

## NPN POWER AMPLIFIER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/580

### Devices

2N4234

2N4235

2N4236

### Qualified Level

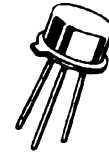
JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

| Ratings                                  | Symbol         | 2N4234                      | 2N4235 | 2N4236 | Units       |
|--|----------------|-----------------------------|--------|--------|-------------|
| Collector-Emitter Voltage                | $V_{CEO}$      | 40                          | 60     | 80     | Vdc         |
| Collector-Base Voltage                   | $V_{CBO}$      | 40                          | 60     | 80     | Vdc         |
| Emitter-Base Voltage                     | $V_{EBO}$      | 7.0                         |        |        | Vdc         |
| Collector Current                        | $I_C$          | 1.0                         |        |        | Adc         |
| Base Current                             | $I_B$          | 0.5                         |        |        | Adc         |
| Total Power Dissipation                  | $P_T$          | @ $T_A = 25^{\circ}C^{(1)}$ | 1.0    |        | W           |
|  |                | @ $T_C = 25^{\circ}C^{(2)}$ | 6.0    |        |             |
| Operating & Storage Junction Temperature | $T_J, T_{stg}$ | -65 to +200                 |        |        | $^{\circ}C$ |

1) Derate linearly 5.7 mW/ $^{\circ}C$  for  $T_A > +25^{\circ}C$

2) Derate linearly 34 mW/ $^{\circ}C$  for  $T_C > +25^{\circ}C$



TO-39\*  
(TO-205AD)

\*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>$I_C = 100$ mAdc   | 2N4234<br>2N4235<br>2N4236 | $V_{(BR)CEO}$ | 40<br>60<br>80    | Vdc        |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 30$ Vdc<br>$V_{CE} = 40$ Vdc<br>$V_{CE} = 60$ Vdc   | 2N4234<br>2N4235<br>2N4236 | $I_{CEO}$     | 1.0<br>1.0<br>1.0 | mAdc       |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 40$ Vdc, $V_{BE} = 1.5$ Vdc<br>$V_{CE} = 60$ Vdc, $V_{BE} = 1.5$ Vdc<br>$V_{CE} = 80$ Vdc, $V_{BE} = 1.5$ Vdc | 2N4234<br>2N4235<br>2N4236 | $I_{CEX}$     | 100<br>100<br>100 | $\eta$ Adc |
| Collector-Base Cutoff Current<br>$V_{CE} = 40$ Vdc<br>$V_{CE} = 60$ Vdc<br>$V_{CE} = 80$ Vdc  | 2N4234<br>2N4235<br>2N4236 | $I_{CBO}$     | 100<br>100<br>100 | $\eta$ Adc |
| Emitter-Base Cutoff Current<br>$V_{BE} = 7.0$ Vdc   |                            | $I_{EBO}$     | 0.5               | mAdc       |

**2N4234, 2N4235, 2N4236 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics  | Symbol               | Min.           | Max.       | Unit |
|--|----------------------|----------------|------------|------|
| <b>ON CHARACTERISTICS <sup>(3)</sup></b>   |                      |                |            |      |
| Forward-Current Transfer Ratio<br>I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 1.0 Vdc<br>I <sub>C</sub> = 250 mAdc, V <sub>CE</sub> = 1.0 Vdc<br>I <sub>C</sub> = 500 mAdc, V <sub>CE</sub> = 1.0 Vdc | h <sub>FE</sub>      | 40<br>30<br>20 | 150        |      |
| Collector-Emitter Saturation Voltage<br>I <sub>C</sub> = 1.0 Adc, I <sub>B</sub> = 100 mAdc<br>I <sub>C</sub> = 500 mAdc, I <sub>B</sub> = 50 mAdc   | V <sub>CE(sat)</sub> |                | 0.6<br>0.4 | Vdc  |
| Base-Emitter Saturation Voltage<br>I <sub>C</sub> = 500 mAdc, I <sub>B</sub> = 50 mAdc<br>I <sub>C</sub> = 1.0 Adc, I <sub>B</sub> = 100 mAdc  | V <sub>BE(sat)</sub> |                | 1.1<br>1.5 | Vdc  |

**DYNAMIC CHARACTERISTICS**

|  |                  |     |     |    |
|--|------------------|-----|-----|----|
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio<br>I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 10 Vdc, f = 10 MHz | h <sub>fe</sub>  | 3.0 |     |    |
| Output Capacitance<br>V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 100 MHz  | C <sub>obo</sub> |     | 100 | pF |

**SAFE OPERATING AREA**

|   |
|---|
| <p><b>DC Tests</b><br/>T<sub>C</sub> = +25°C, 1 cycle, t ≥ 0.5 s</p> <p><b>Test 1</b><br/>V<sub>CE</sub> = 6.0 Vdc, I<sub>C</sub> = 1.0 Adc</p> <p><b>Test 2</b><br/>V<sub>CE</sub> = 12 Vdc, I<sub>C</sub> = 500 mAdc</p> <p><b>Test 3</b><br/>V<sub>CE</sub> = 30 Vdc, I<sub>C</sub> = 166 mAdc    2N4234<br/>V<sub>CE</sub> = 30 Vdc, I<sub>C</sub> = 166 mAdc    2N4235<br/>V<sub>CE</sub> = 30 Vdc, I<sub>C</sub> = 166 mAdc    2N4236</p> |
|---|

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