



NPN 2N2369 – 2N2369A

HIGH-FREQUENCY SATURATED SWITCH

The 2N2369 and 2N2369A are NPN transistors mounted in TO-18 metal package with the collector connected to the case.

They are designed specifically for high-speed saturated switching applications at current levels from 100 μ A to 100 mA.

Compliance to RoHS

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit	
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)		2N2369A	40	V
			2N2369		
V_{CBO}	Collector-Base Voltage ($I_E = 0$)		2N2369A	40	V
			2N2369		
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)		2N2369A	15	V
			2N2369		
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)		2N2369A	4.5	V
			2N2369		
I_C	Collector Current		2N2369A	200	mA
			2N2369		
I_{CM}	Peak Collector Current ($t_p = 10ms$)		2N2369A	500	mA
			2N2369		
P_D	Total Power Dissipation	@ $T_{amb} = 25^\circ C$	2N2369A	0.36	Watts
			2N2369		
P_D	Total Power Dissipation	@ $T_{case} = 25^\circ C$	2N2369A	1.2	Watts
			2N2369		
T_J	Junction Temperature		2N2369A	200	$^\circ C$
			2N2369		
T_{Stg}	Storage Temperature range		2N2369A	-65 to +200	$^\circ C$
			2N2369		

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to ambient in free air	486	$^\circ C/W$
R_{thJ-c}	Thermal Resistance, Junction to case	146	$^\circ C/W$

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit			
I_{CBO}	Collector Cutoff Current	$V_{CB}= 20\text{ V}$ $I_E= 0$	-	-	40	nA			
							2N2369A		
			2N2369						
		$V_{CB}= 20\text{ V}$ $I_E= 0, T_j= 150^\circ\text{C}$	-	-	30	μA			
	2N2369A								
	2N2369								
V_{CES}	Collector Emitter Breakdown Voltage	$V_{BE}= 0$ $I_C= 10\ \mu\text{A}$	40	-	-	V			
							2N2369A		
	2N2369								
V_{CEO}	Collector Emitter Breakdown Voltage	$I_C= 10\text{ mA}$ $I_B= 0$	15	-	-	V			
							2N2369A		
	2N2369								
V_{CBO}	Collector Base Breakdown Voltage	$I_C= 10\ \mu\text{A}$ $I_E= 0$	40	-	-	V			
							2N2369A		
	2N2369								
V_{EBO}	Emitter Base Breakdown Voltage	$I_E= 10\ \mu\text{A}$ $I_C= 0$	4.5	-	-	V			
							2N2369A		
	2N2369								
h_{FE}	DC Current Gain (*)	$I_C= 10\text{ mA}$ $V_{CE}= 1\text{ V}$	2N2369	-	-	-			
		$I_C= 100\text{ mA}$ $V_{CE}= 2\text{ V}$					40	-	120
		$I_C= 100\text{ mA}$ $V_{CE}= 2\text{ V}$ $T_{amb} = -55^\circ\text{C}$					20	-	-
		$I_C= 10\text{ mA}$ $V_{CE}= 1\text{ V}$	2N2369A	-	-	-			
		$I_C= 10\text{ mA}$ $V_{CE}= 1\text{ V}$ $T_{amb} = -55^\circ\text{C}$					40	-	120
		$I_C= 10\text{ mA}$ $V_{CE}= 0.35\text{ V}$					40	-	120
		$I_C= 10\text{ mA}$ $V_{CE}= 0.35\text{ V}$ $T_{amb} = -55^\circ\text{C}$					20	50	-
		$I_C= 30\text{ mA}$ $V_{CE}= 0.4\text{ V}$					30	71	-
$I_C= 100\text{ mA}$ $V_{CE}= 1\text{ V}$	20	-					-		

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Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C = 10\text{ mA}$ $I_B = 1\text{ mA}$	2N2369A	-	0.14	0.2	V
			2N2369	-	0.2	0.25	
		$I_C = 10\text{ mA}, I_B = 1\text{ mA}$ $T_{amb} = 125^\circ\text{C}$	2N2369A	-	0.19	0.3	
		$I_C = 30\text{ mA}$ $I_B = 3\text{ mA}$		-	0.17	0.25	
		$I_C = 100\text{ mA}$ $I_B = 10\text{ mA}$		-	0.28	0.5	
$V_{BE(SAT)}$	Base-Emitter saturation Voltage (*)	$I_C = 10\text{ mA}$ $I_B = 1\text{ mA}$	2N2369A	0.7	0.8	0.85	V
			2N2369	0.7	0.75	0.85	
		$I_C = 10\text{ mA}, I_B = 1\text{ mA}$ $T_{amb} = -55\text{ to }125^\circ\text{C}$	2N2369A	0.59	-	1.02	
		$I_C = 30\text{ mA}$ $I_B = 3\text{ mA}$		-	0.9	1.15	
		$I_C = 100\text{ mA}$ $I_B = 10\text{ mA}$		-	1.1	1.6	

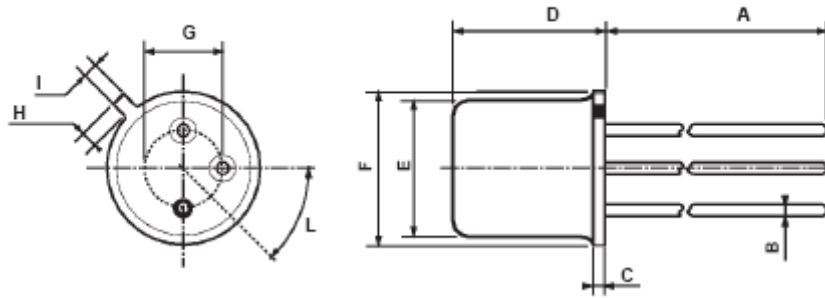
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
f_T	Transition frequency	$I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 100\text{ MHz}$	500	-	-	MHz	
t_d	Delay time	$I_C = -150\text{ mA}$ $I_B = -15\text{ mA}$ $-V_{CC} = -30\text{ V}$	2N2369A	-	-	10	ns
t_r	Rise time		2N2369	-	-	40	

(*) Pulse conditions : $t_p < 300\ \mu\text{s}$, $\delta = 1\%$

MECHANICAL DATA CASE TO-18

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DIMENSIONS (mm)		
	min	max
A	12.7	-
B	-	0.49
C	0.9	-
D	-	5.3
E	-	4.9
F	-	5.8
G	2.54	-
H	-	1.2
I	-	1.16
L	45°	-



Pin 1 :	emitter
Pin 2 :	base
Pin 3 :	Collector
Case :	Collector

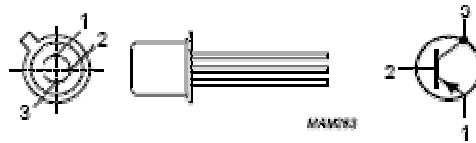


Fig.1 Simplified outline (TO-18) and symbol.

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