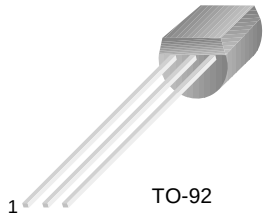
FAIRCHILD
SEMICONDUCTOR®

PN3646

NPN Switching Transistor

- Sourced from process 22.



TO-92

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	15	V
V_{CBO}	Collector-Base Voltage	40	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continued	300	mA
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 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

Electrical Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$BV_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	I_C = 10mA, I_B = 0	15		V
$BV_{(BR)CES}$	Collector-Emitter Breakdown Voltage	I_C = 100µA, V_{BE} = 0	40		V
$BV_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100µA, I_E = 0	40		V
$BV_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100µA, I_C = 0	5.0		V
I_{CES}	Collector Cutoff Current	V_{CE} = 20V, V_{BE} = 0 V_{CE} = 20V, V_{BE} = 0, T_a = 65°C		0.5 3.0	µA µA
On Characteristics *					
h_{FE}	DC Current Gain	V_{CE} = 0.4V, I_C = 30mA V_{CE} = 0.5V, I_C = 100mA V_{CE} = 1.0V, I_C = 300mA	30 25 15	120	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 30mA, I_B = 3.0mA I_C = 100mA, I_B = 10mA I_C = 300mA, I_B = 3.0mA		0.2 0.28 0.5	V V V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = 30mA, I_B = 3.0mA I_C = 100mA, I_B = 10mA I_C = 300mA, I_B = 3.0mA	0.73	0.95 1.2 1.7	V V V
Small Signal Characteristics					
C_{cb}	Collector-Base Capacitance	V_{CB} = 5.0V, I_E = 0, f = 1MHz		5.0	pF
C_{eb}	Emitter-Base Capacitance	V_{CB} = 5.0V, I_C = 0, f = 1MHz		8.0	pF
h_{fe}	Small-Signal Current Gain	I_C = 300mA, V_{CE} = 10V, f = 100MHz	3.5		

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

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Electrical Characteristics Ta=25°C unless otherwise noted (Continued)

Symbol	Parameter	Test Condition	Min.	Max.	Units
Switching Characteristics					
t_s	Storage Time	I_C = 300mA, V_{CC} = 10V $I_{B1} = I_{B2}$ = 30mA		20	ns
t_{on}	Turn-On Time			18	ns
t_{off}	Turn-Off Time			28	ns

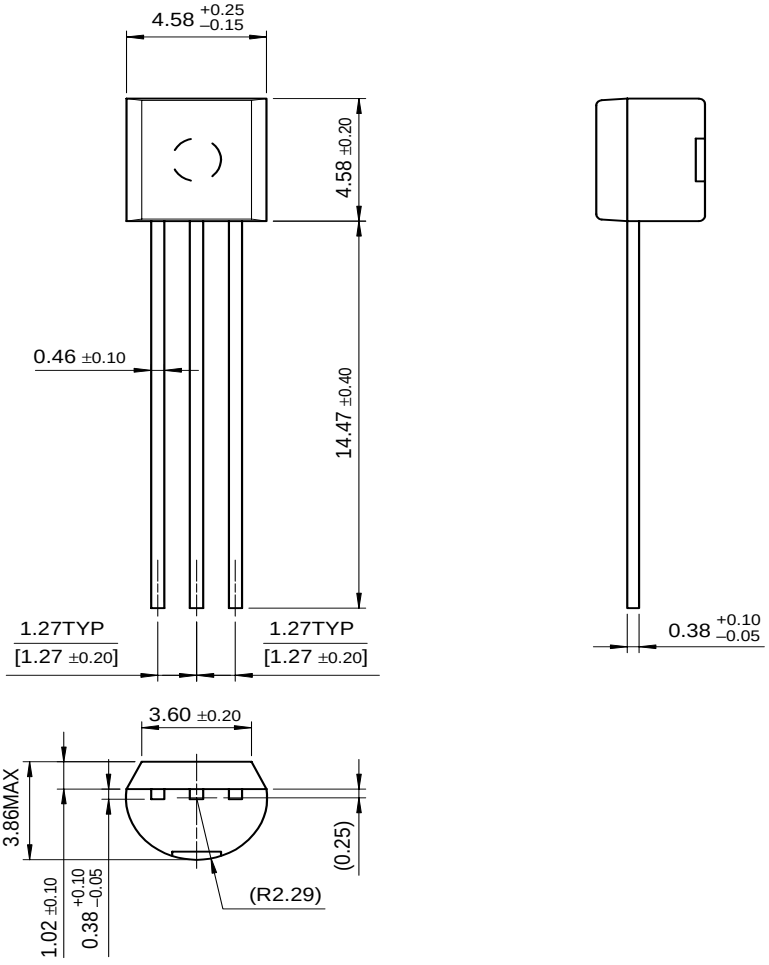
Thermal Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

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Package Dimensions

TO-92



Dimensions in Millimeters

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FACT Quiet Series™		OPTOLOGIC®	µSerDes™	UltraFET®
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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