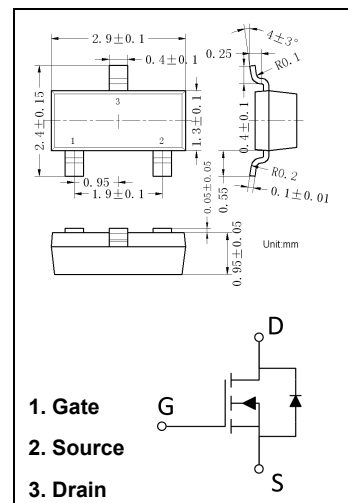


## SOT-23 Plastic-Encapsulate Mosfets

### LBSS123LT1G

N-Channel Power MOSFET

Marking: SA



### Maximum Ratings ( $T_a=25^\circ\text{C}$ unless otherwise specified)

| Symbol    | Parameter                                                         | Value    | Unit |
|-----------|-------------------------------------------------------------------|----------|------|
| $V_{DS}$  | Drain-Source voltage                                              | 100      | V    |
| $V_{GS}$  | Gate-Source voltage – Continuous                                  | $\pm 20$ |      |
| $V_{GSM}$ | Gate-Source voltage – Non-repetitive ( $t_p \leq 50\mu\text{s}$ ) | $\pm 40$ |      |
| $I_D$     | Drain Current – Continuous <sup>1)</sup>                          | 0.17     | A    |
| $I_{DM}$  | Drain Current – Pulsed <sup>2)</sup>                              | 0.68     |      |

### Thermal Characteristics

| Symbol          | Parameter                                                                                                        | Value       | Unit                       |
|-----------------|------------------------------------------------------------------------------------------------------------------|-------------|----------------------------|
| $P_D$           | Total Device Dissipation FR-5 Board <sup>3)</sup><br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | 225<br>1.8  | mW<br>mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient                                                                          | 556         | $^\circ\text{C/W}$         |
| $T_J, T_{stg}$  | Junction and Storage Temperature                                                                                 | -55 to +150 | $^\circ\text{C}$           |

#### Notes

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .
3. FR-5 =  $1.0 \times 0.75 \times 0.062$  in.

**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)**

| Symbol                       | Parameter                       | Test Conditions                                                                                | Min | Typ | Max | Unit |
|------------------------------|---------------------------------|------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| Off Characteristics          |                                 |                                                                                                |     |     |     |      |
| V <sub>(BR)DSS</sub>         | Drain-Source Breakdown Voltage  | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA                                                   | 100 |     |     | V    |
| I <sub>DSS</sub>             | Zero Gate Voltage Drain Current | V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V                                                   |     |     | 0.1 | μA   |
|                              |                                 | V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C                           |     |     | 30  |      |
| I <sub>GSS</sub>             | Gate-body Leakage current       | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V                                                   |     |     | ±50 | nA   |
| On Characteristics 4)        |                                 |                                                                                                |     |     |     |      |
| V <sub>GS(th)</sub>          | Gate-Threshold Voltage          | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA                                       | 0.8 |     | 2.0 | V    |
| R <sub>DS(on)</sub>          | Drain-Source On-Resistance      | V <sub>GS</sub> = 10V, I <sub>D</sub> = 100mA                                                  |     | 5.0 | 6.0 | Ω    |
| g <sub>fs</sub>              | Forward Trans conductance       | V <sub>DS</sub> = 25V, I <sub>D</sub> =100mA                                                   | 80  |     |     | mS   |
| Dynamic Characteristics      |                                 |                                                                                                |     |     |     |      |
| C <sub>iss</sub>             | Input Capacitance               | V <sub>GS</sub> = 0V<br>V <sub>DS</sub> = 25V<br>f = 1.0MHz                                    |     | 20  |     | pF   |
| C <sub>oss</sub>             | Output Capacitance              |                                                                                                |     | 9.0 |     |      |
| C <sub>rss</sub>             | Reverse Transfer Capacitance    |                                                                                                |     | 4.0 |     |      |
| Switching Characteristics 4) |                                 |                                                                                                |     |     |     |      |
| t <sub>d(on)</sub>           | Turn-On Delay Time              | V <sub>DD</sub> = 30V, I <sub>D</sub> = 0.28A,<br>R <sub>GS</sub> = 50Ω, V <sub>GS</sub> = 10V |     | 20  |     | ns   |
| t <sub>d(off)</sub>          | Turn-Off Delay Time             |                                                                                                |     | 40  |     |      |
| Reverse Diode                |                                 |                                                                                                |     |     |     |      |
| V <sub>SD</sub>              | Diode Forward On–Voltage        | I <sub>D</sub> = 0.34A, V <sub>GS</sub> = 0V                                                   |     |     | 1.3 | V    |

**Notes**

4. Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.

