

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/315

Devices

2N2880

2N3749

Qualified Level

JAN
JANTX
JANTXV

MAXIMUM RATINGS

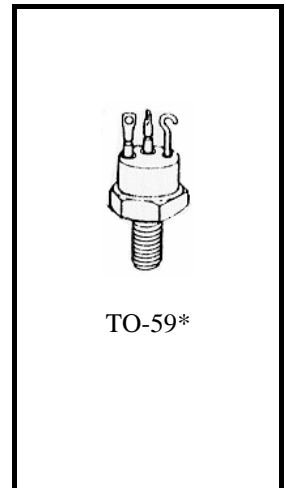
Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Collector-Base Voltage	V_{CBO}	110	Vdc
Emitter-Base Voltage	V_{EBO}	8.0	Vdc
Base Current	I_B	0.5	Adc
Collector Current	I_C	5.0	Adc
Total Power Dissipation @ $T_A = 25^{\circ}C$ (1) @ $T_C = 100^{\circ}C$ (2)	P_T	2.0 30	W
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-65 to +200	$^{\circ}C$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.33	$^{\circ}C/W$

1) Derate linearly 11.4 mW/ $^{\circ}C$ for $T_A > 25^{\circ}C$

2) Derate linearly 300 mW/ $^{\circ}C$ for $T_C > 100^{\circ}C$



*See Appendix A for Package Outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100$ mAdc	$V_{(BR)CEO}$	80		Vdc
Collector-Emitter Breakdown Voltage $I_C = 10$ μ Adc	$V_{(BR)CBO}$	110		Vdc
Emitter-Base Breakdown to Voltage $I_E = 10$ μ Adc	$V_{(BR)EBO}$	8.0		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 60$ Vdc	I_{CEO}		20	μ Adc
Collector-Base Cutoff Current $V_{CB} = 80$ Vdc	I_{CBO}		0.2	μ Adc
Collector-Emitter Cutoff Current $V_{CE} = 110$ Vdc, $V_{BE} = -0.5$	I_{CEX}		1.0	μ Adc
Emitter-Base Cutoff Current $V_{EB} = 6.0$ Vdc	I_{EBO}		0.2	μ Adc

ELECTRICAL CHARACTERISTICS (Con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS				
Forward-Current Transfer Ratio $I_C = 50 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}$ $I_C = 1.0 \text{ A dc}, V_{CE} = 2.0 \text{ V dc}$ $I_C = 5.0 \text{ A dc}, V_{CE} = 5.0 \text{ V dc}$	h_{FE}	40 40 15	120 120	
Base-Emitter Voltage Non-Saturated $V_{CE} = 2.0 \text{ A dc}, I_C = 1.0 \text{ A dc}$	V_{BE}		1.2	Vdc
Collector-Emitter Saturation Voltage $I_C = 1.0 \text{ A dc}, I_B = 0.1 \text{ A dc}$ $I_C = 5.0 \text{ A dc}, I_B = 0.5 \text{ A dc}$	$V_{CE(sat)}$		0.25 1.5	Vdc
Base-Emitter Saturation Voltage $I_C = 1.0 \text{ A dc}, I_B = 0.1 \text{ A dc}$	$V_{BE(sat)}$		1.2	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ A dc}, V_{CE} = 10 \text{ V dc}, f = 10 \text{ MHz}$	$ h_{fe} $	3.0	12	
Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 50 \text{ mA dc}, V_{CE} = 5.0 \text{ V dc}, f = 1 \text{ kHz}$	h_{fe}	40	140	
Output Capacitance $V_{CB} = 10 \text{ V dc}, I_E = 0, 100 \leq f \leq 1.0 \text{ MHz}$	C_{obo}		150	pF

SAFE OPERATING AREA

DC Tests $T_C = 100^\circ\text{C}, t = 10 \text{ s}$ Test 1 $V_{CE} = 80 \text{ V dc}, I_C = 80 \text{ mA dc}$ Test 2 $V_{CE} = 20 \text{ V dc}, I_C = 1.5 \text{ A dc}$
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