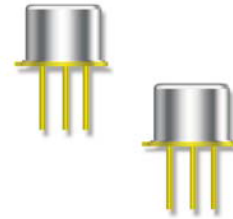


Features

- Available in JAN, JANTX, and JANTXV per MIL-PRF-19500/583
- TO-39 (TO-205AD) Package



Electrical Characteristics

| Parameter | Test Conditions | Symbol | Units | Min. | Max. |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------|---------------|---------------|
| Off Characteristics | | | | | |
| Collector - Emitter Breakdown Voltage | $I_C = 10 \text{ mAdc}$, 2N5681 $I_C = 10 \text{ mAdc}$, 2N5682 | $V_{(BR)CEO}$ | Vdc | 100 120 | — |
| Collector - Emitter Cutoff Current | $V_{CE} = 70 \text{ Vdc}$, 2N5681 $V_{CE} = 80 \text{ Vdc}$, 2N5682 | I_{CEO} | μAdc | — | 10 |
| Collector - Emitter Cutoff Current | $V_{CE} = 100 \text{ Vdc}$, $V_{BE} = 1.5 \text{ Vdc}$, 2N5681 $V_{CE} = 120 \text{ Vdc}$, $V_{BE} = 1.5 \text{ Vdc}$, 2N5682 | I_{CEX} | nAdc | — | 100 |
| Collector - Base Cutoff Current | $V_{CB} = 100 \text{ Vdc}$, 2N5681 $V_{CB} = 120 \text{ Vdc}$, 2N5682 | I_{CBO} | nAdc | — | 100 |
| Emitter - Base Cutoff Current | $V_{EB} = 4.0 \text{ Vdc}$ | I_{EBO} | μAdc | — | 1 |
| On Characteristics¹ | | | | | |
| Forward Current Transfer Ratio | $I_C = 250 \text{ mAdc}$, $V_{CE} = 2 \text{ Vdc}$ $I_C = 500 \text{ mAdc}$, $V_{CE} = 2 \text{ Vdc}$ $I_C = 1 \text{ Adc}$, $V_{CE} = 2 \text{ Vdc}$ | H_{FE} | - | 40 20 5 | 150 — — |
| Collector - Emitter Saturation Voltage | $I_C = 250 \text{ mAdc}$, $I_B = 25 \text{ mAdc}$ $I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$ | $V_{CE(SAT)}$ | Vdc | — | 0.6 1.0 |
| Emitter - Base Saturation Voltage | $I_C = 250 \text{ mAdc}$, $I_B = 25 \text{ mAdc}$ $I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$ | $V_{BE(SAT)}$ | Vdc | — | 1.1 1.3 |
| Dynamic Characteristics | | | | | |
| Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio | $I_C = 0.1 \text{ Adc}$, $V_{CE} = 1.5 \text{ Vdc}$, $f = 1 \text{ MHz}$ | $ h_{FE} $ | - | 3 | — |
| Small-Signal Short-Circuit Forward Current Transfer Ratio | $I_C = 0.2 \text{ Adc}$, $V_{CE} = 1.5 \text{ Vdc}$, $f = 1 \text{ kHz}$ | h_{FE} | - | 40 | — |
| Output Capacitance | $V_{CB} = 20 \text{ Vdc}$, $I_E = 0$, $f = 1 \text{ MHz}$ | C_{IBO} | pF | — | 50 |
| Safe Operating Area | | | | | |
| DC Tests: | $T_C = +25^\circ\text{C}$, 1 Cycle, $t \geq 0.5 \text{ s}$ | | | | |
| Test 1: | $V_{CE} = 2 \text{ Vdc}$, $I_C = 1 \text{ Adc}$ | | | | |
| Test 2: | $V_{CE} = 10 \text{ Vdc}$, $I_C = 1 \text{ Adc}$ | | | | |
| Test 3: | $V_{CE} = 90 \text{ Vdc}$, $I_C = 10 \text{ mAdc}$ | | | | |

Absolute Maximum Ratings

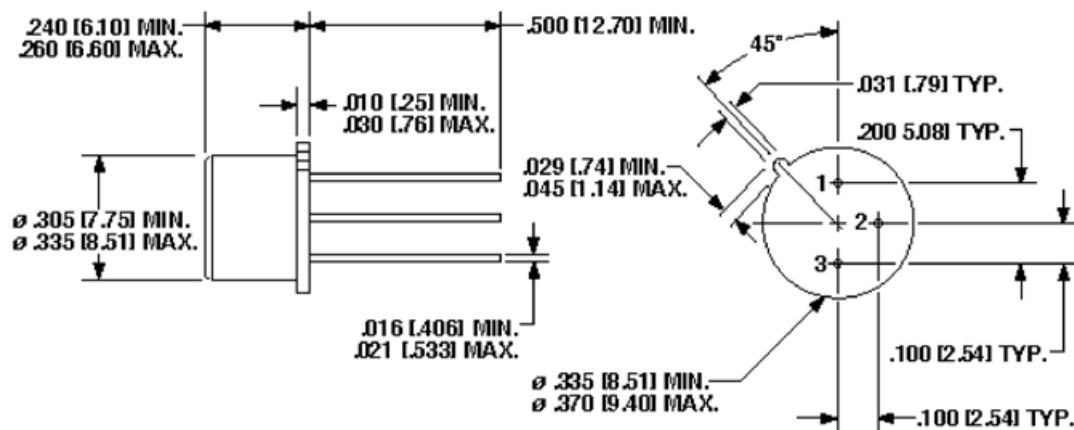
| Ratings | Symbol | Value |
|-----------------------------------------------------------------------------------------|-------------------|--------------------|
| Collector - Emitter Voltage 2N5681 2N5682 | V_{CEO} | 100 Vdc 120 Vdc |
| Collector - Base Voltage 2N5681 2N5682 | V_{CBO} | 100 Vdc 120 Vdc |
| Emitter - Base Voltage | V_{EBO} | 4.0 Vdc |
| Collector Current | I_C | 1.0 Adc |
| Base Current | I_B | 0.5 Adc |
| Total Power Dissipation @ $T_A = 25^\circ\text{C}^2$ @ $T_C = 25^\circ\text{C}^3$ | P_T | 1 W 10 W |
| Operating & Storage Temperature Range | T_{OP}, T_{STG} | -65°C to +200°C |

2. Derate linearly @ 5.7 mW/°C for $T_A > +25^\circ\text{C}$.
3. Derate linearly @ 57 mW/°C for $T_C > +75^\circ\text{C}$.

Thermal Characteristics

| Characteristics | Symbol | Max. Value |
|--------------------------------------|-----------------|------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 17.5°C/W |

Outline Drawing



Dimensions are in inches [mm].

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