

NPN Power Silicon Transistor

Rev. V1

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/407
- TO-3 (TO-204AA) Package



Electrical Characteristics

| Parameter | Test Conditions | Symbol | Units | Min. | Max. |
|---|--|---|---------------|----------------|--------------|
| Off Characteristics | | | | | |
| Collector - Emitter Breakdown Voltage | $I_C = 200 \text{ mAdc}$ $I_C = 200 \text{ mAdc}, R_{BE} = 100 \Omega$ $V_{BE} = -1.5 \text{ Vdc}, I_C = 200 \text{ mAdc}$ | $V_{(BR)CEO}$ $V_{(BR)CER}$ $V_{(BR)CEX}$ | Vdc | 70 80 90 | — |
| Collector - Emitter Cutoff Current | $V_{CE} = 60 \text{ Vdc}$ $V_{BE} = -1.5 \text{ Vdc}, V_{CE} = 100 \text{ Vdc}$ | I_{CEO} I_{CEX} | mAdc | — | 1 1 |
| Emitter - Base Cutoff Current | $V_{EB} = 7.0 \text{ Vdc}$ | I_{EBO} | mAdc | — | 1 |
| On Characteristics | | | | | |
| Forward Current Transfer Ratio | $I_C = 0.5 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ $I_C = 4.0 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ $I_C = 10.0 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ | H_{FE} | - | 40 20 5 | — 60 — |
| Collector - Emitter Saturation Voltage | $I_C = 4.0 \text{ Adc}, I_B = 0.4 \text{ Adc}$ $I_C = 10.0 \text{ Adc}, I_B = 3.3 \text{ Adc}$ | $V_{CE(SAT)}$ | Vdc | — | 0.75 2.0 |
| Emitter - Base Saturation Voltage | $I_C = 4.0 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$ | $V_{BE(SAT)}$ | Vdc | — | 1.4 |
| Dynamic Characteristics | | | | | |
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio | $I_C = 1 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}, f = 100 \text{ kHz}$ | $ H_{FE} $ | | 8 | 40 |
| Output Capacitance | $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$ | C_{OBO} | pF | — | 700 |
| Switching Characteristics | | | | | |
| Turn-On Time | $V_{CC} = 30 \text{ Vdc}; I_C = 4.0 \text{ Adc}; I_{B1} = 0.4 \text{ Adc}$ | T_{ON} | μs | — | 6 |
| Turn-Off Time | $I_C = 4.0 \text{ Adc}; I_{B1} = -I_{B2} = 0.4 \text{ Adc}$ | T_{OFF} | μs | — | 12 |
| Safe Operating Area | | | | | |
| DC Tests: | $T_C = +25 \text{ }^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$ | | | | |
| Test 1: | $V_{CE} = 7.8 \text{ Vdc}, I_C = 15 \text{ Adc}$ | | | | |
| Test 2: | $V_{CE} = 70.0 \text{ Vdc}, I_C = 1.67 \text{ Adc}$ | | | | |

Absolute Maximum Ratings

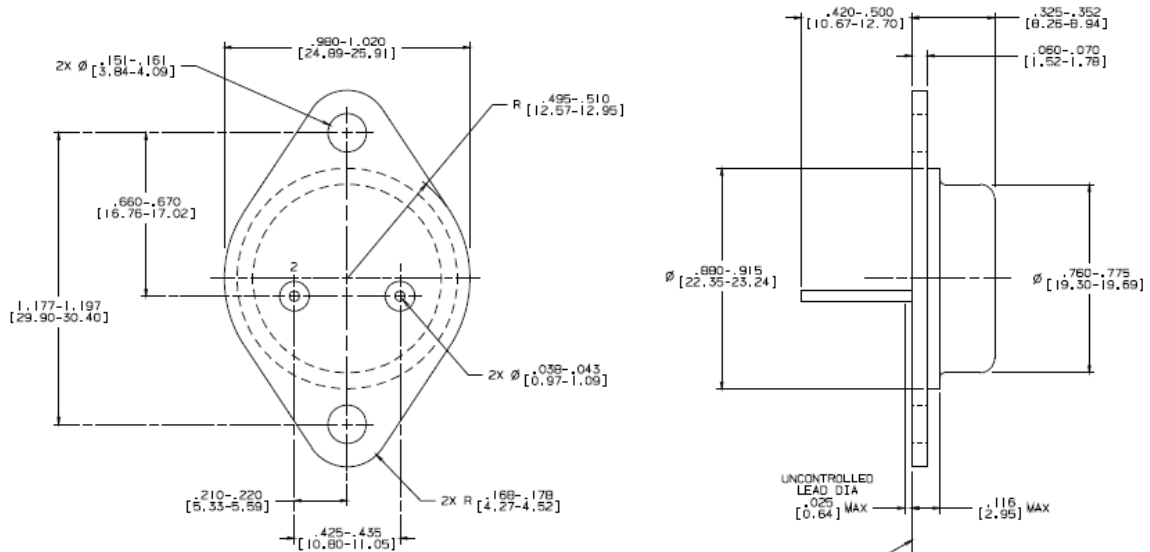
| Ratings | Symbol | Value |
|--|-------------------|---|
| Collector - Emitter Voltage | V_{CEO} | 70 Vdc |
| Collector - Base Voltage | V_{CBO} | 100 Vdc |
| Emitter - Base Voltage | V_{EBO} | 7 Vdc |
| Base Current | I_B | 7 Vdc |
| Collector Current | I_C | 15 Adc |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}^1$ | P_T | 6 W |
| Operating & Storage Temperature Range | T_{OP}, T_{STG} | -65°C to $+200^\circ\text{C}$ |

1. Derate linearly @ 34.2 mW / °C for $T_A = 25^\circ\text{C}$

Thermal Characteristics

| Characteristics | Symbol | Max. Value |
|--------------------------------------|-----------------|------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 1.5°C/W |

Outline Drawing



NOTES:

- STANDARD HEADER TYPE SOLID BASE.
- STANDARD LEAD FINISH PER MIL-M-38510 TYPE X OR EQUIVALENT.
- LEAD NOT BENT GREATER THAN 15°.
- DIMENSIONS BASED ON JEDEC STANDARD TO-3 PUBLICATION 95, PA

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