

NPN Power Silicon Transistor

2N3766 & 2N3767



Features

- Available in JAN, JANTX, and JANTXV per MIL-PRF-19500/518
- TO-66 (TO-213AA) Package



Maximum Ratings

| Ratings | Symbol | 2N3766 | 2N3767 | Units |
|---|-------------------|-------------|--------|------------------|
| Collector - Emitter Voltage | V_{CEO} | 60 | 80 | Vdc |
| Collector - Base Voltage | V_{CBO} | 80 | 100 | Vdc |
| Emitter - Base Voltage | V_{EBO} | 6.0 | | Vdc |
| Base Current | I_B | 2.0 | | Adc |
| Collector Current | I_C | 4.0 | | Adc |
| Total Power Dissipation @ $T_C = +25^\circ\text{C}$ (1) | P_T | 25 | | W |
| Operating & Storage Temperature Range | T_{op}, T_{stg} | -65 to +200 | | $^\circ\text{C}$ |

Thermal Characteristics

| Characteristics | Symbol | Maximum | Units |
|--------------------------------------|-----------------|---------|---------------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 2.66 | $^\circ\text{C}/\text{W}$ |

1) Derate linearly 143 mW/ $^\circ\text{C}$ between $T_C = +25^\circ\text{C}$ and $T_C = +200^\circ\text{C}$

Electrical Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| OFF Characteristics | Symbol | Minimum | Maximum | Units |
|---|---------------|---------------|------------|-----------------|
| Collector - Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$ | $V_{(BR)CEO}$ | 2N3766 60 | --- | Vdc |
| 2N3767 80 | | | | |
| Collector - Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}$ | I_{CEO} | 2N3766 --- | 500 500 | μAdc |
| 2N3767 | | | | |
| Collector - Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ | I_{CEX} | 2N3766 --- | 10 | μAdc |
| 2N3767 | | | | |
| Collector - Base Cutoff Current $V_{CB} = 80 \text{ Vdc}$ $V_{CB} = 100 \text{ Vdc}$ | I_{CBO} | 2N3766 --- | 10 10 | μAdc |
| 2N3767 | | | | |
| Emitter - Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$ | I_{EBO} | --- | 500 | μAdc |

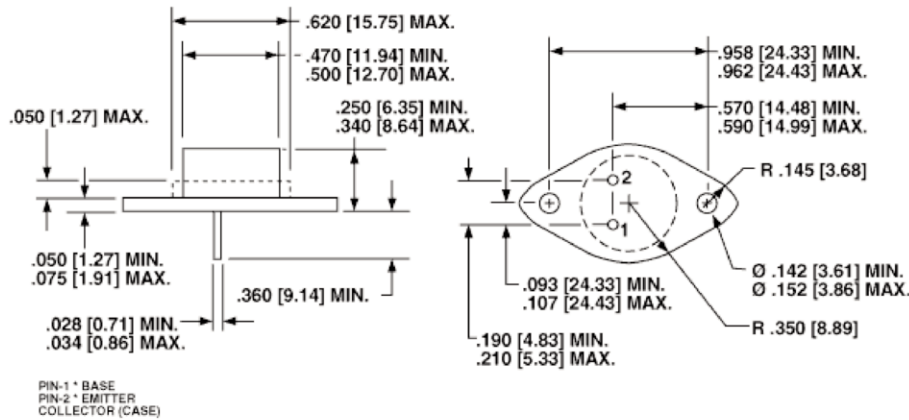


Electrical Characteristics -con't

| ON Characteristics (2) | | | | |
|---|--|----------------|------------|---------------|
| | Symbol | Minimum | Maximum | Unit |
| Forward Current Transfer Ratio $I_C = 50 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 500 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}, V_{CE} = 10.0 \text{ Vdc}$ | H_{FE} | 30 40 20 | 160 | |
| Collector - Emitter Saturation Voltage $I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$ $I_C = 0.5 \text{ Adc}, I_B = 0.5 \text{ Adc}$ | $V_{CE(sat)}$ | --- --- | 2.5 1.0 | Vdc |
| Base-Emitter Voltage $I_C = 1.0 \text{ Adc}, V_{CE} = 10.0 \text{ Vdc}$ | $V_{BE(on)}$ | --- | 1.5 | Vdc |
| DYNAMIC Characteristics | | | | |
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 500 \text{ mAdc}, V_{CE} = 10.0 \text{ Vdc}, f = 10 \text{ MHz}$ | $ h_{fe} $ | 1.0 | 8.0 | |
| Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 0.1 \text{ MHz} \leq f \leq 1.0 \text{ MHz}$ | C_{obo} | --- | 50 | pF |
| Switching Characteristics | | | | |
| Turn-on Time $V_{CC} = 30 \text{ Vdc}, I_C = 0.5 \text{ Adc}, I_{B1} = 0.05 \text{ Adc}$ | t_{on} | --- | 0.25 | μs |
| Turn-Off Time $V_{CC} = 30 \text{ Vdc}, I_C = 0.5 \text{ Adc}, I_{B1} = -I_{B2} = 0.05 \text{ Adc}$ | t_{off} | --- | 2.5 | μs |
| SAFE OPERATING AREA | | | | |
| DC Tests: | $T_C = +25 \text{ }^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$ | | | |
| Test 1: | $V_{CE} = 6.22 \text{ Vdc}, I_C = 4.0 \text{ Adc}$ | | | |
| Test 2: | $V_{CE} = 20 \text{ Vdc}, I_C = 1.25 \text{ Adc}$ | | | |
| Test 3: | $V_{CE} = 50 \text{ Vdc}, I_C = 150 \text{ mAdc}$ | 2N3766 | | |
| | $V_{CE} = 65 \text{ Vdc}, I_C = 150 \text{ mAdc}$ | 2N3767 | | |

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

Outline Drawing



NOTE: Dimensions in Inches [mm]

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