

## NPN HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/488

### Devices

2N5671

2N5672

### Qualified Level

JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

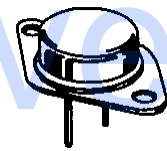
| Ratings                               | Symbol            | 2N5671                                | 2N5672 | Unit        |
|---------------------------------------|-------------------|---------------------------------------|--------|-------------|
| Collector-Emitter Voltage             | $V_{CEO}$         | 90                                    | 120    | Vdc         |
| Collector-Base Voltage                | $V_{CBO}$         | 120                                   | 150    | Vdc         |
| Emitter-Base Voltage                  | $V_{EBO}$         | 7.0                                   |        | Vdc         |
| Base Current                          | $I_B$             | 10                                    |        | Adc         |
| Collector Current                     | $I_C$             | 30                                    |        | Adc         |
| Total Power Dissipation               | $P_T$             | @ $T_A = +25^{\circ}C$ <sup>(1)</sup> | 6.0    | W           |
|                                       |                   | @ $T_C = +25^{\circ}C$ <sup>(2)</sup> | 140    | W           |
| Operating & Storage Temperature Range | $T_{op}, T_{stg}$ | -65 to +200                           |        | $^{\circ}C$ |

### THERMAL CHARACTERISTICS

| Characteristics                      | Symbol          | Max. | Unit          |
|--------------------------------------|-----------------|------|---------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 1.25 | $^{\circ}C/W$ |

1) Derate linearly 34.2 mW/ $^{\circ}C$  for  $T_A > +25^{\circ}C$

2) Derate linearly 800 mW/ $^{\circ}C$  for  $T_C > +25^{\circ}C$



TO-3\*  
(TO-204AA)

\*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>$I_C = 200$ mAdc                    | 2N5671<br>2N5672 | $V_{(BR)CEO}$ | 90<br>120  | Vdc  |
| Collector-Emitter Breakdown Voltage<br>$I_C = 200$ mAdc                    | 2N5671<br>2N5672 | $V_{(BR)CER}$ | 110<br>140 | Vdc  |
| Collector-Emitter Breakdown Voltage<br>$I_C = 200$ mAdc                    | 2N5671<br>2N5672 | $V_{(BR)CEX}$ | 120<br>150 | Vdc  |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 80$ Vdc                      |                  | $I_{CEO}$     | 10         | mAdc |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 110$ Vdc, $V_{BE} = 1.5$ Vdc | 2N5671           | $I_{CEX}$     | 12         | mAdc |
| $V_{CE} = 135$ Vdc, $V_{BE} = 1.5$ Vdc                                     | 2N5672           |               |            |      |

**2N5671, 2N5672 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

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

**OFF CHARACTERISTICS (con't)**

|   |                  |                  |          |      |
|---|------------------|------------------|----------|------|
| Collector-Base Cutoff Current<br>V <sub>CB</sub> = 120 Vdc<br>V <sub>CB</sub> = 150 Vdc | 2N5671<br>2N5672 | I <sub>CBO</sub> | 25<br>25 | mAdc |
| Emitter-Base Cutoff Current<br>V <sub>EB</sub> = 7.0 Vdc                                |                  | I <sub>EBO</sub> | 10       | mAdc |

**ON CHARACTERISTICS <sup>(3)</sup>**

|  |  |                      |          |             |
|--|--|----------------------|----------|-------------|
| Forward-Current Transfer Ratio<br>I <sub>C</sub> = 15 Adc, V <sub>CE</sub> = 2.0 Vdc<br>I <sub>C</sub> = 20 Adc, V <sub>CE</sub> = 5.0 Vdc     |  | h <sub>FE</sub>      | 20<br>20 | 100         |
| Collector-Emitter Saturation Voltage<br>I <sub>C</sub> = 15 Adc, I <sub>B</sub> = 1.2 Adc<br>I <sub>C</sub> = 30 Adc, I <sub>B</sub> = 6.0 Adc |  | V <sub>CE(sat)</sub> |          | 0.75<br>5.0 |
| Base-Emitter Saturation Voltage<br>I <sub>C</sub> = 15 Adc, I <sub>B</sub> = 1.2 Adc   |  | V <sub>BE(sat)</sub> |          | 1.5         |

**DYNAMIC CHARACTERISTICS**

|  |  |                  |    |     |
|--|--|------------------|----|-----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 2.0 Adc, V <sub>CE</sub> = 10 Vdc, f = 5.0 MHz |  | h <sub>fe</sub>  | 10 | 40  |
| Output Capacitance<br>V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz  |  | C <sub>obo</sub> |    | 900 |

**SWITCHING CHARACTERISTICS**

|   |  |                  |  |     |
|---|--|------------------|--|-----|
| Turn-On Time<br>V <sub>CC</sub> = 30 ± 2.0 Vdc; I <sub>C</sub> = 15 Adc; I <sub>B1</sub> = 1.2 Adc                    |  | t <sub>on</sub>  |  | 0.5 |
| Turn-Off Time<br>V <sub>CC</sub> = 30 ± 2.0 Vdc; I <sub>C</sub> = 15 Adc; I <sub>B1</sub> = I <sub>B2</sub> = 1.2 Adc |  | t <sub>off</sub> |  | 1.5 |

**SAFE OPERATING AREA**

|  |        |  |  |  |
|--|--------|--|--|--|
| <b>DC Tests</b>                                      |        |  |  |  |
| T <sub>C</sub> = +25°C, 1 Cycle, t = 1.0 s           |        |  |  |  |
| <b>Test</b>  |        |  |  |  |
| V <sub>CE</sub> = 24 Vdc, I <sub>C</sub> = 5.8 Adc   |        |  |  |  |
| <b>Test 2</b>  |        |  |  |  |
| V <sub>CE</sub> = 45 Vdc, I <sub>C</sub> = 0.9 Adc   |        |  |  |  |
| <b>Test 3</b>  |        |  |  |  |
| V <sub>CE</sub> = 4.67 Vdc, I <sub>C</sub> = 30 Adc  |        |  |  |  |
| <b>Test 4</b>  |        |  |  |  |
| V <sub>CE</sub> = 90 Vdc, I <sub>C</sub> = 0.19 Adc  |        |  |  |  |
|  | 2N5671 |  |  |  |
| <b>Test 5</b>  |        |  |  |  |
| V <sub>CE</sub> = 120 Vdc, I <sub>C</sub> = 0.11 Adc |        |  |  |  |
|  | 2N5672 |  |  |  |

(3) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%.