

## NPN DARLINGTON HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/624

### Devices

**2N7370**

### Qualified Level

**JAN  
JANTX  
JANTXV**

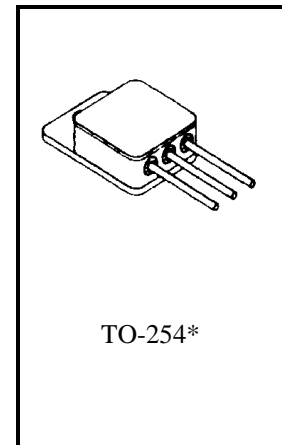
### MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Emitter Voltage	$V_{CEO}$	100	Vdc
Collector-Base Voltage	$V_{CBO}$	100	Vdc
Emitter-Base Voltage	$V_{EBO}$	5.0	Vdc
Base Current	$I_B$	0.2	Adc
Collector Current	$I_C$	12	Adc
Total Power Dissipation @ $T_C = +25^{\circ}\text{C}$ <sup>(1)</sup>	$P_T$	100	W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +175	$^{\circ}\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.5	$^{\circ}\text{C}/\text{W}$

1) Derate linearly 0.667 W/ $^{\circ}\text{C}$  above  $T_C > +25^{\circ}\text{C}$



\*See Appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	$V_{CEO(sus)}$	100		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 50 \text{ Vdc}$	$I_{CEO}$		1.0	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	$I_{CEX}$		0.5	mAdc
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$	$I_{EBO}$		2.0	mAdc

**2N7370 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
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**ON CHARACTERISTICS <sup>(2)</sup>**

Forward-Current Transfer Ratio $I_C = 6.0 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$ $I_C = 12 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$	$h_{FE}$	1,000 150	18,000	
Collector-Emitter Saturation Voltage $I_C = 12 \text{ Adc}, I_B = 120 \text{ mAdc}$	$V_{CE(sat)}$		3.0	Vdc
Base-Emitter Saturation Voltage $I_C = 12 \text{ Adc}, I_B = 120 \text{ mAdc}$	$V_{BE(sat)}$		4.0	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 5.0 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}, f = 1.0 \text{ MHz}$	$ h_{fe} $	10	250	
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**SWITCHING CHARACTERISTICS**

Turn-On Time $V_{CC} = 30 \text{ Vdc}; I_C = 12 \text{ Adc}; I_{B1} = 120 \text{ mAdc}$	$t_{on}$		2.0	$\mu\text{s}$
Turn-Off Time $V_{CC} = 30 \text{ Vdc}; I_C = 12 \text{ Adc}; I_{B1} = I_{B2} = 120 \text{ mAdc}$	$t_{off}$		10	$\mu\text{s}$

**SAFE OPERATING AREA**

<p><b>DC Tests</b>  <math>T_C = +25^{\circ}\text{C}, 1 \text{ Cycle}, t \geq 1.0 \text{ s}</math></p> <p><b>Test 1</b>  <math>V_{CE} = 8.3 \text{ Vdc}, I_C = 12 \text{ Adc}</math></p> <p><b>Test 2</b>  <math>V_{CE} = 30 \text{ Vdc}, I_C = 3.3 \text{ Adc}</math></p> <p><b>Test 3</b>  <math>V_{CE} = 90 \text{ Vdc}, I_C = 150 \text{ mAdc}</math></p>
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(2) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .