

## PNP HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/379

### Devices

2N3791

2N3792

### Qualified Level

JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

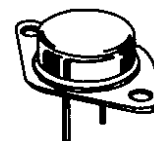
| Ratings                                        | Symbol                                                                                        | 2N3791      | 2N3792 | Unit               |
|------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------|--------|--------------------|
| Collector-Emitter Voltage                      | $V_{CEO}$                                                                                     | 60          | 80     | Vdc                |
| Collector-Base Voltage                         | $V_{CBO}$                                                                                     | 60          | 80     | Vdc                |
| Emitter-Base Voltage                           | $V_{EBO}$                                                                                     | 7.0         |        | Vdc                |
| Base Current                                   | $I_B$                                                                                         | 4.0         |        | Adc                |
| Collector Current                              | $I_C$                                                                                         | 10          |        | Adc                |
| Total Power Dissipation                        | @ $T_A = +25^{\circ}\text{C}$ <sup>(1)</sup><br>@ $T_C = +100^{\circ}\text{C}$ <sup>(2)</sup> | 5.0         |        | W                  |
|                                                |                                                                                               | 85.7        |        | 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 | $R_{\theta JC}$ | 1.17 | $^{\circ}\text{C/W}$ |

1) Derate linearly @ 28.57 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$

2) Derate linearly @ 0.857 mW/ $^{\circ}\text{C}$  for  $T_C > +100^{\circ}\text{C}$



TO-3\*  
(TO-204AA)

\*See Appendix A for  
Package Outline

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

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

### OFF CHARACTERISTICS

|                                                                                                                                                |        |               |     |      |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|-----|------|
| Collector-Emitter Breakdown Voltage<br>$I_C = 10 \text{ mAdc}$                                                                                 | 2N3791 | $V_{(BR)CEO}$ | 60  | Vdc  |
|                                                                                                                                                | 2N3792 |               | 80  |      |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 50 \text{ Vdc}$<br>$V_{CE} = 70 \text{ Vdc}$                                                     | 2N3791 | $I_{CES}$     | 5.0 | mAdc |
|                                                                                                                                                | 2N3792 |               | 5.0 |      |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 60 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$<br>$V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ | 2N3791 | $I_{CEX}$     | 5.0 | mAdc |
|                                                                                                                                                | 2N3792 |               | 5.0 |      |

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics                                                                       | Symbol           | Min. | Max.       | Unit |
|---------------------------------------------------------------------------------------|------------------|------|------------|------|
| Collector-Base Cutoff Current<br>V <sub>CB</sub> = 60 Vdc<br>V <sub>CB</sub> = 80 Vdc | I <sub>CBO</sub> |      | 5.0<br>5.0 | mAdc |
| Emitter-Base Cutoff Current<br>V <sub>EB</sub> = 7.0 Vdc                              | I <sub>EBO</sub> |      | 5.0        | mAdc |

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

|                                                                                                                                                                                                                                                           |                      |                       |            |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|------------|-----|
| Forward-Current Transfer Ratio<br>I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 2.0 Vdc<br>I <sub>C</sub> = 3.0 Adc, V <sub>CE</sub> = 2.0 Vdc<br>I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 2.0 Vdc<br>I <sub>C</sub> = 10 Adc, V <sub>CE</sub> = 4.0 Vdc | h <sub>FE</sub>      | 50<br>30<br>10<br>5.0 | 150<br>120 |     |
| Collector-Emitter Saturation Voltage<br>I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc<br>I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 2.0 Adc                                                                                                           | V <sub>CE(sat)</sub> |                       | 1.0<br>2.5 | Vdc |
| Base-Emitter Saturation Voltage<br>I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc<br>I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 2.0 Adc                                                                                                                | V <sub>BE(sat)</sub> |                       | 1.5<br>3.0 | Vdc |

**DYNAMIC CHARACTERISTICS**

|                                                                                                                                                          |                  |     |     |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----|-----|----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 MHz | h <sub>fe</sub>  | 4.0 | 20  |    |
| Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz                             | h <sub>fe</sub>  | 30  | 300 |    |
| Output Capacitance<br>V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz                                                                          | C <sub>obo</sub> |     | 500 | pF |

**SAFE OPERATING AREA****DC Tests**T<sub>C</sub> = +25°C, 1 Cycle, t ≥ 1.0 s**Test 1**V<sub>CE</sub> = 15 Vdc, I<sub>C</sub> = 10 Adc**Test 2**V<sub>CE</sub> = 40 Vdc, I<sub>C</sub> = 3.75 Adc**Test 3**V<sub>CE</sub> = 55 Vdc, I<sub>C</sub> = 0.9 Adc 2N3791V<sub>CE</sub> = 65 Vdc, I<sub>C</sub> = 0.9 Adc 2N3792

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