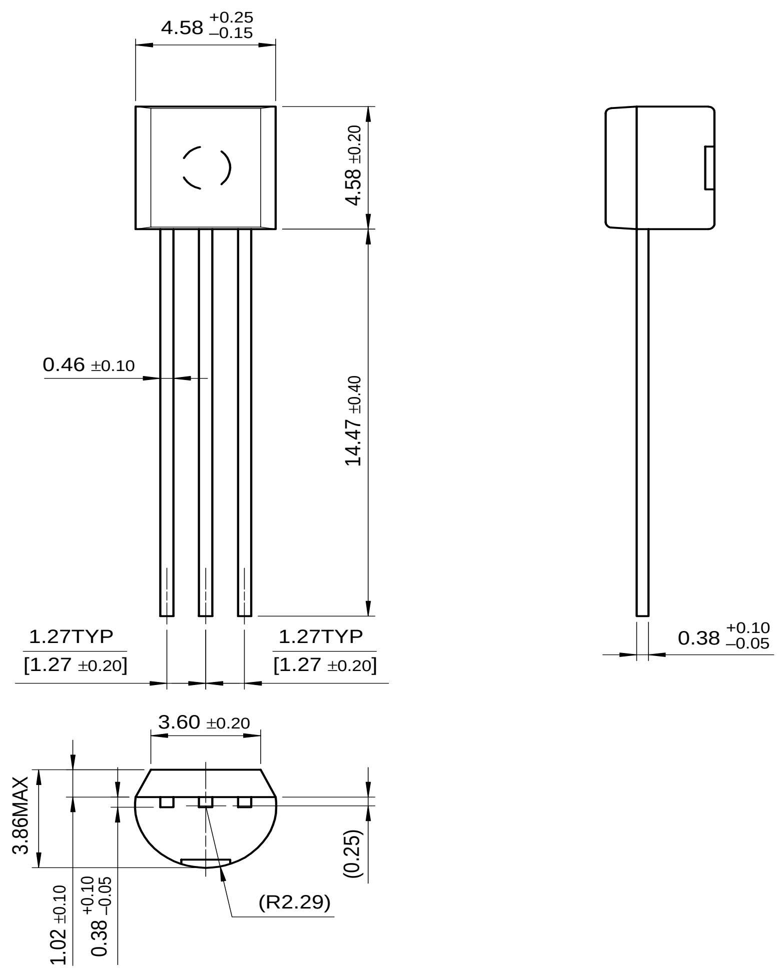

Dimensions in Millimeters

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CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
DOME™	GlobalOptoisolator™	MICROWIRE™	QS™	SyncFET™
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EnSigna™	I^2C™	OCX™	RapidConfigure™	UHC™
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Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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Definition of Terms

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