



NPN 2N2218 – 2N2218A 2N2219 – 2N2219A

SWITCHING SILICON TRANSISTORS

The 2N2218-A and 2N2219-A are NPN transistors mounted in TO-39 metal case . They are designed for high-speed switching applications and feature useful current gain over a wide range of collector current, low leakage currents and low saturation voltages. Compliance to RoHS

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value		Unit
			2N2218 2N2219	2N2218 A 2N2219 A	
V _{CEO}	Collector-Emitter Voltage		30	40	V
V _{CBO}	Collector-Base Voltage		60	75	V
V _{EBO}	Emitter-Base Voltage		5	6	V
I _C	Collector Current		800		mA
P _D	Total Power Dissipation	T _{amb} = 25°	0.8		W
		T _{case} = 25°	3		
T _J	Junction Temperature		175		°C
T _{Stg}	Storage Temperature range		-65 to +200		°C

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-a}	Thermal Resistance, Junction to ambient in free air	50	$^\circ\text{C/W}$
R_{thJ-c}	Thermal Resistance, Junction to case	187.5	$^\circ\text{C/W}$

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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	$V_{CB} = 50\text{ V}$	$T_J = 25^\circ\text{C}$	2N2218-2N2219	-	-	10	nA
		$I_E = 0$	$T_J = 150^\circ\text{C}$	2N2218-2N2219	-	-	10	μA
		$V_{CB} = 60\text{ V}$	$T_J = 25^\circ\text{C}$	2N2218A-2N2219A	-	-	10	nA
		$I_E = 0$	$T_J = 150^\circ\text{C}$	2N2218A-2N2219A	-	-	10	μA
I_{EBO}	Emitter Cutoff Current	$V_{BE} = 3.0\text{ V}, I_C = 0$		2N2218-2N2219	-	-	10	nA
				2N2218A-2N2219A				
I_{CEX}	Collector Cutoff Current	$V_{CE} = 60\text{ V}, -V_{BE} = 3\text{ V}$		2N2218A-2N2219A	-	-	10	nA
V_{CEO}	Collector Emitter Breakdown Voltage (*)	$I_C = 10\text{ mA}, I_B = 0$		2N2218-2N2219	30	-	-	V
				2N2218A-2N2219A	40	-	-	
V_{CBO}	Collector Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}, I_E = 0$		2N2218-2N2219	60	-	-	V
				2N2218A-2N2219A	75	-	-	
V_{EBO}	Emitter Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}, I_C = 0$		2N2218-2N2219	5	-	-	V
				2N2218A-2N2219A	6	-	-	
h_{FE}	DC Current Gain (*)	$I_C = 0.1\text{ mA}, V_{CE} = 10\text{ V}$		2N2218-2N2218A	20	-	-	-
				2N2219-2N2219A	35	-	-	
		$I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$		2N2218-2N2218A	25	-	-	
				2N2219-2N2219A	50	-	-	
		$I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$		2N2218-2N2218A	35	-	-	
				2N2219-2N2219A	75	-	-	
		$I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$ $T_{amb} = -55^\circ\text{C}$		2N2218A	15	-	-	
				2N2219A	35	-	-	
		$I_C = 150\text{ mA}, V_{CE} = 1\text{ V}$		2N2218-2N2218A	20	-	-	
				2N2219-2N2219A	50	-	-	
		$I_C = 150\text{ mA}, V_{CE} = 10\text{ V}$		2N2218-2N2218A	40	-	120	
				2N2219-2N2219A	100	-	300	
		$I_C = 500\text{ mA}, V_{CE} = 10\text{ V}$		2N2218	20	-	-	
				2N2218A	25	-	-	
				2N2219	30	-	-	
				2N2219A	40	-	-	

