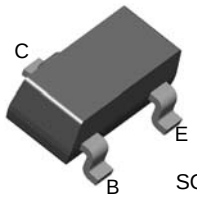
FAIRCHILD SEMICONDUCTOR®

February 2008

MMBT2369 / PN2369
NPN Switching Transistor

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

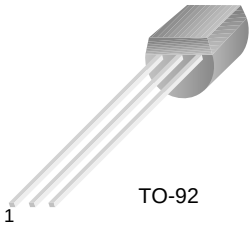
MMBT2369



SOT-23

Mark: 1J

PN2369



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
I_{CP}	**Collector Current (Pulse)	400	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.

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

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.

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

* Device mounted on FR-4PCB 1.6” ¥ 1.6” ¥ 0.06”.

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 V_{CB} = 20V, I_E = 0, T_a = 125°C		0.4 30	μA μA
On Characteristics					
h_{FE}	DC Current Gain *	I_C = 10mA, V_{CE} = 1.0V I_C = 100mA, V_{CE} = 2.0V	40 20	120	
$V_{CE(sat)}$	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 £ 300ms, Duty Cycle £ 2.0%

Package Dimensions

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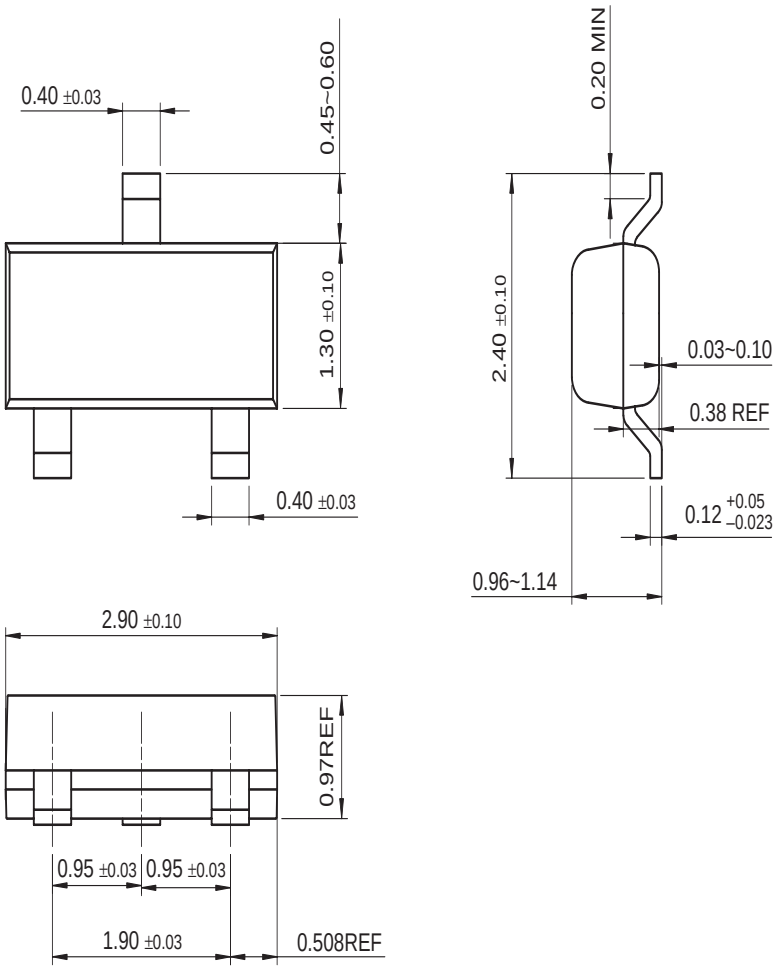
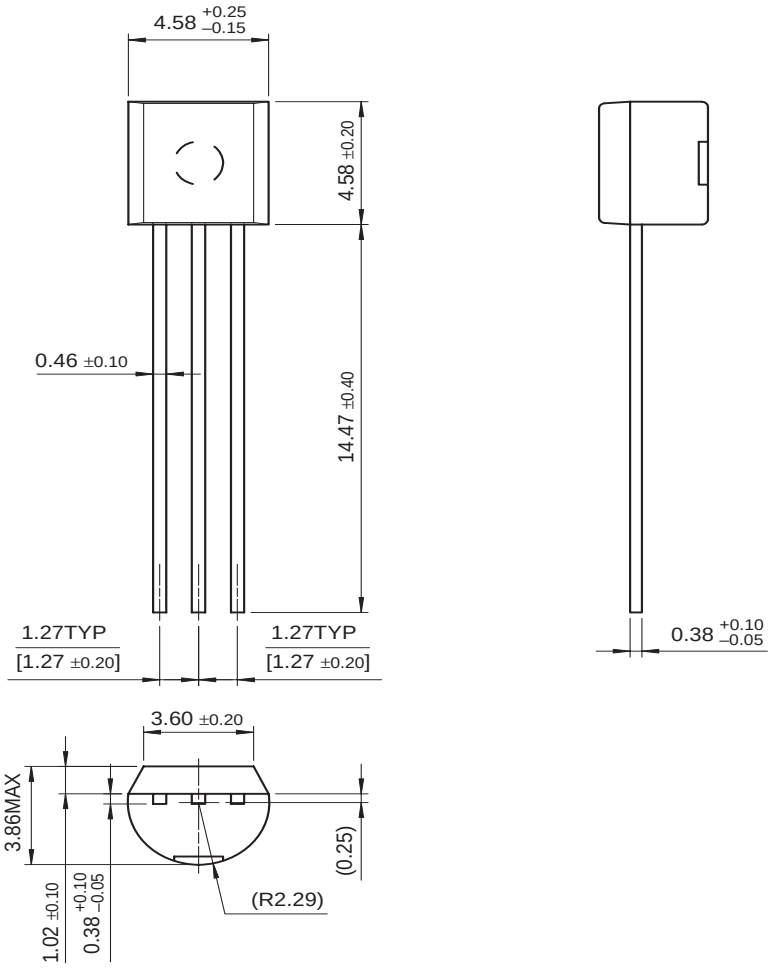


Dimensions in Millimeters

Package Dimensions (Continued)

TO-92



Dimensions in Millimeters

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