

# Super323™ SOT323 NPN SILICON POWER (SWITCHING) TRANSISTOR

ISSUE 2 - DECEMBER 2008

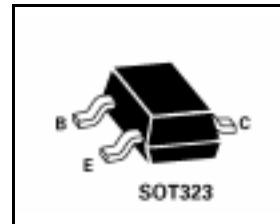
ZUMT619

## FEATURES

- \* **500mW POWER DISSIPATION**
- \* **I<sub>C</sub> CONT 1A**
- \* **2A Peak Pulse Current**
- \* **Excellent H<sub>FE</sub> Characteristics Up To 2A (pulsed)**
- \* **Extremely Low Equivalent On Resistance; R<sub>CE(sat)</sub>**

## APPLICATIONS

- \* LCD backlighting inverter circuits
- \* Boost functions in DC-DC converters



| DEVICE TYPE | COMPLEMENT | PARTMARKING | R <sub>CE(sat)</sub> |
|-------------|------------|-------------|----------------------|
| ZUMT619     | ZUMT720    | T63         | <b>160mΩ at 1A</b>   |

## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER  | SYMBOL                           | VALUE                        | UNIT |
|--|----------------------------------|------------------------------|------|
| Collector-Base Voltage                           | V <sub>CBO</sub>                 | 50                           | V    |
| Collector-Emitter Voltage                        | V <sub>CEO</sub>                 | 50                           | V    |
| Emitter-Base Voltage                             | V <sub>EBO</sub>                 | 5                            | V    |
| Peak Pulse Current**                             | I <sub>CM</sub>                  | 2                            | A    |
| <b>Continuous Collector Current</b>              | I <sub>C</sub>                   | <b>1.0</b>                   | A    |
| Base Current                                     | I <sub>B</sub>                   | 200                          | mA   |
| <b>Power Dissipation at T<sub>amb</sub>=25°C</b> | P <sub>tot</sub>                 | <b>385 †</b><br><b>500 ‡</b> | mW   |
| Operating and Storage Temperature Range          | T <sub>j</sub> ;T <sub>stg</sub> | -55 to +150                  | °C   |

† Recommended P<sub>tot</sub> 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.

# ZUMT619

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

| PARAMETER                             | SYMBOL        | MIN.                          | TYP.                           | MAX.                 | UNIT | CONDITIONS.   |
|---------------------------------------|---------------|-------------------------------|--------------------------------|----------------------|------|---|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$ | 50                            |                                |                      | V    | $I_C = 100\mu A$  |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$ | 50                            |                                |                      | V    | $I_C = 10mA^*$  |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$ | 5                             |                                |                      | V    | $I_E = 100\mu A$  |
| Collector Cut-Off Current             | $I_{CBO}$     |                               |                                | 10                   | nA   | $V_{CB} = 40V$  |
| Emitter Cut-Off Current               | $I_{EBO}$     |                               |                                | 10                   | nA   | $V_{EB} = 4V$   |
| Collector Emitter Cut-Off Current     | $I_{CES}$     |                               |                                | 10                   | nA   | $V_{CES} = 40V$   |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$ | 24<br>60<br>120<br>160        | 35<br>80<br>200<br>270         | mV<br>mV<br>mV<br>mV |      | $I_C = 100mA, I_B = 10mA^*$<br>$I_C = 250mA, I_B = 10mA^*$<br>$I_C = 500mA, I_B = 10mA^*$<br>$I_C = 1A, I_B = 50mA^*$                                   |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$ |                               | 940                            | 1100                 | mV   | $I_C = 1A, I_B = 50mA^*$  |
| Base-Emitter Turn-On Voltage          | $V_{BE(on)}$  |                               | 850                            | 1100                 | mV   | $I_C = 1A, V_{CE} = 2V^*$   |
| Static Forward Current Transfer Ratio | $h_{FE}$      | 200<br>300<br>200<br>75<br>20 | 420<br>450<br>350<br>130<br>60 |                      |      | $I_C = 10mA, V_{CE} = 2V^*$<br>$I_C = 100mA, V_{CE} = 2V^*$<br>$I_C = 500mA, V_{CE} = 2V^*$<br>$I_C = 1A, V_{CE} = 2V^*$<br>$I_C = 1.5A, V_{CE} = 2V^*$ |
| Transition Frequency                  | $f_T$         |                               | 215                            |                      | MHz  | $I_C = 50mA, V_{CE} = 10V$<br>$f = 100MHz$  |
| Output Capacitance                    | $C_{obo}$     |                               | 6                              |                      | pF   | $V_{CB} = 10V, f = 1MHz$  |
| Turn-On Time                          | $t_{(on)}$    |                               | 150                            |                      | ns   | $V_{CC} = 10V, I_C = 1A$  |
| Turn-Off Time                         | $t_{(off)}$   |                               | 425                            |                      | ns   | $I_{B1} = I_{B2} = 100mA$   |

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

**ZUMT619**

## TYPICAL CHARACTERISTICS

