

NPN SILICON HIGH POWER TRANSISTOR

Qualified per MIL-PRF-19500/208

Devices

2N1487 2N1488 2N1489 2N1490

Qualified Level

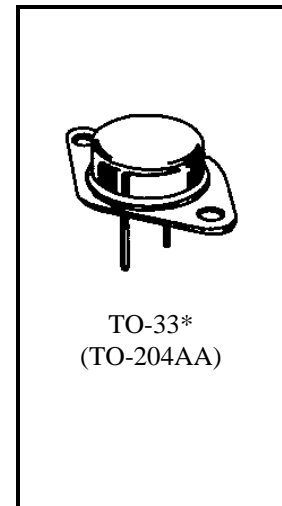
MAXIMUM RATINGS

| Ratings | Symbol | 2N1487 2N1498 | 2N1488 2N1490 | Unit |
|---|----------------|------------------|------------------|--------------------|
| Collector-Emitter Voltage | V_{CEO} | 40 | 55 | Vdc |
| Collector-Base Voltage | V_{CBO} | 60 | 100 | Vdc |
| Collector-Emitter Voltage | V_{CEX} | 60 | 100 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 10 | | Vdc |
| Base Current | I_B | 3.0 | | Adc |
| Collector Current | I_C | 6.0 | | Adc |
| Total Power Dissipation @ $T_C = 25^{\circ}\text{C}$ ⁽¹⁾ | P_T | 75 | | 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 | $R_{\theta JC}$ | 2.33 | $^{\circ}\text{C}/\text{W}$ |

1) Derate linearly @ 0.429 W/ $^{\circ}\text{C}$ for $T_C > 25^{\circ}\text{C}$



*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 $I_C = 100 \text{ mAdc}$ | 2N1487, 2N1489 2N1488, 2N1490 | $V_{(BR)CEO}$ | 40 55 | Vdc |
| Collector-Emitter Breakdown Voltage $I_C = 200 \mu\text{Adc}$ | 2N1487, 2N1489 2N1488, 2N1490 | $V_{(BR)CBO}$ | 60 100 | Vdc |
| Collector-Emitter Breakdown Voltage $I_C = 0.5 \text{ mAdc}, V_{EB} = 1.5 \text{ Vdc}$ | 2N1487, 2N1489 2N1488, 2N1490 | $V_{(BR)CEX}$ | 60 100 | Vdc |
| Collector-Base Cutoff Current $V_{CB} = 30 \text{ Vdc}$ | | I_{CBO} | 25 | μAdc |
| Emitter-Base Cutoff Current $V_{EB} = 10 \text{ Vdc}$ | | I_{EBO} | 25 | μAdc |

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2N1487, 2N1488, 2N1489, 2N1490 JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

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

ON CHARACTERISTICS ⁽²⁾

| | | | | | |
|--|----------------------------------|---------------|----------|------------|-----|
| Forward-Current Transfer Ratio $I_C = 1.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ | 2N1487, 2N1488 2N1489, 2N1490 | h_{FE} | 15 25 | 45 75 | |
| Collector-Emitter Saturation Voltage $I_C = 1.5 \text{ Adc}, I_B = 300 \text{ mAdc}$ $I_C = 1.5 \text{ Adc}, I_B = 100 \text{ mAdc}$ | 2N1487, 2N1488 2N1489, 2N1490 | $V_{CE(sat)}$ | | 3.0 1.0 | Vdc |
| Base-Emitter Voltage $I_C = 1.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ | 2N1487, 2N1488 2N1489, 2N1490 | $V_{BE(on)}$ | | 3.0 2.0 | Vdc |

DYNAMIC CHARACTERISTICS

| | | | | | |
|---|--|-------------|-----|-----|----|
| Small-Signal Short-Circuit Forward Current Transfer Ratio Cutoff Frequency $I_C = 100 \text{ mAdc}, V_{CB} = 12 \text{ Vdc}$ | | $ f_{hfb} $ | 500 | | kc |
| Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$ | | C_{obo} | | 700 | pF |

SWITCHING CHARACTERISTICS

| | | | | | |
|---|--|--------------------|--|----|---------------|
| Turn-On / Turn-Off Time $V_{CC} = 12 \text{ Vdc}; I_{B0} = I_{B2} = 150 \text{ mAdc}; I_{B1} = 300 \text{ mAdc}; R_C = 7.8 \Omega$ | | $t_{on} + t_{off}$ | | 25 | μs |
|---|--|--------------------|--|----|---------------|

(2) Pulse Test: Pulse Width = 300 μs , Duty Cycle \leq 2.0%.