

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/510

Devices

2N6249
2N6250

2N6251

Qualified Level

JAN
JANTX
JANTXV
JANHC

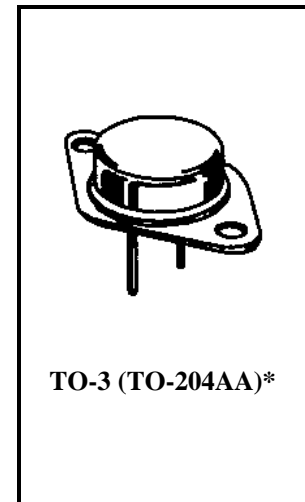
MAXIMUM RATINGS

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 @ $T_A = +25^{\circ}\text{C}$ ⁽¹⁾ @ $T_C = +25^{\circ}\text{C}$ ⁽²⁾	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	$^{\circ}\text{C}/\text{W}$

- 1) Derate linearly at 34.2 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$
- 2) Derate linearly at 1.0 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
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)	$V_{(BR)CEO}$	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)	$V_{(BR)CER}$	225 300 375		Vdc
Emitter-Base Cutoff Current $V_{EB} = 6 \text{ Vdc}$	I_{EBO}		100	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 150 \text{ Vdc}$ $V_{CE} = 225 \text{ Vdc}$ $V_{CE} = 300 \text{ Vdc}$	I_{CEO}		1.0 1.0 1.0	mAdc

2N6249, 2N6250, 2N6251 JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

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

ON CHARACTERISTICS⁽³⁾

Forward-Current Transfer Ratio I _C = 10 Adc; V _{CE} = 3 Vdc	2N6249 2N6250 2N6251	h _{FE}	10 8 6	50 50 50	
Collector-Emitter Saturated Voltage I _B = 1.0 Adc; I _C = 10 Adc I _B = 1.25 Adc; I _C = 10 Adc I _B = 1.67 Adc; I _C = 10 Adc	2N6249 2N6250 2N6251	V _{CE(sat)}		1.5 1.5 1.5	Vdc
Base-Emitter Saturated Voltage I _B = 1.0 Adc; I _C = 10 Adc I _B = 1.25 Adc; I _C = 10 Adc I _B = 1.67 Adc; I _C = 10 Adc	2N6249 2N6250 2N6251	V _{BE(sat)}		2.25 2.25 2.25	Vdc

DYNAMIC CHARACTERISTICS

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

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 200 Vdc; I _C = 10 Adc I _B = 1.0 Adc I _B = 1.25 Adc I _B = 1.67 Adc	2N6249 2N6250 2N6251	t _{on}		2.0 2.0 2.0	μs
Turn-Off Time V _{CC} = 200 Vdc; I _C = 10 Adc I _B = 1.0 Adc I _B = 1.25 Adc I _B = 1.67 Adc	2N6249 2N6250 2N6251	t _{off}		4.5 4.5 4.5	μs

SAFE OPERATING AREA

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