

# 2N2369, 2369A

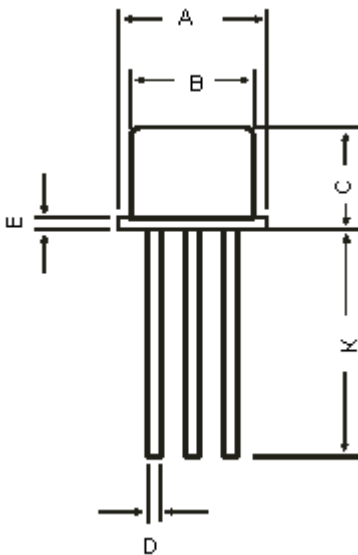
## High Speed Switching Transistors



### Features:

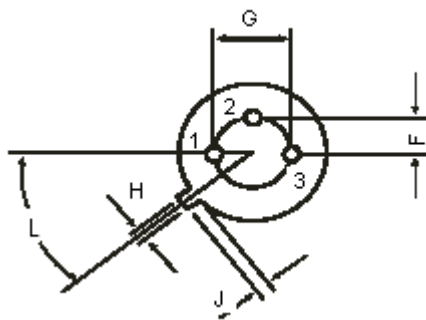
- NPN Silicon Planar Epitaxial Transistors.
- Fast switching devices exhibiting short turn-off and low saturation voltage characteristics.
- 2N2369/A are NPN Silicon High Speed Saturated Switching, Transistors With Low Power and High Speed Switching Applications.

### TO-18 Metal Can Package



Dimensions	Minimum	Maximum
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	-	0.76
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	-
L	45°	

Dimensions : Millimetres



Pin Configuration

1. Emitter
2. Base
3. Collector



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### Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	$V_{CEO}$	15	V
Collector Emitter Voltage	$V_{CES}$	40	
Collector Base Voltage	$V_{CBO}$		
Emitter Base Voltage	$V_{EBO}$	4.5	
Collector Current Continuous	$I_C$	200	mA
Collector Current Peak (10 $\mu$ s Pulse)	$I_C$ (Peak)	500	
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	360 2.06	mW mW/ $^\circ\text{C}$
Power Dissipation at $T_c = 25^\circ\text{C}$ $T_c = 100^\circ\text{C}$ Derate above $100^\circ\text{C}$	$P_D$	1.2 0.68 6.85	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	-65 to +200	$^\circ\text{C}$

### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	2N2369	2N2369A	Unit
Collector Emitter Voltage	$V_{CEO^*(sus)}$	$I_C = 10\text{mA}, I_B = 0$	>15		V
Collector Emitter Voltage	$V_{CES}$	$I_C = 10\mu\text{A}, V_{BE} = 0$	>40		
Collector Base Voltage	$V_{CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	>40		
Emitter Base Voltage	$V_{EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	>4.5		
Collector Cut off Current	$I_{CBO}$	$V_{CB} = 20\text{V}, I_E = 0$	<400	-	nA
	$I_{CES}$	$V_{CB} = 20\text{V}, I_E = 0, T_a = 150^\circ\text{C}$ $V_{CE} = 20\text{V}, V_{BE} = 0$	<30 -	- <400	$\mu\text{A}$ nA
Base Current	$I_B$	$V_{CE} = 20\text{V}, V_{BE} = 0$	-	<400	nA
Collector Emitter Saturation Voltage	$V_{CE(sat)^*}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	<0.25	<0.20	V
		$I_C = 30\text{mA}, I_B = 3\text{mA}$	-	<0.25	
		$I_C = 100\text{mA}, I_B = 10\text{mA}$	-	<0.50	
		$I_C = 10\text{mA}, I_B = 1\text{mA}, T_a = 125^\circ\text{C}$	-	<0.30	
Base Emitter Saturation Voltage	$V_{BE(sat)^*}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	0.7 to 0.85	0.7 to 0.85	V
		$I_C = 30\text{mA}, I_B = 3\text{mA}$	-	<1.15	
		$I_C = 100\text{mA}, I_B = 10\text{mA}$	-	<1.60	
		$I_C = 10\text{mA}, I_B = 1\text{mA}, T_a = +125^\circ\text{C}$	-	>0.59	
		$I_C = 10\text{mA}, I_B = 1\text{mA}, T_a = -55^\circ\text{C}$	-	<1.20	
DC Current Gain	$h_{FE}^*$	$I_C = 10\text{mA}, V_{CE} = 1\text{V}$	40 to 120	40 to 120	-
		$I_C = 10\text{mA}, V_{CE} = 1\text{V}, T_a = -55^\circ\text{C}$	>20	-	
		$I_C = 100\text{mA}, V_{CE} = 0.35\text{V}, T_a = -55^\circ\text{C}$	-	>20	

\*Pulse Test : Pulse Width = 300 $\mu$ s, Duty Cycle = 2%



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### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	2N2369	2N2369A	Unit
DC Current Gain	$h_{FE}^*$	$I_C = 10\text{mA}, V_{CE} = 0.35\text{V}$	-	40 to 120	-
		$I_C = 30\text{mA}, V_{CE} = 0.4\text{V}$	-	>30	
		$I_C = 100\text{mA}, V_{CE} = 1\text{V}$	-	>20	
		$I_C = 100\text{mA}, V_{CE} = 2\text{V}$	>20	-	
<b>Small Signal Characteristic</b>					
Transition Frequency	$f_t$	$V_{CE} = 10\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	>500		MHz
Output Capacitance	$C_{obo}$	$V_{CB} = 5\text{V}, I_E = 0, f = 140\text{kHz}$	<4.0		pF
Turn on Time	$t_{on}$	$I_C = 10\text{mA}, I_{B1} = 3\text{mA}, I_B = -1.5\text{mA}, V_{CC} = 3\text{V}$	<12		ns
Turn off Time	$t_{off}$	$I_C = 10\text{mA}, I_{B1} = 3\text{mA}, I_B = -1.5\text{mA}, V_{CC} = 3\text{V}$	-	<15	
Storage time	$t_s$	$I_C = 100\text{mA}, I_{B1} = I_B = 10\text{mA}, V_{CC} = 10\text{V}$	<13		

\*Pulse Test : Pulse Width = 300 $\mu\text{s}$ , Duty Cycle = 2%

### Specifications

$V_{CEO}$ maximum (V)	$I_C$ maximum (A)	$V_{CE(sat)}$ maximum (V) at $I_C = 10\text{mA}$	$t_{off}$ maximum (ns) at $I_C = 10\text{mA}$	$h_{FE}$ minimum at $I_C = 10\text{mA}$	$P_D$ at $T_a = 25^\circ\text{C}$ (mW)	Package and Pin Out	Part Number
15	0.2	0.25	18	40	360	TO-18	2N2369
		0.20					2N2369A

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### Notes:

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