

# Super323™ SOT323 PNP SILICON POWER (SWITCHING) TRANSISTOR

## ZUMT717

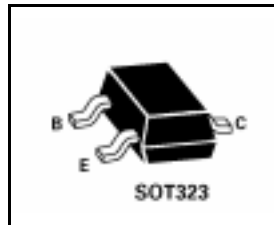
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### FEATURES

- \* **500mW POWER DISSIPATION**
- \*  **$I_C$  CONT 1.5A**
- \* 3A Peak Pulse Current
- \* Excellent  $H_{FE}$  Characteristics Up To 3A (pulsed)
- \* Extremely Low Saturation Voltage
- \* Extremely Low Equivalent On Resistance;  $R_{CE(sat)}$

### APPLICATIONS

- \* Negative boost functions in DC-DC converters
- \* Supply line switching in mobile phones and pagers
- \* Motor drivers in camcorders and mini disk players



| DEVICE TYPE | COMPLEMENT | PARTMARKING | $R_{CE(sat)}$          |
|-------------|------------|-------------|------------------------|
| ZUMT717     | ZUMT617    | T71         | 150m $\Omega$ at 1.25A |

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                                     | SYMBOL                      | VALUE                        | UNIT       |
|---------------------------------------------------------------|-----------------------------|------------------------------|------------|
| Collector-Base Voltage                                        | $V_{CBO}$                   | -12                          | V          |
| Collector-Emitter Voltage                                     | $V_{CEO}$                   | -12                          | V          |
| Emitter-Base Voltage                                          | $V_{EBO}$                   | -5                           | V          |
| Peak Pulse Current**                                          | $I_{CM}$                    | -3                           | A          |
| <b>Continuous Collector Current</b>                           | <b><math>I_C</math></b>     | <b>-1.25</b>                 | <b>A</b>   |
| Base Current                                                  | $I_B$                       | -200                         | mA         |
| <b>Power Dissipation at <math>T_{amb}=25^\circ C^*</math></b> | <b><math>P_{tot}</math></b> | <b>385 †</b><br><b>500 ‡</b> | <b>mW</b>  |
| Operating and Storage Temperature Range                       | $T_J; T_{stg}$              | -55 to +150                  | $^\circ C$ |

† Recommended  $P_{tot}$  calculated using FR4 measuring 10 x 8 x 0.6mm (still air).

‡ Maximum power dissipation is calculated assuming that the device is mounted on FR4 size 25x25x0.6mm and using comparable measurement methods adopted by other suppliers.

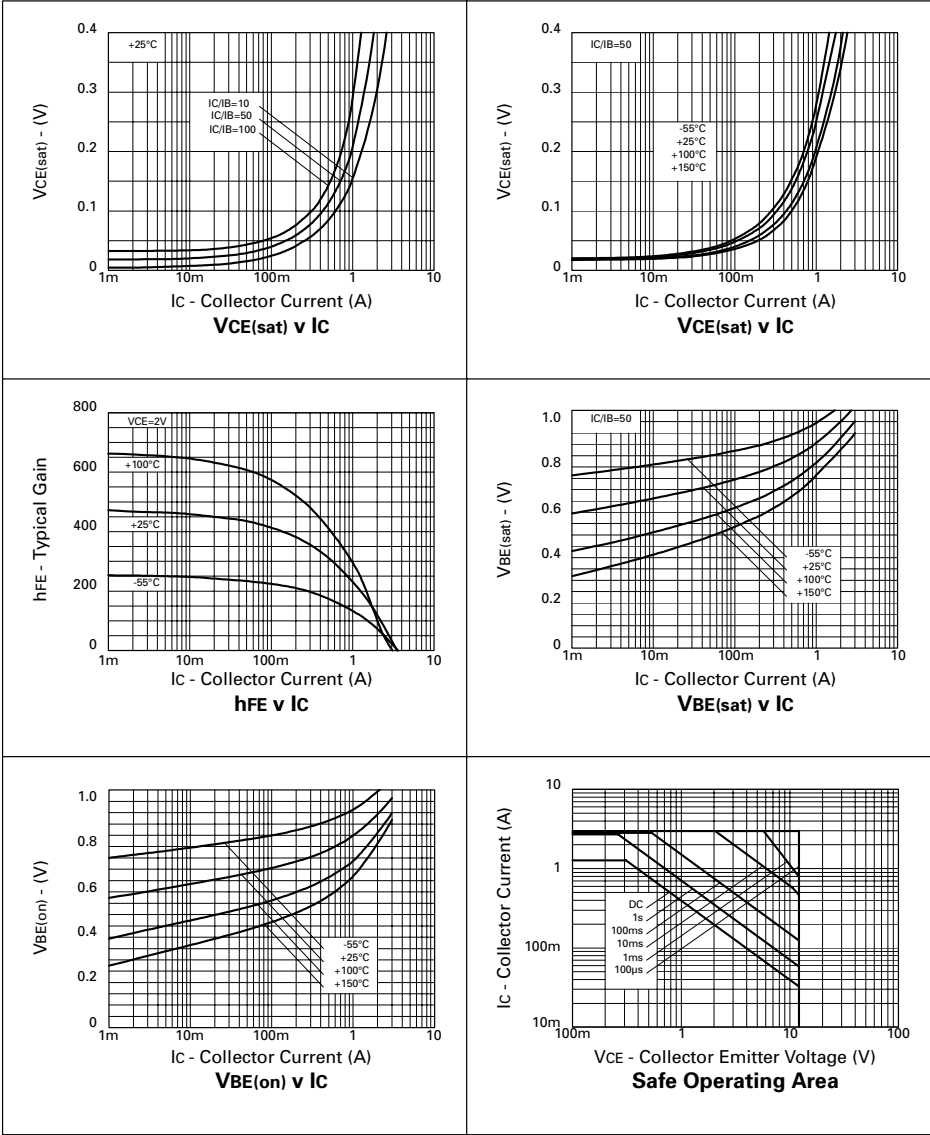
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## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