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Mx	Unit
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C=150\text{ mA}, I_B=15\text{ mA}$	2N2218-2N2219	-	-	0.4	V
			2N2218A-2N2219A	-	-	0.3	
		$I_C=500\text{ mA}, I_B=50\text{ mA}$	2N2218-2N2219	-	-	1.6	
			2N2218A-2N2219A	-	-	1	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C=150\text{ mA}, I_B=15\text{ mA}$	2N2218-2N2219	-	-	1.3	V
			2N2218A-2N2219A	0.6	-	1.2	
		$I_C=500\text{ mA}, I_B=50\text{ mA}$	2N2218-2N2219	-	-	2.6	
			2N2218A-2N2219A	-	-	2	
f_T	Transition frequency	$I_C=20\text{ mA}, V_{CE}=20\text{ V}$ $f=100\text{ MHz}$	2N2218-2N2218A 2N2219	250	-	-	MHz
			2N2219A	300	-	-	
h_{fe}	Small signal current gain	$I_C=1\text{ mA}, V_{CE}=10\text{ V}$ $f=1\text{ kHz}$	2N2218A	30	-	150	-
			2N2219A	50	-	300	
		$I_C=10\text{ mA}, V_{CE}=10\text{ V}$ $f=1\text{ kHz}$	2N2218A	50	-	300	
			2N2219A	75	-	375	
t_d	Delay time	$I_C=150\text{ mA}, I_B=15\text{ mA}$ $-V_{BB}=0.5\text{ V}, V_{CC}=30\text{ V}$	2N2218A	-	-	10	ns
			2N2219A				
t_r	Rise time	$I_C=150\text{ mA}, I_B=15\text{ mA}$ $-V_{BB}=0.5\text{ V}, V_{CC}=30\text{ V}$	2N2218A	-	-	25	ns
			2N2219A				
t_s	Storage time	$I_C=150\text{ mA}, V_{CC}=30\text{ V}$ $I_{B1} = -I_{B2} = 15\text{ mA}$	2N2218A	-	-	225	ns
			2N2219A				
t_f	Fall time	$I_C=150\text{ mA}, V_{CC}=30\text{ V}$ $I_{B1} = -I_{B2} = 15\text{ mA}$	2N2218A	-	-	60	ns
			2N2219A				
r_b, C_c	Feedback time constant	$I_C=20\text{ mA}, V_{CE}=20\text{ V}$ $f=31.8\text{ MHz}$	2N2218A	-	-	150	ps
			2N2219A				

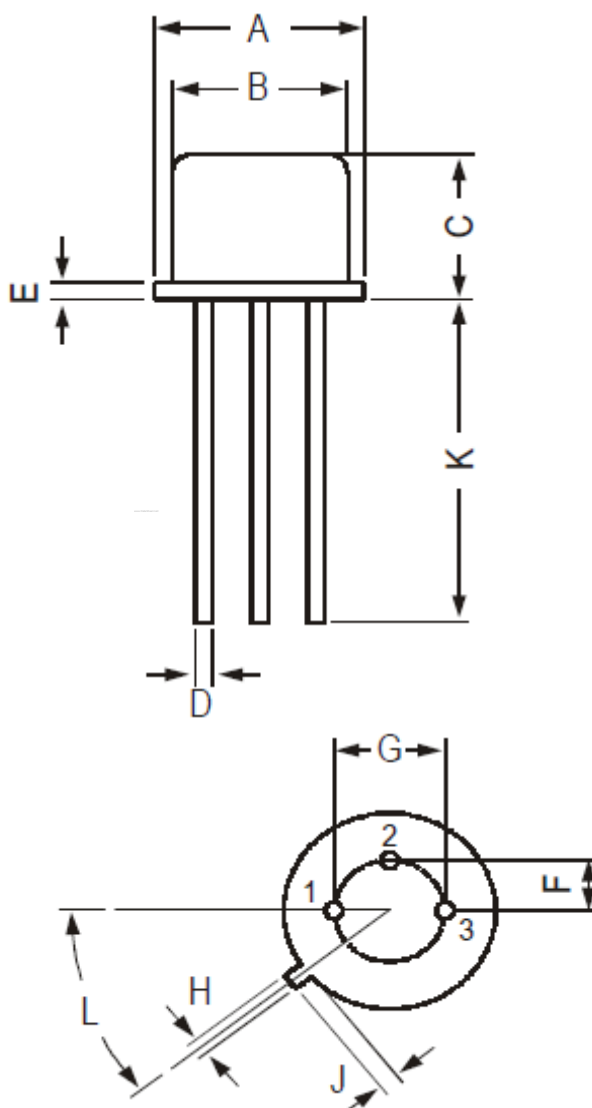
(*) Pulse conditions : $t_p < 300\text{ }\mu\text{s}$, $\delta = 2\%$

NPN 2N2218 – 2N2218A
2N2219 – 2N2219A

MECHANICAL DATA CASE TO-39

DIMENSIONS (mm)		
	min	max
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	-	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	-
L	42°	48°

Pin 1 :	Emitter
Pin 2 :	Base
Pin 3 :	Collector
Case :	Collector



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