

## PNP DARLINGTON HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/623

### Devices

2N7371

### Qualified Level

JAN, JANTX  
JANTXV

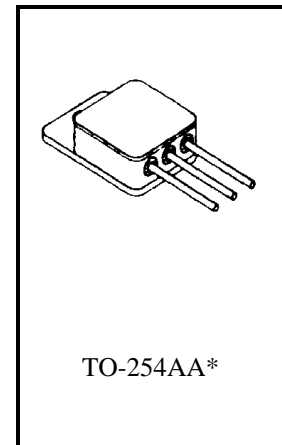
### MAXIMUM RATINGS

| 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 @ $T_C = +25^{\circ}C$ <sup>(1)</sup> | $P_T$          | 100         | W           |
| Operating & Storage Junction Temperature Range                | $T_J, T_{stg}$ | -65 to +175 | $^{\circ}C$ |

### THERMAL CHARACTERISTICS

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

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



\*See Appendix A for package outline

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

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

### OFF CHARACTERISTICS

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

**2N7371 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

**ON CHARACTERISTICS <sup>(2)</sup>**

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

**DYNAMIC CHARACTERISTICS**

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

**SWITCHING CHARACTERISTICS**

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

**SAFE OPERATING AREA**

|  |
|--|
| <p><b>DC Tests</b><br/> <math>T_C = +25^{\circ}\text{C}, 1 \text{ Cycle}, t \geq 1.0 \text{ s}</math></p> <p><b>Test 1</b><br/> <math>V_{CE} = 8.3 \text{ Vdc}, I_C = 12 \text{ Adc}</math></p> <p><b>Test 2</b><br/> <math>V_{CE} = 30 \text{ Vdc}, I_C = 3.3 \text{ Adc}</math></p> <p><b>Test 3</b><br/> <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  $\leq 2.0\%$ .