| PARAMETER                             | SYMBOL        | MIN.                                 | TYP.                                  | MAX.                                | UNIT                       | CONDITIONS.                                                                                                                                                                                                                                                                                           |
|---------------------------------------|---------------|--------------------------------------|---------------------------------------|-------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$ | -12                                  |                                       |                                     | V                          | $I_C = -100\mu\text{A}$                                                                                                                                                                                                                                                                               |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$ | -12                                  |                                       |                                     | V                          | $I_C = -10\text{mA}^*$                                                                                                                                                                                                                                                                                |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$ | -5                                   |                                       |                                     | V                          | $I_E = -100\mu\text{A}$                                                                                                                                                                                                                                                                               |
| Collector Cut-Off Current             | $I_{CBO}$     |                                      |                                       | -10                                 | nA                         | $V_{CB} = -10\text{V}$                                                                                                                                                                                                                                                                                |
| Emitter Cut-Off Current               | $I_{EBO}$     |                                      |                                       | -10                                 | nA                         | $V_{EB} = -4\text{V}$                                                                                                                                                                                                                                                                                 |
| Collector Emitter Cut-Off Current     | $I_{CES}$     |                                      |                                       | -10                                 | nA                         | $V_{CES} = -10\text{V}$                                                                                                                                                                                                                                                                               |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$ |                                      | -25<br>-55<br>-110<br>-160<br>-185    | -40<br>-100<br>-175<br>-215<br>-240 | mV<br>mV<br>mV<br>mV<br>mV | $I_C = -0.1\text{A}$ , $I_B = -10\text{mA}^*$<br>$I_C = -0.25\text{A}$ , $I_B = -10\text{mA}^*$<br>$I_C = -0.5\text{A}$ , $I_B = -10\text{mA}^*$<br>$I_C = -1\text{A}$ , $I_B = -50\text{mA}^*$<br>$I_C = -1.25\text{A}$ , $I_B = -100\text{mA}^*$                                                    |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$ |                                      | -990                                  | -1100                               | mV                         | $I_C = -1.25\text{A}$ , $I_B = -100\text{mA}^*$                                                                                                                                                                                                                                                       |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$  |                                      | -850                                  | -1000                               | mV                         | $I_C = -1.25\text{A}$ , $V_{CE} = 2\text{V}^*$                                                                                                                                                                                                                                                        |
| Static Forward Current Transfer Ratio | $h_{FE}$      | 300<br>300<br>200<br>125<br>75<br>30 | 490<br>450<br>340<br>250<br>140<br>80 |                                     |                            | $I_C = -10\text{mA}$ , $V_{CE} = -2\text{V}^*$<br>$I_C = -0.1\text{A}$ , $V_{CE} = -2\text{V}^*$<br>$I_C = -0.5\text{A}$ , $V_{CE} = -2\text{V}^*$<br>$I_C = -1.25\text{A}$ , $V_{CE} = -2\text{V}^*$<br>$I_C = -2\text{A}$ , $V_{CE} = -2\text{V}^*$<br>$I_C = -3\text{A}$ , $V_{CE} = -2\text{V}^*$ |
| Transition Frequency                  | $f_T$         |                                      | 220                                   |                                     | MHz                        | $I_C = -50\text{mA}$ , $V_{CE} = -10\text{V}$<br>$f = 100\text{MHz}$                                                                                                                                                                                                                                  |
| Output Capacitance                    | $C_{obo}$     |                                      | 15                                    |                                     | pF                         | $V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$                                                                                                                                                                                                                                                            |
| Turn-On Time                          | $t_{(on)}$    |                                      | 50                                    |                                     | ns                         | $V_{CC} = -10\text{V}$ , $I_C = -1\text{A}$<br>$I_{B1} = I_{B2} = -100\text{mA}$                                                                                                                                                                                                                      |
| Turn-Off Time                         | $t_{(off)}$   |                                      | 135                                   |                                     | ns                         |                                                                                                                                                                                                                                                                                                       |

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

TYPICAL CHARACTERISTICS



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