

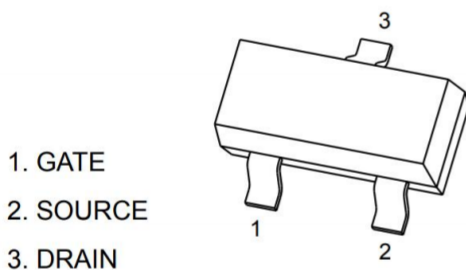
### Product Summary

- $V_{DS}$  30 V
- $R_{DS(ON)}$  ( $V_{GS}=10V$ )  $\leq 22m\Omega$  (Typ)
- $R_{DS(ON)}$  ( $V_{GS}=4.5V$ )  $\leq 27m\Omega$  (Typ)

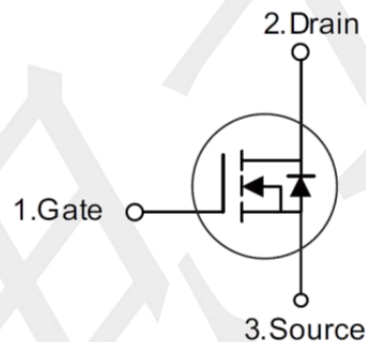
### Application

- Interfacing Switching
- Load Switch
- Portable equipment and battery

### Package and Pin Configuration



### Circuit diagram



### SOT-23

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

| PARAMETER                                         |                          | SYMBOL    | LIMIT       | UNIT               |
|---------------------------------------------------|--------------------------|-----------|-------------|--------------------|
| Drain-Source Voltage                              |                          | $V_{DS}$  | 30          | V                  |
| Gate-Source Voltage                               |                          | $V_{GS}$  | $\pm 12$    | V                  |
| Continuous Drain Current $T_A=25^{\circ}\text{C}$ |                          | $I_D$     | 5.8         | A                  |
| Continuous Drain Current $T_A=75^{\circ}\text{C}$ |                          | $I_D$     | 4.8         | A                  |
| Pulsed Drain Current (t = 100 $\mu\text{s}$ )     |                          | $I_{DM}$  | 30          | A                  |
| Maximum Power Dissipation                         | $T_A=25^{\circ}\text{C}$ | $P_D$     | 1.25        | W                  |
|                                                   | $T_A=75^{\circ}\text{C}$ |           | 0.8         | W                  |
| Operating Junction Temperature Range              |                          | $T_J$     | -55 to +150 | $^{\circ}\text{C}$ |
| Storage Temperature Range                         |                          | $T_{stg}$ | -55 to +150 | $^{\circ}\text{C}$ |

### Thermal Characteristic

| PARAMETER                                                          | Symbol          | Value | Unit               |
|--------------------------------------------------------------------|-----------------|-------|--------------------|
| Thermal Resistance from Junction to Ambient( $t \leq 10\text{s}$ ) | $R_{\theta JA}$ | 100   | $^\circ\text{C/W}$ |

Note : When mounted on 1" square PCB (FR4 material).