## Typical Characteristics

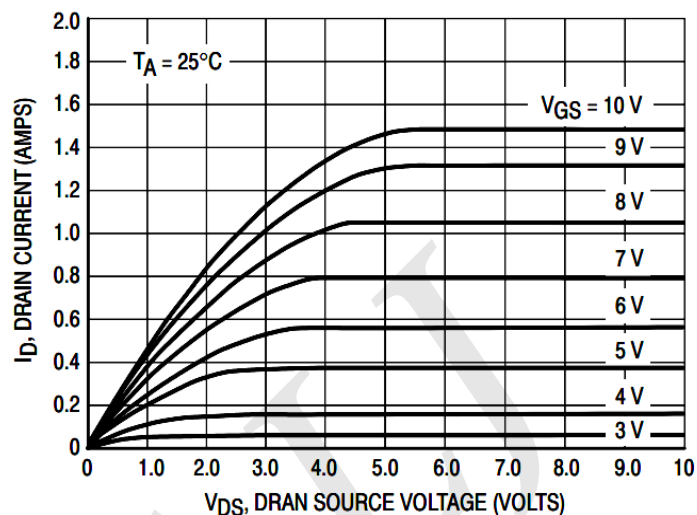


Figure 1. Ohmic Region

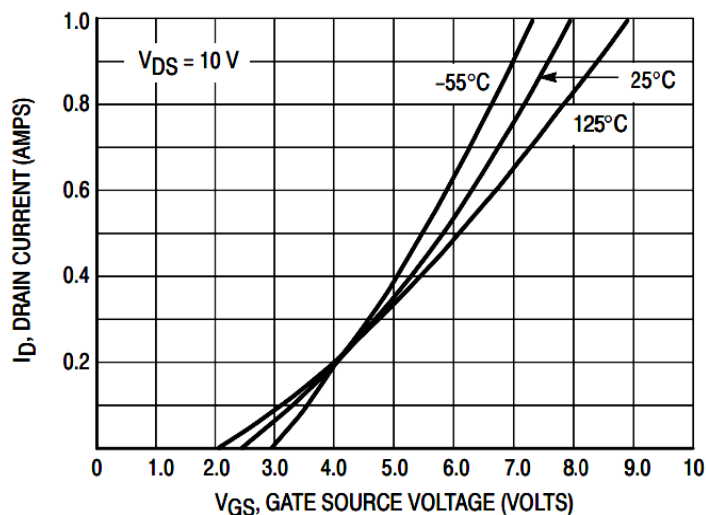


Figure 2. Transfer Characteristics

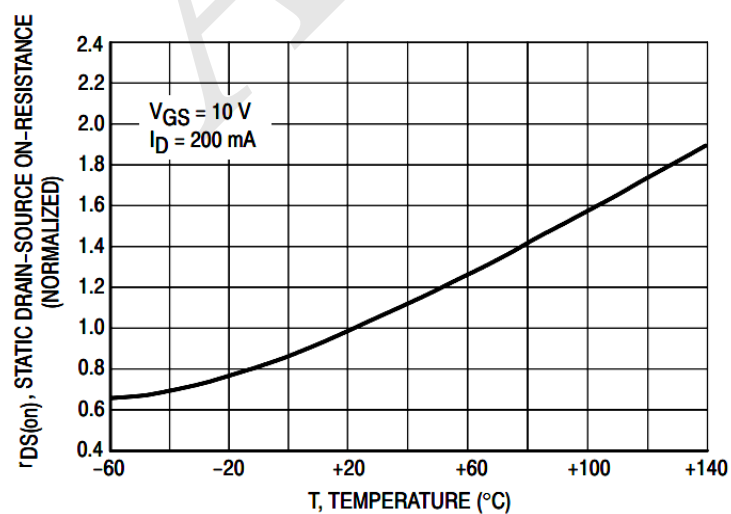


Figure 3. Temperature versus Static Drain-Source On-Resistance

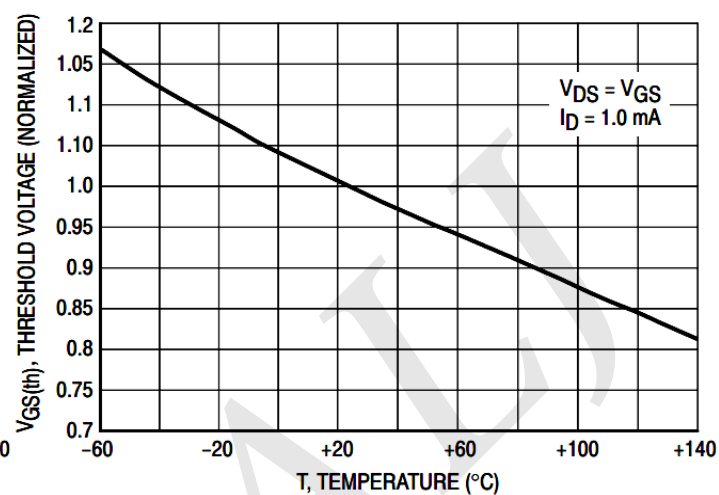


Figure 4. Temperature versus Gate Threshold Voltage