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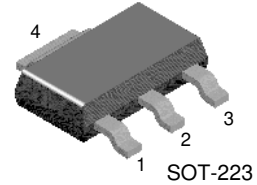
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FZT3019

NPN General Purpose Amplifier

Features

- This device is designed for general purpose medium power amplifiers and switches requiring collector currents to 500 mA and collector voltages up to 80 V.
- Sourced from process 12.



1. Base 2. Collector 3. Emitter

Absolute Maximum Ratings * $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|----------------------------------|------------|------------------|
| V_{CEO} | Collector-Emitter Voltage | 80 | V |
| V_{CBO} | Collector-Base Voltage | 140 | V |
| V_{EBO} | Emitter-Base Voltage | 7.0 | V |
| I_C | Collector current - Continuous | 1.0 | A |
| T_J, T_{stg} | Junction and Storage Temperature | -55 ~ +150 | $^\circ\text{C}$ |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|-------------------------------------|--|---|-----------------------------|------------|---------------------|
| Off Characteristics | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Sustaining Voltage * | $I_C = 30 \text{ mA}, I_B = 0$ | 80 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 100 \mu\text{A}, I_E = 0$ | 140 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 100 \mu\text{A}, I_C = 0$ | 7.0 | | Vn |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 90 \text{ V}, I_E = 0$ $V_{CB} = 90 \text{ V}, I_E = 0, T_a = 150^\circ\text{C}$ | | 10 10 | nA μA |
| I_{EBO} | Emitter-Cutoff Current | $V_{EB} = 5 \text{ V}$ | | 10 | nA |
| On Characteristics | | | | | |
| h_{FE} | DC Current Gain | $I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 1.0 \text{ A}, V_{CE} = 10 \text{ V}$ | 50 90 100 50 15 | 300 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | | 0.2 0.5 | V V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ | | 1.1 | V |
| Small Signal Characteristics | | | | | |
| f_T | Current Gain - Bandwidth Product | $I_C = 50 \text{ mA}, V_{CE} = 10 \text{ V}, f = 20 \text{ MHz}$ | 100 | | MHz |
| C_{cob} | Collector-Base Capacitance | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$ | | 12 | pF |
| C_{ibo} | Input Capacitance | $V_{BE} = 0.5 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$ | | 60 | pF |
| h_{fe} | Small Signal current Gain | $I_C = 50 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 20 \text{ MHz}$ | 80 | 400 | |
| $rb'Cc$ | Collector Base Time Constant | $I_C = 10 \text{ mA}, V_{CB} = 10 \text{ V}, f = 4.0 \text{ MHz}$ | | 400 | pS |
| NF | Noise Figure | $I_C = 100 \text{ mA}, V_{CE} = 10 \text{ V},$ $R_S = 1.0\text{k}\Omega, f = 1.0\text{KHz}$ | | 4.0 | dB |

* Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$

Thermal Characteristics $T_a=25^{\circ}\text{C}$ unless otherwise noted

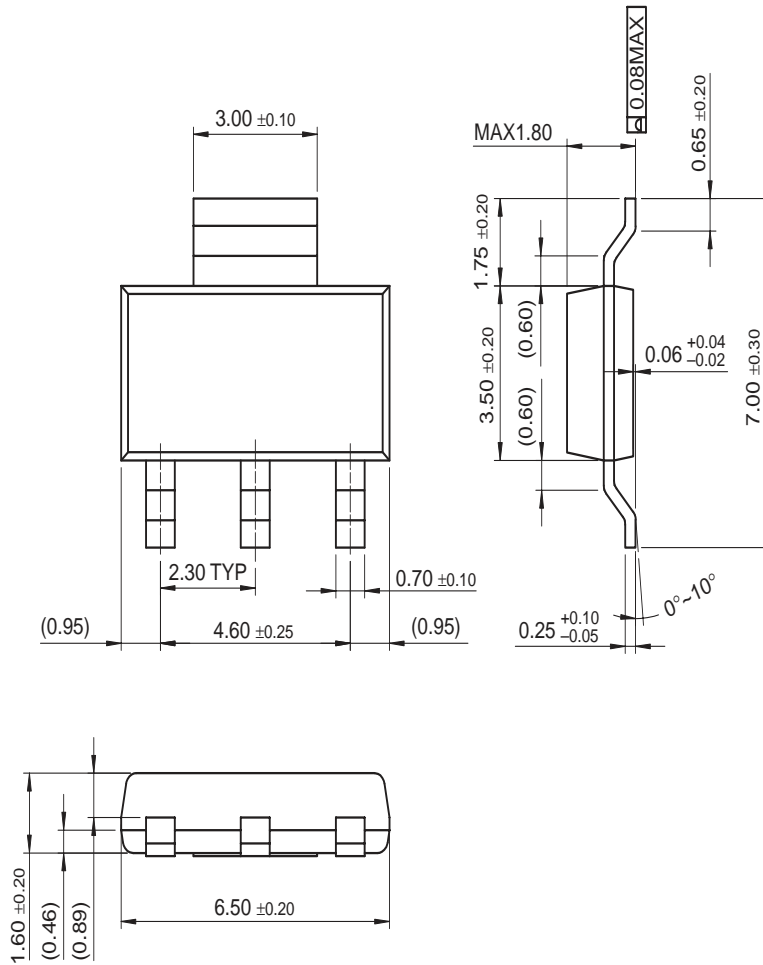
| Symbol | Parameter | Max. | Units |
|-------------------|---|------|-----------------------------|
| P_D | Total Device Dissipation | 1.0 | W |
| | Derate above 25°C | 8.0 | mW/ $^{\circ}\text{C}$ |
| $R_{\theta JA}^*$ | Thermal Resistance, Junction to Ambient | 125 | $^{\circ}\text{C}/\text{W}$ |

NOTES :

* Device mounted on FR-4 PCB $36\text{mm} \times 18\text{mm} \times 1.5\text{mm}$, Mounting Pad for the collector lead is 600mm^2

Package Dimensions

SOT-223



Dimensions in Millimeters

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|--------------------------|------------------------|---|
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