

## NPN SILICON LOW POWER TRANSISTOR

Qualified per MIL-PRF-19500/376

### Devices

**2N2484**

### Qualified Level

**JANTX  
JANTXV**

### MAXIMUM RATINGS

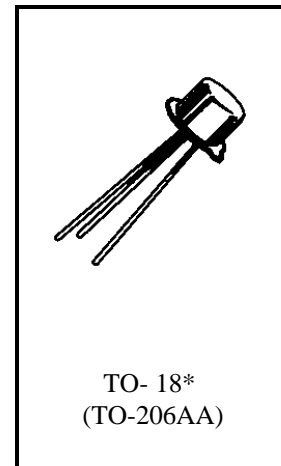
| Ratings  | Symbol         | 2N2484                       | Unit        |
|--|----------------|------------------------------|-------------|
| Collector-Emitter Voltage                      | $V_{CEO}$      | 60                           | Vdc         |
| Collector-Base Voltage                         | $V_{CBO}$      | 60                           | Vdc         |
| Emitter-Base Voltage                           | $V_{EBO}$      | 6.0                          | Vdc         |
| Collector Current                              | $I_C$          | 50                           | mAdc        |
| Total Power Dissipation                        | $P_T$          | @ $T_A = +25^{\circ}C^{(1)}$ | 360         |
|  |                | @ $T_C = +25^{\circ}C^{(2)}$ | 1.2         |
| Operating & Storage Junction Temperature Range | $T_J, T_{stg}$ | -65 to +200                  | $^{\circ}C$ |

### THERMAL CHARACTERISTICS

| Characteristics                      | Symbol          | Max. | Unit          |
|--------------------------------------|-----------------|------|---------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 146  | $^{\circ}C/W$ |

1) Derate linearly 2.06 mW/ $^{\circ}C$  above  $T_A = +25^{\circ}C$

2) Derate linearly 6.85 mW/ $^{\circ}C$  above  $T_C = +25^{\circ}C$



\*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 Current<br>$I_C = 10$ mAdc                  | $V_{(BR)CEO}$ | 60 |     | Vdc        |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 45$ Vdc                   | $I_{CES}$     |    | 5.0 | $\eta$ Adc |
| Collector-Base Cutoff Current<br>$V_{CB} = 45$ Vdc<br>$V_{CB} = 60$ Vdc | $I_{CBO}$     |    | 5.0 | $\eta$ Adc |
|   |               |    | 10  | $\mu$ Adc  |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 5.0$ Vdc                  | $I_{CEO}$     |    | 2.0 | $\eta$ Adc |
| Emitter-Base Cutoff Current<br>$V_{EB} = 5.0$ Vdc<br>$V_{EB} = 6.0$ Vdc | $I_{EBO}$     |    | 2.0 | $\eta$ Adc |
|   |               |    | 10  | $\mu$ Adc  |

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics  | Symbol               | Min.                                  | Max.                     | Unit            |
|--|----------------------|---------------------------------------|--------------------------|-----------------|
| <b>ON CHARACTERISTICS (3)</b>  |                      |                                       |                          |                 |
| Forward-Current Transfer Ratio<br>I <sub>C</sub> = 1.0 μA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub><br>I <sub>C</sub> = 10 μA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub><br>I <sub>C</sub> = 100 μA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub><br>I <sub>C</sub> = 500 μA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub><br>I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub><br>I <sub>C</sub> = 10 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> | h <sub>FE</sub>      | 45<br>200<br>225<br>250<br>250<br>225 | 500<br>675<br>800<br>800 |                 |
| Collector-Emitter Saturation Voltage<br>I <sub>C</sub> = 1.0 mA <sub>dc</sub> , I <sub>B</sub> = 100 μA <sub>dc</sub>  | V <sub>CE(sat)</sub> |                                       | 0.3                      | V <sub>dc</sub> |
| Base-Emitter Voltage<br>V <sub>CE</sub> = 5.0 V <sub>dc</sub> , I <sub>C</sub> = 100 μA <sub>dc</sub>  | V <sub>BE</sub>      | 0.5                                   | 0.7                      | V <sub>dc</sub> |

**DYNAMIC CHARACTERISTICS**

|  |                  |            |                      |       |
|--|------------------|------------|----------------------|-------|
| Forward Current Transfer Ratio<br>I <sub>C</sub> = 50 μA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 5.0 MHz<br>I <sub>C</sub> = 500 μA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 30 MHz | h <sub>fe</sub>  | 3.0<br>2.0 | 7.0                  |       |
| Open Circuit Output Admittance<br>I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 1.0 kHz  | h <sub>oe</sub>  |            | 40                   | μmhos |
| Open Circuit Reverse-Voltage Transfer Ratio<br>I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 1.0 kHz   | h <sub>re</sub>  |            | 8.0x10 <sup>-4</sup> |       |
| Input Impedance<br>I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 1.0 kHz   | h <sub>ie</sub>  | 3.5        | 24                   | kΩ    |
| Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 5.0 V <sub>dc</sub> , f = 1.0 kHz   | h <sub>fe</sub>  | 250        | 900                  |       |
| Output Capacitance<br>V <sub>CB</sub> = 5.0 V <sub>dc</sub> , I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz  | C <sub>obo</sub> |            | 5.0                  | pF    |
| Input Capacitance<br>V <sub>EB</sub> = 0.5 V <sub>dc</sub> , I <sub>C</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz   | C <sub>ibo</sub> |            | 6.0                  | pF    |

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