Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/ 510

Devices		*Qualified Level*
2N6249 **2N6250**	**2N6251**	**JAN** **JANTX** **JANTXV** **JANHC**

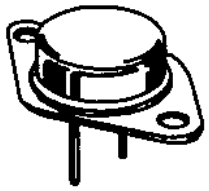
MAXIMUM RATINGS

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 @ $T_A = +25^0C$ (1) @ $T_C = +25^0C$ (2)	P_T	5.5 175			W W
Operating & Storage Temp Range	T_{op}, T_{stg}	-55 to +200			^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^0C/W$

1) Derate linearly at 34.2 mW/^{0}C for $T_A > +25^0C$
2) Derate linearly at 1.0 W/^{0}C for $T_C > +25^0C$



TO-3 (TO-204AA)*

*See Appendix A for Package Outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C = 200 mAdc; L = 42 mH; F = 30-60 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 mAdc; L = 14 mH; F = 30-60 Hz; R_{BE} = 50Ω (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 Vdc		I_{EBO}		100	µAdc
Collector-Emitter Cutoff Current V_{CE} = 150 Vdc V_{CE} = 225 Vdc V_{CE} = 300 Vdc	2N6249 2N6250 2N6251	I_{CEO}		1.0 1.0 1.0	mAdc

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	2N6249	I_{CEX}		100	µAdc
V_{CE} = 300 Vdc; V_{BE} = -1.5 Vdc	2N6250			100	
V_{CE} = 375 Vdc; V_{BE} = -1.5 Vdc	2N6251			100	
Collector-Base Cutoff Current					
V_{CB} = 300 Vdc	2N6249	I_{CBO}		0.5	mAdc
V_{CB} = 375 Vdc	2N6250			0.5	
V_{CB} = 450 Vdc	2N6251			0.5	
ON CHARACTERISTICS[3]					
Forward-Current Transfer Ratio					
I_C = 10 Adc; V_{CE} = 3 Vdc	2N6249	h_{FE}	10	50	
	2N6250		8	50	
	2N6251		6	50	
Collector-Emitter Saturated Voltage					
I_B = 1.0 Adc; I_C = 10 Adc	2N6249	$V_{CE(sat)}$		1.5	Vdc
I_B = 1.25 Adc; I_C = 10 Adc	2N6250			1.5	
I_B = 1.67 Adc; I_C = 10 Adc	2N6251			1.5	
Base-Emitter Saturated Voltage					
I_B = 1.0 Adc; I_C = 10 Adc	2N6249	$V_{BE(sat)}$		2.25	Vdc
I_B = 1.25 Adc; I_C = 10 Adc	2N6250			2.25	
I_B = 1.67 Adc; I_C = 10 Adc	2N6251			2.25	
DYNAMIC CHARACTERISTICS					
Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio		$\lvert h_{fe} \rvert$			
I_C = 1.0 Adc, V_{CE} = 10 Vdc, f = 1 MHz			2.5	15	
Output Capacitance		C_{obo}			pF
V_{CB} = 10 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz				500	
SWITCHING CHARACTERISTICS					
Turn-On Time					
V_{CC} = 200 Vdc; I_C = 10 Adc					
I_B = 1.0 Adc	2N6249	t_{on}		2.0	µs
I_B = 1.25 Adc	2N6250			2.0	
I_B = 1.67 Adc	2N6251			2.0	
Turn-Off Time					
V_{CC} = 200 Vdc; I_C = 10 Adc					
I_B = 1.0 Adc	2N6249	t_{off}		4.5	µs
I_B = 1.25 Adc	2N6250			4.5	
I_B = 1.67 Adc	2N6251			4.5	

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}C; t = 1 s, 1 cycle (See Figure 5 of MIL-PRF-19500/510)

Test 1

V_{CE} = 17.5 Vdc, I_C = 10 Adc

Test 2

V_{CE} = 30 Vdc, I_C = 5.8 Adc

Test 3

V_{CE} = 100 Vdc, I_C = 0.3 Adc

3) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%.