

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

## FZT857

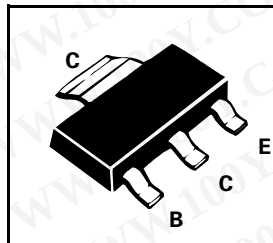
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### FEATURES

- \* Up to 3.5 Amps continuous collector current, up to 5 Amp peak
- \*  $V_{CEO} = 300V$
- \* Very low saturation voltage
- \* Excellent  $h_{FE}$  specified up to 3 Amps

PARTMARKING DETAIL - FZT857

COMPLEMENTARY TYPE - FZT957



### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                  | SYMBOL         | VALUE       | UNIT        |
|--------------------------------------------|----------------|-------------|-------------|
| Collector-Base Voltage                     | $V_{CBO}$      | 350         | V           |
| Collector-Emitter Voltage                  | $V_{CEO}$      | 300         | V           |
| Emitter-Base Voltage                       | $V_{EBO}$      | 6           | V           |
| Peak Pulse Current                         | $I_{CM}$       | 5           | A           |
| Continuous Collector Current               | $I_C$          | 3.5         | A           |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | $P_{tot}$      | 3           | 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 a typical manner on a P.C.B. with copper equal to 2 inches square.

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

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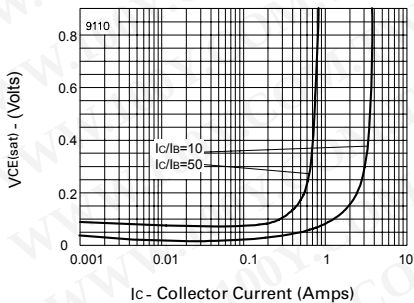
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| PARAMETER                             | SYMBOL                                | MIN.             | TYP.                   | MAX.                     | UNIT                 | CONDITIONS.                                                                                                                                                                                |
|---------------------------------------|---------------------------------------|------------------|------------------------|--------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$                         | 350              | 475                    |                          | V                    | $I_C = 100\mu\text{A}$                                                                                                                                                                     |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CER}$                         | 350              | 475                    |                          | V                    | $I_C = 1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$                                                                                                                                          |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$                         | 300              | 350                    |                          | 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>$\mu\text{A}$  | $V_{CB} = 300\text{V}$<br>$V_{CB} = 300\text{V}$ ,<br>$T_{amb} = 100^{\circ}\text{C}$                                                                                                      |
| Collector Cut-Off Current             | $I_{CER}$<br>$R \leq 1\text{k}\Omega$ |                  |                        | 50<br>1                  | nA<br>$\mu\text{A}$  | $V_{CB} = 300\text{V}$<br>$V_{CB} = 300\text{V}$ ,<br>$T_{amb} = 100^{\circ}\text{C}$                                                                                                      |
| Emitter Cut-Off Current               | $I_{EBO}$                             |                  |                        | 10                       | nA                   | $V_{EB} = 6\text{V}$                                                                                                                                                                       |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$                         |                  |                        | 100<br>155<br>230<br>345 | mV<br>mV<br>mV<br>mV | $I_C = 500\text{mA}$ , $I_B = 50\text{mA}^*$<br>$I_C = 1\text{A}$ , $I_B = 100\text{mA}^*$<br>$I_C = 2\text{A}$ , $I_B = 200\text{mA}^*$<br>$I_C = 3.5\text{A}$ , $I_B = 600\text{mA}^*$   |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$                         |                  |                        | 1250                     | mV                   | $I_C = 3.5\text{A}$ , $I_B = 600\text{mA}^*$                                                                                                                                               |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$                          |                  |                        | 1.12                     | V                    | $I_C = 3.5\text{A}$ , $V_{CE} = 10\text{V}^*$                                                                                                                                              |
| Static Forward Current Transfer Ratio | $h_{FE}$                              | 100<br>100<br>15 | 200<br>200<br>25<br>15 | 300                      |                      | $I_C = 10\text{mA}$ , $V_{CE} = 5\text{V}$<br>$I_C = 500\text{mA}$ , $V_{CE} = 10\text{V}^*$<br>$I_C = 2\text{A}$ , $V_{CE} = 10\text{V}^*$<br>$I_C = 3\text{A}$ , $V_{CE} = 10\text{V}^*$ |
| Transition Frequency                  | $f_T$                                 |                  | 80                     |                          | MHz                  | $I_C = 100\text{mA}$ , $V_{CE} = 10\text{V}$<br>$f = 50\text{MHz}$                                                                                                                         |
| Output Capacitance                    | $C_{obo}$                             |                  | 11                     |                          | pF                   | $V_{CB} = 20\text{V}$ , $f = 1\text{MHz}$                                                                                                                                                  |
| Switching Times                       | $t_{on}$<br>$t_{off}$                 |                  | 100<br>5300            |                          | ns<br>ns             | $I_C = 250\text{mA}$ , $I_{B1} = 25\text{mA}$<br>$I_{B2} = 25\text{mA}$ , $V_{CC} = 50\text{V}$                                                                                            |

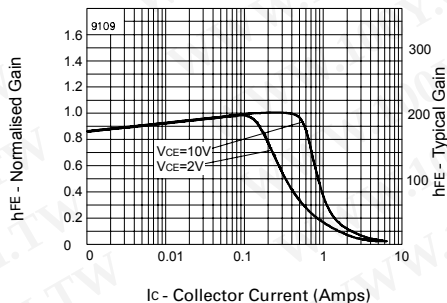
\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

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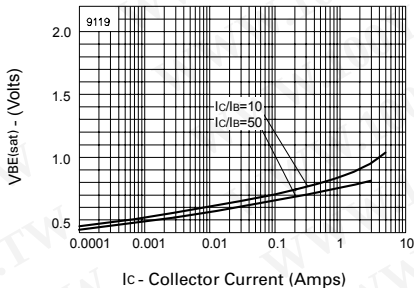
## TYPICAL CHARACTERISTICS



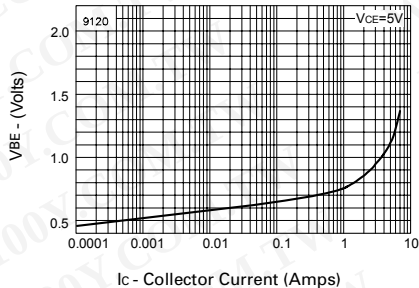
**$V_{CE(sat)}$  v  $I_C$**



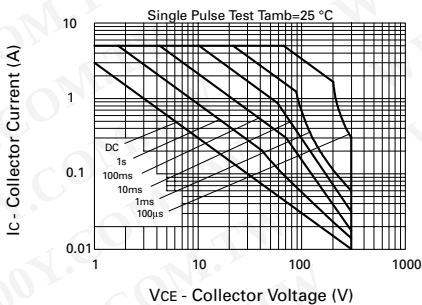
**hFE v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**



**Safe Operating Area**