



# FZT869

## SOT223 NPN SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTOR

ISSUE 2 - JANUARY 1996

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

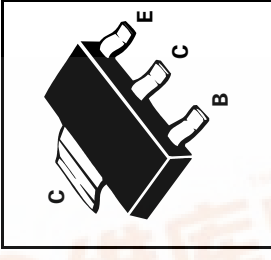
| PARAMETER                             | SYMBOL                                | MIN.                    | TYP.                     | MAX.                    | UNIT                | CONDITIONS.   |
|---------------------------------------|---------------------------------------|-------------------------|--------------------------|-------------------------|---------------------|---|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$                         | 60                      | 120                      |                         | V                   | $I_C = 100\mu\text{A}$  |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CER}$                         | 60                      | 120                      |                         | V                   | $I_C = 1\mu\text{A}, R_B \leq 1\text{k}\Omega$  |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$                         | 25                      | 35                       |                         | V                   | $I_C = 10\text{mA}^*$   |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$                         | 6                       | 8                        |                         | V                   | $I_E = 100\mu\text{A}$  |
| Collector Cut-Off Current             | $I_{CBO}$                             |                         |                          | 50<br>1                 | nA<br>$\mu\text{A}$ | $V_{CE} = 50\text{V}, T_{amb} = 100^{\circ}\text{C}$  |
| Collector Cut-Off Current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                         |                          | 50<br>1                 | nA<br>$\mu\text{A}$ | $V_{CE} = 50\text{V}, T_{amb} = 100^{\circ}\text{C}$  |
| Emitter Cut-Off Current               | $I_{EBO}$                             |                         |                          | 10                      | nA                  | $V_{EB} = 6\text{V}$  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$                         |                         | 35<br>67<br>168          | 50<br>110<br>215<br>350 | mV                  | $I_C = 0.5\text{A}, I_B = 10\text{mA}^*$<br>$I_C = 1\text{A}, I_B = 10\text{mA}^*$<br>$I_C = 2\text{A}, I_B = 10\text{mA}^*$<br>$I_C = 6.5\text{A}, I_B = 150\text{mA}^*$ |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$                         |                         |                          | 1.2                     | V                   | $I_C = 6.5\text{A}, I_B = 300\text{mA}$   |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$                          |                         |                          | 1.13                    | V                   | $I_C = 6.5\text{A}, V_{CE} = 1\text{V}^*$   |
| Static Forward Current Transfer Ratio | $h_{FE}$                              | 300<br>300<br>200<br>40 | 450<br>450<br>300<br>100 |                         |                     | $I_C = 10\text{mA}, V_{CE} = 1\text{V}$<br>$I_C = 1\text{A}, V_{CE} = 1\text{V}^*$<br>$I_C = 7\text{A}, V_{CE} = 1\text{V}^*$<br>$I_C = 20\text{A}, V_{CE} = 2\text{V}^*$ |
| Transition Frequency                  | $f_T$                                 |                         | 100                      |                         | MHz                 | $I_C = 100\text{mA}, V_{CE} = 10\text{V}$<br>$f = 50\text{MHz}$   |
| Output Capacitance                    | $C_{obo}$                             |                         | 70                       |                         | pF                  | $V_{CE} = 10\text{V}, f = 1\text{MHz}^*$  |
| Switching Times                       | $t_{on}$<br>$t_{off}$                 |                         | 60<br>680                |                         | ns<br>ns            | $I_C = 1\text{A}, I_{BR} = 100\text{mA}$<br>$I_{B2} = 100\text{mA}, V_{CC} = 10\text{V}$  |

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
 †piece parameter data is available upon request for this device

### FEATURES

- \* Extremely low equivalent on-resistance;  $R_{CE(sat)} = 36\text{m}\Omega$  at 5A
- \* 7 Amp continuous collector current (20 Amp peak)
- \* Very low saturation voltages
- \* Excellent gain characteristics specified upto 20 Amp
- \*  $P_{tot} = 3$  Watts

