

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/277

Devices

2N2150

2N2151

Qualified Level

JANTX

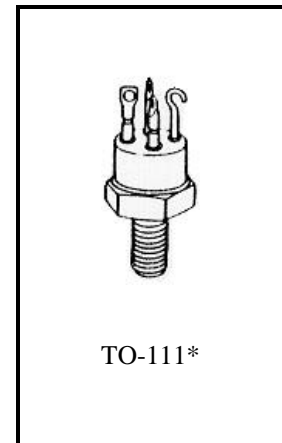
MAXIMUM RATINGS ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	100	Vdc
Collector-Base Voltage	V_{CBO}	150	Vdc
Emitter-Base Voltage	V_{EBO}	8.0	Vdc
Base Current	I_B	2.0	Adc
Collector Current	I_C	2.0	Adc
Total Power Dissipation @ $T_C = +100^{\circ}\text{C}^{(1)}$	P_T	30	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.3	$^{\circ}\text{C/W}$

1) Derate linearly @ 0.3 W/ $^{\circ}\text{C}$ for $T_C > +100^{\circ}\text{C}$



*See Appendix A for Package Outline

ELECTRICAL CHARACTERISTICS ($T_C = +25^{\circ}\text{C}$)

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 50 \text{ mAdc}$	$V_{(BR)CEO}$	100		Vdc
Collector-Emitter Breakdown Voltage $I_C = 100 \mu\text{Adc}$	V_{CBO}	150		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}$	I_{CEO}		10	μAdc
Collector-Base Cutoff Current $V_{CB} = 120 \text{ Vdc}$	I_{CBO}		5.0	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 120 \text{ Vdc}, V_{BE} = -1.0 \text{ Vdc}$	I_{CEX}		5.0	μAdc
Emitter-Base Cutoff Current $V_{EB} = 8.0 \text{ Vdc}$	I_{EBO}		2.0	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 120 \text{ Vdc}, V_{BE} = 0 \text{ Vdc}$	I_{CES}		5.0	μAdc

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2N2150, 2N2151 JANTX SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS				
Forward-Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 0.5 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 0.1 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 0.5 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 0.1 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$	2N2150 2N2151	 20 20 20 40 40 40	60 60 120 120	
Base-Emitter Voltage Non -Saturated $V_{CE} = 5.0 \text{ Vdc}, I_C = 1.0 \text{ Adc}$	V_{BE}		1.2	Vdc
Collector-Emitter Saturation Voltage $I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$	$V_{CE(sat)}$		1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$	$V_{BE(sat)}$		1.2	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 0.1 \text{ mAdc}, V_{CE} = 30 \text{ Vdc}, f = 10 \text{ MHz}$	$ h_{fe} $	1.0	7.0	
Output Capacitance $V_{CB} = 20 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		160	pF

SAFE OPERATING AREA

Test 1 $V_{CE} = 15 \text{ Vdc}, I_C = 2.0 \text{ Adc}$ Test 2 $V_{CE} = 57 \text{ Vdc}, I_C = 200 \text{ mAdc}$ Test 3 $V_{CE} = 100 \text{ Vdc}, I_C = 25 \text{ mAdc}$
