

## NPN-SWITCHING SILICON TRANSISTOR

Qualified per MIL-PRF-19500/251

### DEVICES

<b>2N2218</b>	<b>2N2219</b>
<b>2N2218A</b>	<b>2N2219A</b>
<b>2N2218AL</b>	<b>2N2219AL</b>

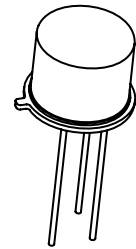
### LEVELS

**JAN**  
**JANTX**  
**JANTXV**  
**JANS \***

\* Also available in Radiation Hardened versions. See datasheet for JANSR2N2218 & JANSR2N2219

### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	2N2218 2N2219	2N221A; L 2N2219A; L	Unit
Collector-Emitter Voltage	$V_{CE0}$	30	50	Vdc
Collector-Base Voltage	$V_{CB0}$	60	75	Vdc
Emitter-Base Voltage	$V_{EB0}$	5.0	6.0	Vdc
Collector Current	$I_C$	800		mA
Total Power Dissipation	$P_T$	@ $T_A = +25^\circ\text{C}$	0.8	W
		@ $T_C = +25^\circ\text{C}$	3.0	W
Operating & Storage Junction Temp. Range	$T_{op}, T_{stg}$	-55 to +200		$^\circ\text{C}$



**TO-39 (TO-205AD)**  
 2N2218, 2N2218A  
 2N2219, 2N2219A

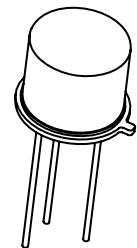
### THERMAL CHARACTERISTICS

Parameters / Test Conditions	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	59	$^\circ\text{C/W}$

**Note:** (1) Derate linearly 4.6mW/ $^\circ\text{C}$  above  $T_A > +25^\circ\text{C}$   
 (2) Derate linearly 17.0mW/ $^\circ\text{C}$  above  $T_C > +25^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS ( $T_A = +25^\circ\text{C}$ , unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage $I_E = 10\text{mA dc}$	$V_{(BR)CEO}$	30 50		Vdc
				2N2218; 2N2219 2N2218A; 2N2219A; L
Emitter-Base Cutoff Current $V_{EB} = 5.0\text{Vdc}$	$I_{EBO}$		10	$\mu\text{A dc}$
$V_{EB} = 6.0\text{Vdc}$			10	$\eta\text{A dc}$
$V_{EB} = 4.0\text{Vdc}$			10	
Collector-Base Cutoff Current $V_{CE} = 30\text{Vdc}$	$I_{CES}$		10	$\eta\text{A dc}$
$V_{CE} = 50\text{Vdc}$			10	
				2N2218; 2N2219 2N2218A; 2N2219A; L



**TO-5**  
 2N2218AL  
 2N2219AL

## NPN-SWITCHING SILICON TRANSISTOR

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### ELECTRICAL CHARACTERISTICS ( $T_A = +25^\circ\text{C}$ , unless otherwise noted) (Con't)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Collector-Base Cutoff Current $V_{CB} = 50\text{Vdc}$ $V_{CB} = 60\text{Vdc}$ $V_{CB} = 60\text{Vdc}$ $V_{CB} = 75\text{Vdc}$	$I_{CBO}$	2N2218; 2N2219 2N2218A; 2N2219A; L 2N2218; 2N2219 2N2218A; 2N2219A; L	10 10 10 10	$\eta_{Adc}$ $\mu_{Adc}$
<b>ON CHARACTERISTICS (3)</b>				
Forward-Current Transfer Ratio $I_C = 0.1\text{mA}_{dc}$ , $V_{CE} = 10\text{Vdc}$ $I_C = 1.0\text{mA}_{dc}$ , $V_{CE} = 10\text{Vdc}$ $I_C = 10\text{mA}_{dc}$ , $V_{CE} = 10\text{Vdc}$ $I_C = 150\text{mA}_{dc}$ , $V_{CE} = 10\text{Vdc}$ $I_C = 500\text{mA}_{dc}$ , $V_{CE} = 10\text{Vdc}$	$h_{FE}$	2N2218 2N2219 2N2218A; 2N2218AL 2N2219A; 2N2219AL 2N2218 2N2219 2N2218A; 2N2218AL 2N2219A; 2N2219AL 2N2218 2N2219 2N2218A; 2N2218AL 2N2219A; 2N2219AL 2N2218; A; AL 2N2219; A; AL 2N2218; A; AL 2N2219; A; AL	20 35 30 50 25 50 35 75 35 75 40 100 40 100 20 30	150 325 150 325 120 300
Collector-Emitter Saturation Voltage $I_C = 150\text{mA}_{dc}$ , $I_B = 15\text{mA}_{dc}$ $I_C = 500\text{mA}_{dc}$ , $I_B = 50\text{mA}_{dc}$	$V_{CE(sat)}$	2N2218; 2N2219 2N2218A; 2N2219A; L 2N2218; 2N2219 2N2218A; 2N2219A; L	0.4 0.3 1.6 1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 150\text{mA}_{dc}$ , $I_B = 15\text{mA}_{dc}$ $I_C = 500\text{mA}_{dc}$ , $I_B = 50\text{mA}_{dc}$	$V_{BE(sat)}$	2N2218; 2N2219 2N2218A; 2N2219A; L 2N2218; 2N2219 2N2218A; 2N2219A; L	0.6 0.6 2.6 2.0	Vdc