

## PNP HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/433

### Devices

2N4399

2N5745

### Qualified Level

JANTX  
JANTXV

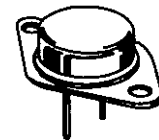
### MAXIMUM RATINGS

| Ratings  | Symbol         | 2N4399                                 | 2N5745 | Unit        |
|--|----------------|--|--------|-------------|
| Collector-Emitter Voltage                      | $V_{CEO}$      | 60                                     | 80     | Vdc         |
| Collector-Base Voltage                         | $V_{CBO}$      | 60                                     | 80     | Vdc         |
| Emitter-Base Voltage                           | $V_{EBO}$      | 5.0                                    |        | Vdc         |
| Base Current                                   | $I_B$          | 7.5                                    |        | Adc         |
| Collector Current                              | $I_C$          | 30                                     | 20     | Adc         |
| Total Power Dissipation                        | $P_T$          | @ $T_A = +25^{\circ}C$ <sup>(1)</sup>  |        | 5.0         |
|  |                | @ $T_C = +100^{\circ}C$ <sup>(2)</sup> |        | 115         |
| Operating & Storage Junction Temperature Range | $T_J, T_{stg}$ | -55 to +200                            |        | $^{\circ}C$ |

### THERMAL CHARACTERISTICS

| Characteristics                      | Symbol          | Max.  | Unit          |
|--------------------------------------|-----------------|-------|---------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 0.875 | $^{\circ}C/W$ |
| Junction-to-Ambient                  | $R_{\theta JA}$ | 35    |               |

- 1) Derate linearly @ 28.57 mW/ $^{\circ}C$  for  $T_A > +25^{\circ}C$
- 2) Derate linearly @ 1.15 W/ $^{\circ}C$  for  $T_C > +100^{\circ}C$



TO-3\*  
(TO-204AA)

\*See appendix A for package outline

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

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

### OFF CHARACTERISTICS

|  |                  |               |            |           |
|--|------------------|---------------|------------|-----------|
| Collector-Emitter Breakdown Voltage<br>$I_C = 200$ mAdc  | 2N4399<br>2N5745 | $V_{(BR)CEO}$ | 60<br>80   | Vdc       |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 60$ Vdc<br>$V_{CE} = 80$ Vdc   | 2N4399<br>2N5745 | $I_{CEO}$     | 100<br>100 | $\mu$ Adc |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 60$ Vdc, $V_{BE} = 1.5$ Vdc<br>$V_{CE} = 80$ Vdc, $V_{BE} = 1.5$ Vdc | 2N4399<br>2N5745 | $I_{CEX}$     | 5.0<br>5.0 | $\mu$ Adc |
| Emitter-Base Cutoff Current<br>$V_{EB} = 5.0$ Vdc  |                  | $I_{EBO}$     | 5.0        | $\mu$ Adc |

2N4399, 2N5745 JAN SERIES

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics  | Symbol               | Min. | Max. | Unit |
|--|----------------------|------|------|------|
| <b>DC CHARACTERISTICS <sup>(3)</sup></b>   |                      |      |      |      |
| Forward-Current Transfer Ratio<br>I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 2.0 Vdc      | h <sub>FE</sub>      | 40   | 425  |      |
| I <sub>C</sub> = 15 Adc, V <sub>CE</sub> = 2.0 Vdc<br>2N4399                               |                      | 15   | 60   |      |
| I <sub>C</sub> = 10 Adc, V <sub>CE</sub> = 2.0 Vdc<br>2N5745                               |                      | 15   | 60   |      |
| I <sub>C</sub> = 30 Adc, V <sub>CE</sub> = 5.0 Vdc<br>2N4399                               |                      | 5.0  |      |      |
| I <sub>C</sub> = 20 Adc, V <sub>CE</sub> = 5.0 Vdc<br>2N5745                               |                      | 5.0  |      |      |
| Collector-Emitter Saturation Voltage<br>I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc | V <sub>CE(sat)</sub> |      | 0.55 | Vdc  |
| I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 1.0 Adc<br>2N4399                                |                      |      | 0.75 |      |
|  |                      |      | 1.0  |      |
| Base-Emitter Saturation Voltage<br>I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 1.0 Adc       | V <sub>BE(sat)</sub> |      | 1.7  | Vdc  |
| I <sub>C</sub> = 15 Adc, I <sub>B</sub> = 1.5 Adc<br>2N4399                                |                      |      | 1.8  |      |
|  |                      |      | 2.0  |      |

**DYNAMIC CHARACTERISTICS**

|  |                  |     |      |    |
|--|------------------|-----|------|----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 MHz | h <sub>fe</sub>  | 4.0 | 40   |    |
| Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 MHz                             | h <sub>fe</sub>  | 40  | 425  |    |
| Output Capacitance<br>V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz  | C <sub>obo</sub> |     | 1000 | pF |

**SAFE OPERATING AREA**

|   |           |  |  |  |
|---|-----------|--|--|--|
| <b>DC Tests</b><br>T <sub>C</sub> = +25°C, 1 Cycle, t = 1.0 s |           |  |  |  |
| <b>Test 1</b>   |           |  |  |  |
| V <sub>CE</sub> = 6.67 Vdc, I <sub>C</sub> = 30 Adc           | 2N4399    |  |  |  |
| V <sub>CE</sub> = 10 Vdc, I <sub>C</sub> = 20 Adc             | 2N5745    |  |  |  |
| <b>Test 2</b>   |           |  |  |  |
| V <sub>CE</sub> = 20 Vdc, I <sub>C</sub> = 10 Adc             | All Types |  |  |  |
| <b>Test 3</b>   |           |  |  |  |
| V <sub>CE</sub> = 40 Vdc, I <sub>C</sub> = 3.0 Adc            | All Types |  |  |  |
| <b>Test 4</b>   |           |  |  |  |
| V <sub>CE</sub> = 50 Vdc, I <sub>C</sub> = 600 mAcd           | 2N4399    |  |  |  |
| V <sub>CE</sub> = 60 Vdc, I <sub>C</sub> = 600 mAcd           | 2N5745    |  |  |  |

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



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

[LittleDiode.com](http://LittleDiode.com)

Looking forward to providing you with the best possible service.