

### FEATURES

- Trench Power LV MOSFET technology
- High density cell design for Low  $R_{DS(ON)}$
- High Speed switching



| Product Summary |                                   |           |
|-----------------|-----------------------------------|-----------|
| $V_{DS}$        | $R_{DS(ON)} (\Omega) \text{ Max}$ | $I_D (A)$ |
| -60V            | 8.0 @ -10V                        | -0.17     |
|                 | 10.0 @ -4.5V                      |           |

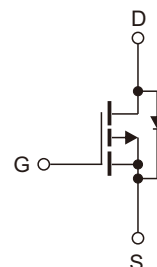
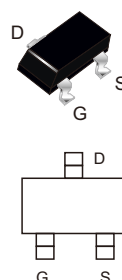
### APPLICATIONS

- Battery protection
- Load switch
- Power management

### MECHANICAL DATA

- Case: SOT-23(TO-236)
- Terminals: Plated solderable per MIL-STD-750, method 2026
- Mounting Position: Any

SOT-23



### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameters   |                          | Symbol         | Value       | Unit             |
|--|--------------------------|----------------|-------------|------------------|
| Drain-Source voltage                                   |                          | $V_{DS}$       | -60         | V                |
| Gate-Source Voltage                                    |                          | $V_{GS}$       | $\pm 20$    | V                |
| Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) | $T_A = 25^\circ\text{C}$ | $I_D$          | -0.17       | A                |
|  | $T_A = 70^\circ\text{C}$ |                | -0.14       |                  |
| Pulsed Drain Current <sup>1)</sup>                     |                          | $I_{DM}$       | -0.68       | A                |
| Maximum Power Dissipation @ $T_A=25^\circ\text{C}$     |                          | $P_D$          | 225         | mW               |
| Junction and Storage Temperature Range                 |                          | $T_J, T_{STG}$ | -55 to +150 | $^\circ\text{C}$ |

### Thermal Resistance Ratings

| Parameters                                      | Symbol          | Typ | Max | Unit               |
|---|-----------------|-----|-----|--------------------|
| Junction to Ambient, Steady State <sup>2)</sup> | $R_{\theta JA}$ | -   | 556 | $^\circ\text{C/W}$ |

# RATINGS AND CHARACTERISTIC OF BSS84

## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

| Parameters                              | Symbol              | Conditions  | Min  | Typ  | Max   | Unit |
|---|---------------------|---|------|------|-------|------|
| Static                                  |                     |   |      |      |       |      |
| Drain-Source Breakdown Voltage          | BV <sub>DSS</sub>   | V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA   | -60  | -    | -     | V    |
| Zero Gate Voltage Drain Current         | I <sub>DSS</sub>    | V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V, T <sub>C</sub> =25°C                              | -    | -    | -1    | μA   |
| Gate-Source Leakage Current             | I <sub>GSS</sub>    | V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V   | -    | -    | ±100  | nA   |
| Gate-Source Threshold Voltage           | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA                                     | -0.9 | -1.4 | -2.0  | V    |
| Drain-Source On-State Resistance        | R <sub>DS(ON)</sub> | V <sub>GS</sub> = -10V, I <sub>D</sub> =-0.15A  | -    | -    | 8.0   | Ω    |
|   |                     | V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-0.15A   | -    | -    | 10.0  |      |
| Dynamic                                 |                     |   |      |      |       |      |
| Input Capacitance                       | C <sub>iss</sub>    | V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, f=1MHz  | -    | 30   | -     | pF   |
| Output Capacitance                      | C <sub>oss</sub>    |   | -    | 10   | -     |      |
| Reverse Transfer Capacitance            | C <sub>rss</sub>    |   | -    | 5    | -     |      |
| Turn-on Delay Time                      | t <sub>D(on)</sub>  | V <sub>GS</sub> =-4.5V, V <sub>DD</sub> =-30V, I <sub>D</sub> =-0.15A, R <sub>GEN</sub> =2.5Ω | -    | 2.5  | -     | ns   |
| Rise Time                               | t <sub>r</sub>      |   | -    | 1    | -     |      |
| Turn-off Delay Time                     | t <sub>D(off)</sub> |   | -    | 16   | -     |      |
| Fall Time                               | t <sub>f</sub>      |   | -    | 8    | -     |      |
| Drain-Source Body Diode Characteristics |                     |   |      |      |       |      |
| Maximum Body-Diode Continuous Current   | I <sub>S</sub>      |   | -    | -    | -0.17 | A    |
| Diode Forward Voltage                   | V <sub>SD</sub>     | I <sub>S</sub> =-0.17A, V <sub>GS</sub> =0V   | -    | -    | -1.2  | V    |

Notes: 1. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.  
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

## Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|---------|----------------------|-------------------------|----------------------------|---------------|
| BSS84         | F2           | B84.    | 3000                 | 30000                   | 120000                     | 7" reel       |

