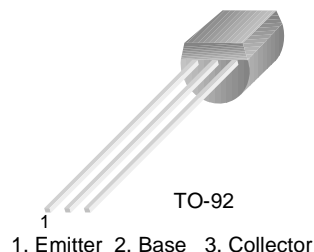**FAIRCHILD**

SEMICONDUCTOR®

PN2369

NPN Switching Transistor

- This device is designed for high speed saturated switching at collector currents of 10mA to 100mA.
- Sourced from process 21.

TO-92

1. Emitter 2. Base 3. Collector

Absolute Maximum Ratings* T_a=25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{CEO}	Collector-Emitter Voltage	15	V
V_{CBO}	Collector-Base Voltage	40	V
V_{EBO}	Emitter-Base Voltage	4.5	V
I_C	Collector Current - Continuous	200	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 ~ 150	°C

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

NOTES:
1) These rating are based on a maximum junction temperature of 150 degrees C.
2) These are steady 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	15		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	I_C = 10µA, V_{BE} = 0	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10µA, I_E = 0	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10µA, I_C = 0	4.5		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 20V, I_E = 0		0.4	µA
		V_{CB} = 20V, I_E = 0, T_a = 125°C		30	µA
On Characteristics					
h_{FE}	DC Current Gain *	I_C = 10mA, V_{CE} = 1.0V	40	120	
		I_C = 100mA, V_{CE} = 2.0V	20		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage *	I_C = 10mA, I_B = 1.0mA		0.25	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 10mA, I_B = 1.0mA	0.7	0.85	V
Small Signal Characteristics					
C_{obo}	Output Capacitance	V_{CB} = 5.0V, I_E = 0, f = 1.0MHz		4.0	pF
C_{ibo}	Input Capacitance	V_{EB} = 0.5V, I_C = 0, f = 1.0MHz		5.0	pF
h_{fe}	Small -Signal Current Gain	I_C = 10mA, V_{CE} = 10V, R_G = 2.0kΩ, f = 100MHz	5.0		
Switching Characteristics					
t_s	Storage Time	I_{B1} = I_{B2} = I_C = 10mA		13	ns
t_{on}	Turn-On Time	V_{CC} = 3.0V, I_C = 10mA, I_{B1} = 3.0mA		12	ns
t_{off}	Turn-Off Time	V_{CC} = 3.0V, I_C = 10mA, I_{B1} = 3.0mA, I_{B2} = 1.5mA		18	ns

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

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
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

Package Dimensions

TO-92

$4.58 ^{+0.25}_{-0.15}$

4.58 ± 0.20

0.46 ± 0.10

14.47 ± 0.40

1.27TYP
[1.27 ±0.20]

1.27TYP
[1.27 ±0.20]

$0.38 ^{+0.10}_{-0.05}$

3.60 ±0.20

3.86MAX

1.02 ± 0.10

$0.38 ^{+0.10}_{-0.05}$

(0.25)

(R2.29)

Dimensions in Millimeters

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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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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