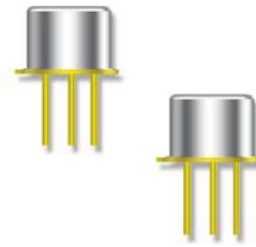


NPN Power Silicon Transistor

Rev. V1

Features

- Available in commercial, JAN, JANTX, JANTXV, JANS and JANSR 100K rads (Si) per MIL-PRF-19500/394
- TO-5 Package

Electrical Characteristics¹

| Parameter | Test Conditions | Symbol | Units | Min. | Max. |
|---|---|------------------------|-----------------|----------------|-----------------|
| Off Characteristics | | | | | |
| Collector - Emitter Breakdown Voltage | $I_C = 100 \text{ mAdc}$ | $V_{(BR)CEO}$ | Vdc | 70 | — |
| Emitter - Base Cutoff Current | $V_{EB} = 7.0 \text{ Vdc}$ $V_{EB} = 5.0 \text{ Vdc}$ | I_{EBO} | μAdc | — | 10 0.1 |
| Collector - Emitter Cutoff Current | $V_{BE} = 0.5 \text{ Vdc}$, $V_{CE} = 60 \text{ Vdc}$ | I_{CEX} | μAdc | — | 10 |
| Collector - Emitter Cutoff Current | $V_{CE} = 60 \text{ Vdc}$ | I_{CEO} I_{CEO} | μAdc | — | 10 |
| Collector - Base Cutoff Current | $V_{CB} = 100 \text{ Vdc}$ $V_{CB} = 100 \text{ Vdc}$ | I_{CBO} | μAdc | — | 10 0.1 |
| On Characteristics | | | | | |
| Collector - Base Cutoff Current | $I_C = 1.0 \text{ Adc}$, $V_{CE} = 5.0 \text{ Vdc}$ $I_C = 5.0 \text{ Adc}$, $V_{CE} = 5.0 \text{ Vdc}$ $I_C = 10.0 \text{ Adc}$, $V_{CE} = 5.0 \text{ Vdc}$ | H_{FE} | Vdc | 50 40 10 | 200 120 — |
| Collector-Emitter Saturation Voltage | $I_C = 5.0 \text{ Adc}$, $I_B = 0.5 \text{ Adc}$ $I_C = 10.0 \text{ Adc}$, $I_B = 1.0 \text{ Adc}$ | $V_{CE(SAT)}$ | Vdc | — | 0.6 2.5 |
| Base-Emitter Saturation Voltage | $I_C = 5.0 \text{ Adc}$, $I_B = 0.5 \text{ Adc}$ $I_C = 10.0 \text{ Adc}$, $I_B = 1.0 \text{ Adc}$ | $V_{BE(SAT)}$ | Vdc | — | 1.5 2.5 |
| Dynamic Characteristics | | | | | |
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio | $I_C = 0.2 \text{ Adc}$, $V_{CE} = 10.0 \text{ Vdc}$, $f = 10 \text{ MHz}$ | $ H_{FE} $ | - | 1.5 | 7.5 |
| Output Capacitance | $V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$ | C_{OBO} | pF | — | 350 |
| Switching Characteristics | | | | | |
| Delay Time | $V_{CC} = 20 \text{ Vdc}$, $V_{BB} = 5.0 \text{ Vdc}$, $I_C = 5.0 \text{ Adc}$, $I_{B1} = 0.5 \text{ Adc}$ | t_d | ns | — | 50 |
| Rise Time | | t_r | ns | — | 500 |
| Storage Time | | t_s | μs | — | 1.5 |
| Fall Time | | t_f | ns | — | 500 |
| Safe Operating Area | | | | | |
| DC Tests: | $T_C = +25^\circ\text{C}$, 1 Cycle, $t = 1.0 \text{ s}$ | | | | |
| Test 1: | $V_{CE} = 40.0 \text{ Vdc}$, $I_C = 0.22 \text{ Adc}$ | | | | |
| Test 2: | $V_{CE} = 70 \text{ Vdc}$, $I_C = 90 \text{ mAdc}$ | | | | |

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

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DC-0012482

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Absolute Maximum Ratings

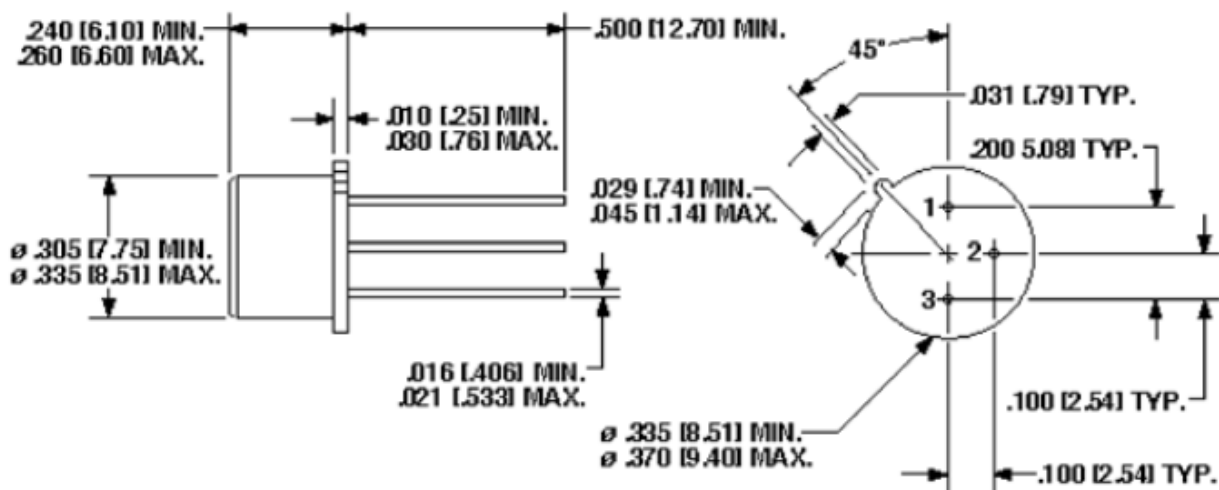
| Ratings | Symbol | Value |
|---|-------------------|---|
| Collector - Emitter Voltage | V_{CEO} | 70 Vdc |
| Collector - Base Voltage | V_{CBO} | 100 Vdc |
| Emitter - Base Voltage | V_{EBO} | 10 Vdc |
| Collector Current | I_C | 10 Adc |
| Total Power Dissipation @ $T_A = +25^\circ\text{C}$ @ $T_C = +25^\circ\text{C}$ | P_T | 1.0 W 0.5 W |
| Operating & Storage Temperature Range | T_{OP}, T_{STG} | -65°C to $+200^\circ\text{C}$ |

- Derate linearly @ 5.7 mW / °C for $T_A > +25^\circ\text{C}$.
- Derate linearly @ 100 mW / °C for $T_C > +25^\circ\text{C}$.

Thermal Characteristics

| Characteristics | Symbol | Max. Value |
|--|-----------------|------------------------|
| Thermal Resistance Junction to Case | $R_{\theta JC}$ | $+10^\circ\text{C/W}$ |
| Junction to Ambient | $R_{\theta JA}$ | $+175^\circ\text{C/W}$ |

Outline Drawings: TO-5 Package



Dimensions are in inches.

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