

## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/277

### Devices

2N2150

2N2151

### Qualified Level

JANTX

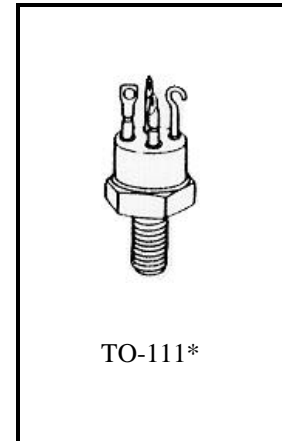
### MAXIMUM RATINGS ( $T_C = 25^{\circ}\text{C}$ unless otherwise noted)

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
-----------------	--------	------	------	------

### 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	$\mu\text{Adc}$
Collector-Base Cutoff Current $V_{CB} = 120 \text{ Vdc}$	$I_{CBO}$		5.0	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 120 \text{ Vdc}, V_{BE} = -1.0 \text{ Vdc}$	$I_{CEX}$		5.0	$\mu\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 8.0 \text{ Vdc}$	$I_{EBO}$		2.0	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 120 \text{ Vdc}, V_{BE} = 0 \text{ Vdc}$	$I_{CES}$		5.0	$\mu\text{Adc}$

**2N2150, 2N2151 JANTX SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS</b>				
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**

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