



## NPN 2N2218A – 2N2219A

### SILICON PLANAR EPITAXIAL TRANSISTORS

The 2N2218A and 2N2219A 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
$V_{CEO}$	Collector-Emitter Voltage	2N2218A	40	V
		2N2219A		
$V_{CBO}$	Collector-Base Voltage	2N2218A	75	V
		2N2219A		
$V_{EBO}$	Emitter-Base Voltage	2N2218A	6	V
		2N2219A		
$I_C$	Collector Current	2N2218A	800	mA
		2N2219A		
$P_D$	Total Power Dissipation	@ $T_{amb} = 25^\circ$	0.8	Watts
		@ $T_{case} = 25^\circ$		
$P_D$	Total Power Dissipation	2N2218A	3	Watts
		2N2219A		
$T_J$	Junction Temperature	2N2218A	175	$^\circ C$
		2N2219A		
$T_{Stg}$	Storage Temperature range	2N2218A	-65 to +200	$^\circ C$
		2N2219A		

#### THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
$R_{thJ-a}$	Thermal Resistance, Junction to ambient in free air	2N2218A	50	$^\circ C/W$
		2N2219A		
$R_{thJ-c}$	Thermal Resistance, Junction to case	2N2218A	187.5	$^\circ C/W$
		2N2219A		

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=60\text{ V}, I_E=0$	2N2218A	-	-	10	nA
			2N2219A	-	-	10	$\mu\text{A}$
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=60\text{ V}, I_E=0, T_J=150^\circ\text{C}$	2N2218A	-	-	10	$\mu\text{A}$
			2N2219A	-	-	10	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{BE}=3.0\text{ V}, I_C=0$	2N2218A	-	-	10	nA
			2N2219A	-	-	10	nA
$I_{CEX}$	Collector Cutoff Current	$V_{CE}=60\text{ V}, -V_{BE}=3\text{ V}$	2N2218A	-	-	10	nA
			2N2219A	-	-	10	nA
$V_{CEO(1)}$	Collector Emitter Breakdown Voltage	$I_C=10\text{ mA}, I_B=0$	2N2218A	40	-	-	V
			2N2219A	40	-	-	V
$V_{CBO}$	Collector Base Breakdown Voltage	$I_C=10\text{ }\mu\text{A}, I_E=0$	2N2218A	75	-	-	V
			2N2219A	75	-	-	V
$V_{EBO}$	Emitter Base Breakdown Voltage	$I_E=10\text{ }\mu\text{A}, I_C=0$	2N2218A	6	-	-	V
			2N2219A	6	-	-	V
$h_{FE(1)}$	DC Current Gain	$I_C=0.1\text{ mA}, V_{CE}=10\text{ V}$	2N2218A	20	-	-	-
			2N2219A	35	-	-	
		$I_C=1\text{ mA}, V_{CE}=10\text{ V}$	2N2218A	25	-	-	
			2N2219A	50	-	-	
		$I_C=10\text{ mA}, V_{CE}=10\text{ V}$	2N2218A	35	-	-	
			2N2219A	75	-	-	
		$I_C=10\text{ mA}, V_{CE}=10\text{ V}$ $T_{amb} = -55^\circ$	2N2218A	15	-	-	
			2N2219A	35	-	-	
		$I_C=150\text{ mA}, V_{CE}=1\text{ V}$	2N2218A	20	-	-	
			2N2219A	50	-	-	
$I_C=150\text{ mA}, V_{CE}=10\text{ V}$	2N2218A	40	-	120			
	2N2219A	100	-	300			
$I_C=500\text{ mA}, V_{CE}=10\text{ V}$	2N2218A	25	-	-			
	2N2219A	40	-	-			
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (1)	$I_C=150\text{ mA}, I_B=15\text{ mA}$	2N2218A	-	-	0.3	V
			2N2219A	-	-	1	
		$I_C=500\text{ mA}, I_B=50\text{ mA}$	2N2218A	-	-	1	
			2N2219A	-	-	1	
$V_{BE(SAT)}$	Base-Emitter saturation Voltage (1)	$I_C=150\text{ mA}, I_B=15\text{ mA}$	2N2218A	-	-	1.2	V
			2N2219A	-	-	1.2	
		$I_C=500\text{ mA}, I_B=50\text{ mA}$	2N2218A	-	-	2	
			2N2219A	-	-	2	

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$f_T$	Transition frequency	$I_C=20\text{ mA}, V_{CE}=20\text{ V}$ $f=100\text{ MHz}$	2N2218A	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	

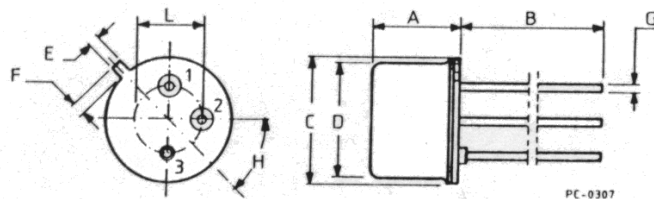
## NPN 2N2218A – 2N2219A

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$t_d$	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	-	-	10	ns
$t_r$	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	-	-	25	ns
$t_s$	Storage time	$I_C=150\text{ mA}$ , $I_{B1} = -I_{B2} = 15\text{ mA}$ $V_{CC}=30\text{ V}$	2N2218A	-	-	225	ns
			2N2219A	-	-	225	ns
$t_f$	Fall time	$I_C=150\text{ mA}$ , $I_{B1} = -I_{B2} = 15\text{ mA}$ $V_{CC}=30\text{ V}$	2N2218A	-	-	60	ns
			2N2219A	-	-	60	ns
$r_b, C_c$	Feedback time constant	$I_C=20\text{ mA}$ , $V_{CE}=20\text{ V}$ $f= 31.8\text{ MHz}$	2N2218A	-	-	150	ps
			2N2219A	-	-	150	ps

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

### MECHANICAL DATA CASE TO-39

DIMENSIONS	
	mm
A	6,25
B	13,59
C	9,24
D	8,24
E	0,78
F	1,05
G	0,42
H	45°
L	4,1



Pin 1 :	Emitter
Pin 2 :	Base
Case :	Collector

Information furnished is believed to be accurate and reliable. However, CS assumes no responsibility for the consequences of use of such information nor for errors that could appear.

Data are subject to change without notice.