

## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/510

### Devices

2N6249  
2N6250

2N6251

### Qualified Level

JAN  
JANTX  
JANTXV  
JANHC

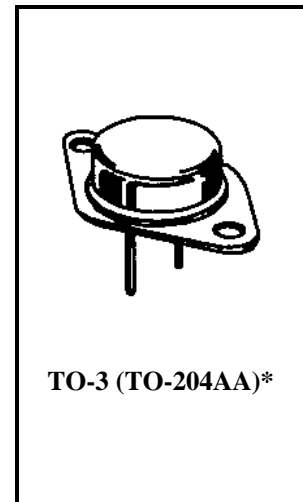
### MAXIMUM RATINGS

Ratings	Symbol	2N6249	2N6250	2N6251	Units
Collector-Emitter Voltage	$V_{CEO}$	200	275	350	Vdc
Collector-Base Voltage	$V_{CBO}$	300	375	450	Vdc
Emitter-Base Voltage	$V_{EBO}$	6.0			Vdc
Collector Current	$I_C$	10			Adc
Base Current	$I_B$	5.0			Adc
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ <sup>(1)</sup> @ $T_C = +25^{\circ}\text{C}$ <sup>(2)</sup>	$P_T$	5.5			W
		175			W
Operating & Storage Temp Range	$T_{op}, T_{stg}$	-55 to +200			$^{\circ}\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^{\circ}\text{C}/\text{W}$

- Derate linearly at  $34.2 \text{ mW}/^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$
- Derate linearly at  $1.0 \text{ W}/^{\circ}\text{C}$  for  $T_C > +25^{\circ}\text{C}$



\*See Appendix A for Package Outline

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

Characteristics	Symbol	Min.	Max.	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$ ; $L = 42 \text{ mH}$ ; $F = 30\text{-}60 \text{ Hz}$ (See Figure 3 of MIL-PRF-19500/510)	2N6249 2N6250 2N6251	$V_{(BR)CEO}$	200 275 350	Vdc
Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$ ; $L = 14 \text{ mH}$ ; $F = 30\text{-}60 \text{ Hz}$ ; $R_{BE} = 50\Omega$ (See Figure 3 of MIL-PRF-19500/510)	2N6249 2N6250 2N6251	$V_{(BR)CER}$	225 300 375	Vdc
Emitter-Base Cutoff Current $V_{EB} = 6 \text{ Vdc}$		$I_{EBO}$	100	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 150 \text{ Vdc}$ $V_{CE} = 225 \text{ Vdc}$ $V_{CE} = 300 \text{ Vdc}$	2N6249 2N6250 2N6251	$I_{CEO}$	1.0 1.0 1.0	mAdc

**2N6249, 2N6250, 2N6251 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics		Symbol	Min.	Max.	Unit
<b>OFF CHARACTERISTICS (con't)</b>					
Collector-Emitter Cutoff Current V <sub>CE</sub> = 225 Vdc; V <sub>BE</sub> = -1.5 Vdc V <sub>CE</sub> = 300 Vdc; V <sub>BE</sub> = -1.5 Vdc V <sub>CE</sub> = 375 Vdc; V <sub>BE</sub> = -1.5 Vdc	2N6249 2N6250 2N6251	I <sub>CEX</sub>		100 100 100	μAdc
Collector-Base Cutoff Current V <sub>CB</sub> = 300 Vdc V <sub>CB</sub> = 375 Vdc V <sub>CB</sub> = 450 Vdc	2N6249 2N6250 2N6251	I <sub>CBO</sub>		0.5 0.5 0.5	mAdc

**ON CHARACTERISTICS<sup>(3)</sup>**

Forward-Current Transfer Ratio I <sub>C</sub> = 10 Adc; V <sub>CE</sub> = 3 Vdc	2N6249 2N6250 2N6251	h <sub>FE</sub>	10 8 6	50 50 50	
Collector-Emitter Saturated Voltage I <sub>B</sub> = 1.0 Adc; I <sub>C</sub> = 10 Adc I <sub>B</sub> = 1.25 Adc; I <sub>C</sub> = 10 Adc I <sub>B</sub> = 1.67 Adc; I <sub>C</sub> = 10 Adc	2N6249 2N6250 2N6251	V <sub>CE(sat)</sub>		1.5 1.5 1.5	Vdc
Base-Emitter Saturated Voltage I <sub>B</sub> = 1.0 Adc; I <sub>C</sub> = 10 Adc I <sub>B</sub> = 1.25 Adc; I <sub>C</sub> = 10 Adc I <sub>B</sub> = 1.67 Adc; I <sub>C</sub> = 10 Adc	2N6249 2N6250 2N6251	V <sub>BE(sat)</sub>		2.25 2.25 2.25	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 10 Vdc, f = 1 MHz		h <sub>fe</sub>	2.5	15	
Output Capacitance V <sub>CB</sub> = 10 Vdc, I <sub>C</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz		C <sub>obo</sub>		500	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 200 Vdc; I <sub>C</sub> = 10 Adc I <sub>B</sub> = 1.0 Adc I <sub>B</sub> = 1.25 Adc I <sub>B</sub> = 1.67 Adc	2N6249 2N6250 2N6251	t <sub>on</sub>		2.0 2.0 2.0	μs
Turn-Off Time V <sub>CC</sub> = 200 Vdc; I <sub>C</sub> = 10 Adc I <sub>B</sub> = 1.0 Adc I <sub>B</sub> = 1.25 Adc I <sub>B</sub> = 1.67 Adc	2N6249 2N6250 2N6251	t <sub>off</sub>		4.5 4.5 4.5	μs

**SAFE OPERATING AREA**

<p><b>DC Tests</b> T<sub>C</sub> = +25°C; t = 1 s, 1 cycle (See Figure 5 of MIL-PRF-19500/510)</p> <p><b>Test 1</b> V<sub>CE</sub> = 17.5 Vdc, I<sub>C</sub> = 10 Adc</p> <p><b>Test 2</b> V<sub>CE</sub> = 30 Vdc, I<sub>C</sub> = 5.8 Adc</p> <p><b>Test 3</b> V<sub>CE</sub> = 100 Vdc, I<sub>C</sub> = 0.3 Adc</p>
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3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.