PARTMARKING DETAILS - FZT869



### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER   | SYMBOL         | VALUE       | UNIT               |
|---|----------------|-------------|--------------------|
| Collector-Base Voltage                              | $V_{CBO}$      | 60          | V                  |
| Collector-Emitter Voltage                           | $V_{CEO}$      | 25          | V                  |
| Emitter-Base Voltage                                | $V_{EBO}$      | 6           | V                  |
| Peak Pulse Current                                  | $I_{CM}$       | 20          | A                  |
| Continuous Collector Current                        | $I_C$          | 7           | A                  |
| Power Dissipation at $T_{amb} = 25^{\circ}\text{C}$ | $P_{tot}$      | 3           | W                  |
| Operating and Storage Temperature Range             | $T_j, T_{stg}$ | -55 to +150 | $^{\circ}\text{C}$ |

\*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 4 inch square minimum

查询FZT869供应商

捷多邦, 专业PCB打样工厂, 24小时加急出货

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

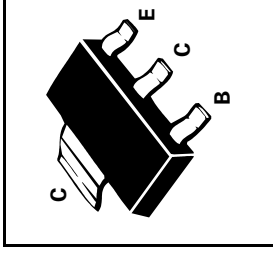
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|---------------------------------------|---------------------------------------|-------------------------|--------------------------|-------------------------|----------------------|---|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$                         | 60                      | 120                      |                         | V                    | $I_C = 100\mu\text{A}$  |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CER}$                         | 60                      | 120                      |                         | V                    | $I_C = 1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$   |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$                         | 25                      | 35                       |                         | V                    | $I_C = 10\text{mA}^*$   |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$                         | 6                       | 8                        |                         | V                    | $I_E = 100\mu\text{A}$  |
| Collector Cut-Off Current             | $I_{CBO}$                             |                         |                          | 50<br>1                 | nA<br>$\mu\text{A}$  | $V_{CE} = 50\text{V}$<br>$V_{CB} = 50\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$  |
| Collector Cut-Off Current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                         |                          | 50<br>1                 | nA<br>$\mu\text{A}$  | $V_{CE} = 50\text{V}$<br>$V_{CB} = 50\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$  |
| Emitter Cut-Off Current               | $I_{EBO}$                             |                         |                          | 10                      | nA                   | $V_{EB} = 6\text{V}$  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$                         |                         | 35<br>67<br>168          | 50<br>110<br>215<br>350 | mV<br>mV<br>mV<br>mV | $I_C = 0.5\text{A}$ , $I_B = 10\text{mA}^*$<br>$I_C = 1\text{A}$ , $I_B = 10\text{mA}^*$<br>$I_C = 2\text{A}$ , $I_B = 10\text{mA}^*$<br>$I_C = 6.5\text{A}$ , $I_B = 150\text{mA}^*$ |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$                         |                         |                          | 1.2                     | V                    | $I_C = 6.5\text{A}$ , $I_B = 300\text{mA}$  |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$                          |                         |                          | 1.13                    | V                    | $I_C = 6.5\text{A}$ , $V_{CE} = 1\text{V}^*$  |
| Static Forward Current Transfer Ratio | $h_{FE}$                              | 300<br>300<br>200<br>40 | 450<br>450<br>300<br>100 |                         |                      | $I_C = 10\text{mA}$ , $V_{CE} = 1\text{V}$<br>$I_C = 1\text{A}$ , $V_{CE} = 1\text{V}^*$<br>$I_C = 7\text{A}$ , $V_{CE} = 1\text{V}^*$<br>$I_C = 20\text{A}$ , $V_{CE} = 2\text{V}^*$ |
| Transition Frequency                  | $f_T$                                 |                         | 100                      |                         | MHz                  | $I_C = 100\text{mA}$ , $V_{CE} = 10\text{V}$<br>$f = 50\text{MHz}$  |
| Output Capacitance                    | $C_{obo}$                             |                         | 70                       |                         | pF                   | $V_{CE} = 10\text{V}$ , $f = 1\text{MHz}^*$   |
| Switching Times                       | $t_{on}$<br>$t_{off}$                 |                         | 60<br>680                |                         | ns<br>ns             | $I_C = 1\text{A}$ , $I_{B1} = 100\text{mA}$<br>$I_{B2} = 100\text{mA}$ , $V_{CC} = 10\text{V}$  |

Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
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| Peak Pulse Current                                  | $I_{CM}$       | 20          | A                  |
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