# RATINGS AND CHARACTERISTIC OF BSS84

## Typical Performance Characteristics

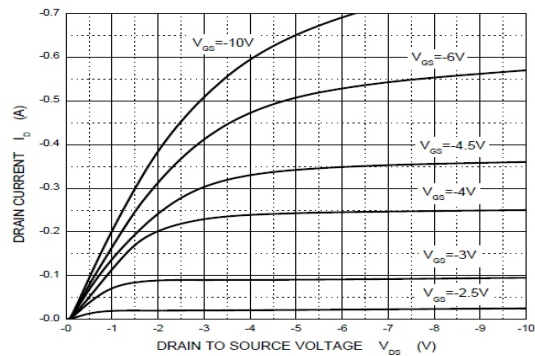


Figure1. Output Characteristics

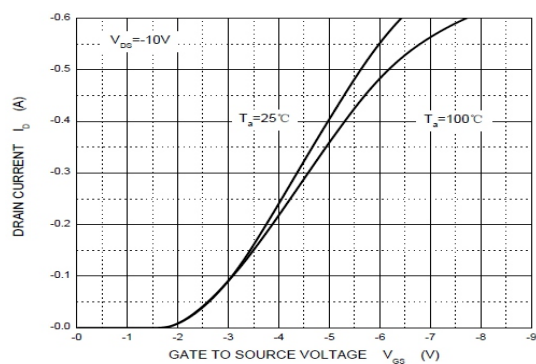


Figure2. Transfer Characteristics

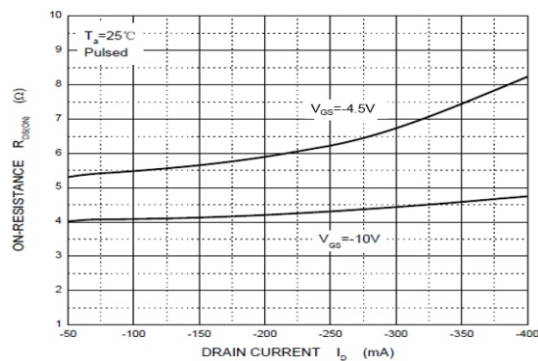


Figure3. Drain-Source on Resistance

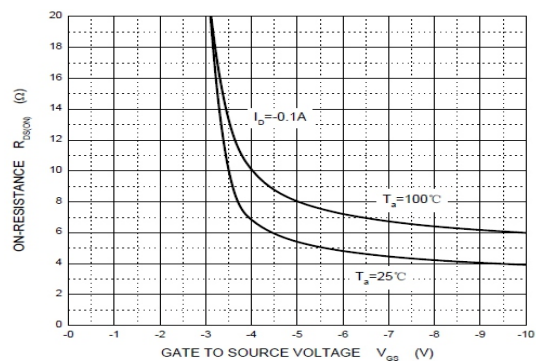


Figure4. Drain-Source on Resistance

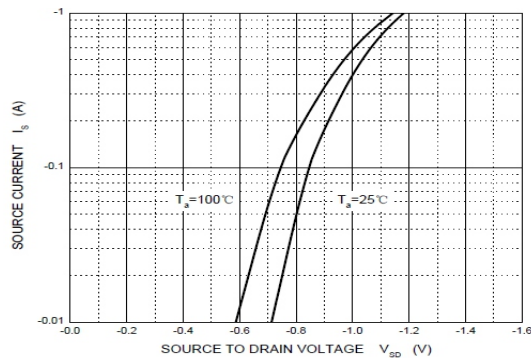


Figure5. Diode Forward Voltage vs. current

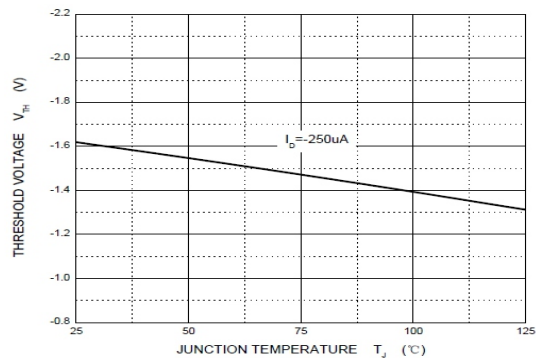
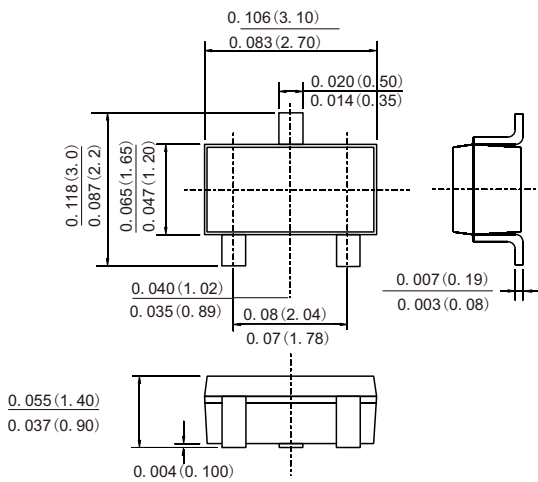


Figure6. Gate Threshold vs. Junction Temperature

# RATINGS AND CHARACTERISTIC OF BSS84

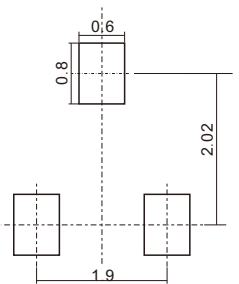
## PACKAGE OUTLINE DIMENSIONS

### SOT-23



Dimensions in inches and (millimeters)

### Suggested Pad Layout



Dimensions in millimeters

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