

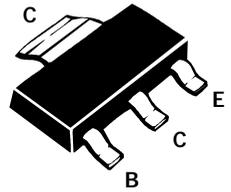
SOT223 NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

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FZT1051A

FEATURES

- * $V_{CEO} = 40V$
- * 5 Amp Continuous Current
- * 20 Amp Pulse Current
- * Low Saturation Voltage
- * High Gain
- * Extremely Low Equivalent On-resistance; $R_{CE(sat)} = 50m\Omega$ at 5A



ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|--|----------------|-------------|-------------|
| Collector-Base Voltage | V_{CBO} | 150 | V |
| Collector-Emitter Voltage | V_{CEO} | 40 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Peak Pulse Current | I_{CM} | 10 | A |
| Continuous Collector Current | I_C | 5 | A |
| Base Current | I_B | 500 | mA |
| Power Dissipation at $T_{amb}=25^{\circ}C$ † | P_{tot} | 2.5 | W |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}C$ |

† The power which can be dissipated assuming the device is mounted in typical manner on a PCB with copper equal to 2 inches x 2 inches.

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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|---------------|-------------------------|-------------------------|-------------------------|----------------------|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 150 | 190 | | V | $I_C=100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | V_{CES} | 150 | 190 | | V | $I_C=100\mu\text{A}^*$ |
| Collector-Emitter Breakdown Voltage | V_{CEO} | 40 | 60 | | V | $I_C=10\text{mA}$ |
| Collector-Emitter Breakdown Voltage | V_{CEV} | 150 | 190 | | V | $I_C=100\mu\text{A}, V_{EB}=1\text{V}$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | 9 | | V | $I_E=100\mu\text{A}$ |
| Collector Cut-Off Current | I_{CBO} | | 0.3 | 10 | nA | $V_{CB}=120\text{V}$ |
| Emitter Cut-Off Current | I_{EBO} | | 0.3 | 10 | nA | $V_{EB}=4\text{V}$ |
| Collector Emitter Cut-Off Current | I_{CES} | | 0.3 | 10 | nA | $V_{CES}=120\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | 17 85 140 250 | 25 120 180 340 | mV mV mV mV | $I_C=0.2\text{A}, I_B=10\text{mA}^*$ $I_C=1\text{A}, I_B=10\text{mA}^*$ $I_C=2\text{A}, I_B=20\text{mA}^*$ $I_C=5\text{A}, I_B=100\text{mA}^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | 980 | 1100 | mV | $I_C=5\text{A}, I_B=100\text{mA}^*$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | 915 | 1000 | mV | $I_C=5\text{A}, V_{CE}=2\text{V}^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 290 270 130 40 | 440 450 220 55 | 1200 | | $I_C=10\text{mA}, V_{CE}=2\text{V}^*$ $I_C=1\text{A}, V_{CE}=2\text{V}^*$ $I_C=5\text{A}, V_{CE}=2\text{V}^*$ $I_C=10\text{A}, V_{CE}=2\text{V}^*$ |
| Transition Frequency | f_T | | 155 | | MHz | $I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=100\text{MHz}$ |
| Output Capacitance | C_{obo} | | 27 | 40 | pF | $V_{CB}=10\text{V}, f=1\text{MHz}$ |
| Turn-on Time | t_{on} | | 220 | | ns | $I_C=3\text{A}, I_B=30\text{mA}, V_{CC}=10\text{V}$ |
| Turn-off Time | t_{off} | | 540 | | ns | |

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

TYPICAL CHARACTERISTICS