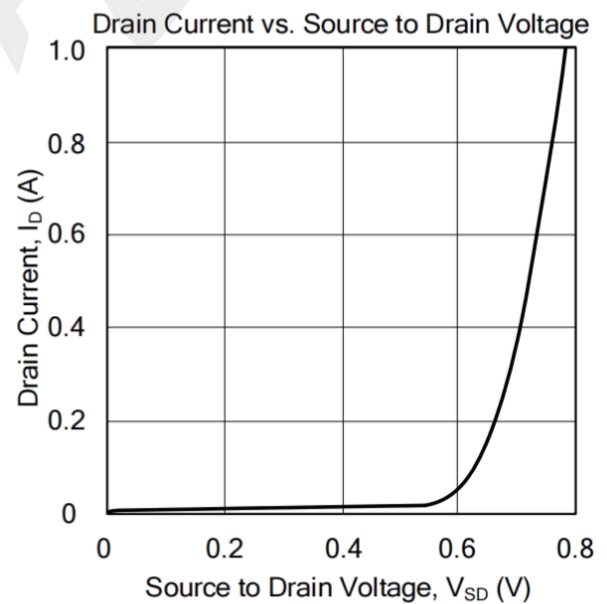
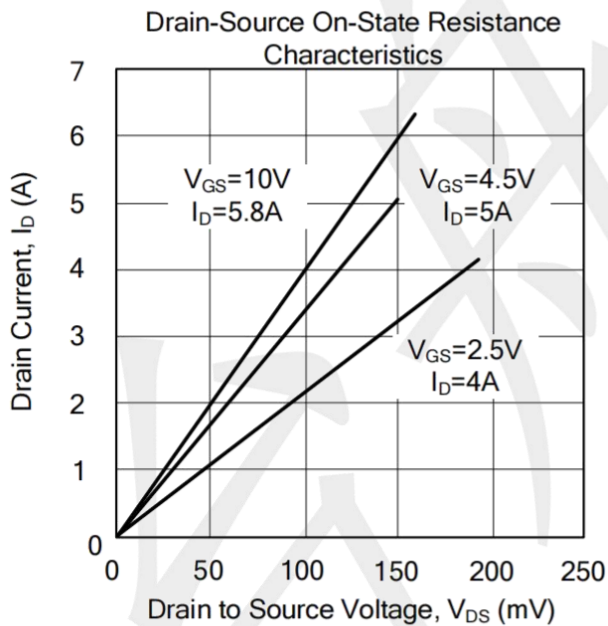
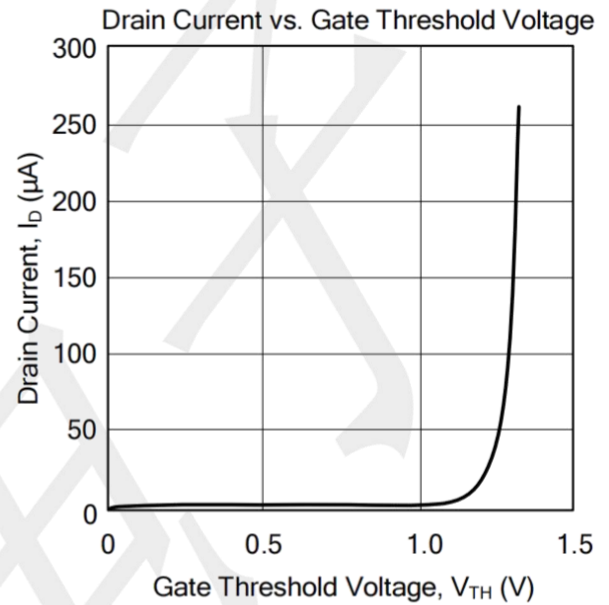
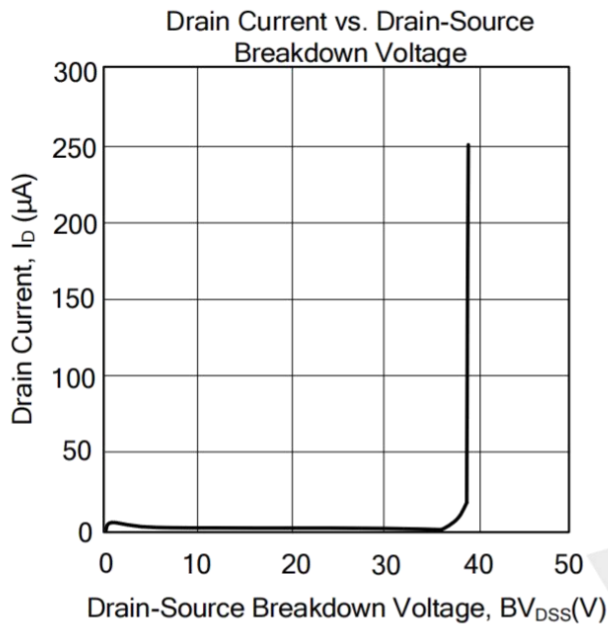
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                               | CONDITIONS                                                                                        | SYMBOL              | MIN | TYP | MAX  | UNIT |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------|-----|-----|------|------|
| Static                                                  |                                                                                                   |                     |     |     |      |      |
| Drain-Source Breakdown Voltage                          | V <sub>GS</sub> =0V, I <sub>D</sub> = 10μA                                                        | BV <sub>DSS</sub>   | 30  | --  | --   | V    |
| Gate-Source Threshold Voltage                           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = 250μA                                         | V <sub>GS(th)</sub> | 0.7 | 1.1 | 1.5  | V    |
| Gate-Source Leakage                                     | V <sub>DS</sub> =0V, V <sub>GS</sub> = ±12V                                                       | I <sub>GSS</sub>    | --  | --  | ±100 | nA   |
| Zero Gate Voltage Drain Current                         | V <sub>DS</sub> = 24V, V <sub>GS</sub> =0V                                                        | I <sub>DSS</sub>    | --  | --  | 1.0  | μA   |
| Drain-Source On-State Resistance<br>(Note 1)            | V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.8A                                                      | R <sub>DS(on)</sub> | --  | 22  | 28   | mΩ   |
|                                                         | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A                                                     |                     | --  | 27  | 33   |      |
|                                                         | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 4.0A                                                     |                     | --  | 43  | 52   |      |
| Forward Transconductance (Note 2)                       | V <sub>DS</sub> = 5V, I <sub>D</sub> = 5.0A                                                       | g <sub>fs</sub>     | --  | 20  | --   | S    |
| Dynamic (Note 2)                                        |                                                                                                   |                     |     |     |      |      |
| Input Capacitance                                       | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V,<br>F = 1.0MHz                                        | C <sub>iss</sub>    | --  | 550 | --   | pF   |
| Output Capacitance                                      |                                                                                                   | C <sub>oss</sub>    | --  | 72  | --   |      |
| Reverse Transfer Capacitance                            |                                                                                                   | C <sub>rss</sub>    | --  | 57  | --   |      |
| Switching                                               |                                                                                                   |                     |     |     |      |      |
| Turn-On Delay Time (Note 3)                             | V <sub>DS</sub> = 15V,<br>V <sub>GS</sub> = 10V,<br>I <sub>D</sub> =5.8A,<br>R <sub>G</sub> = 3Ω. | t <sub>d(on)</sub>  | --  | 5   | --   | nS   |
| Rise Time (Note 3)                                      |                                                                                                   | t <sub>r</sub>      | --  | 16  | --   |      |
| Turn-Off Delay Time (Note 3)                            |                                                                                                   | t <sub>d(off)</sub> | --  | 17  | --   |      |
| Fall Time (Note 3)                                      |                                                                                                   | t <sub>f</sub>      | --  | 24  | --   |      |
| Total Gate Charge                                       | V <sub>DS</sub> = 10V,<br>I <sub>D</sub> = 5.8A,V <sub>GS</sub> = 4.5V                            | Q <sub>g</sub>      | --  | 9   | --   | nC   |
| Gate Source Charge                                      |                                                                                                   | Q <sub>gs</sub>     | --  | 1.4 | --   |      |
| Gate Drain Charge                                       |                                                                                                   | Q <sub>gd</sub>     | --  | 3.4 | --   |      |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                                                                   |                     |     |     |      |      |
| Forward Voltage                                         | V <sub>GS</sub> = 0V, I <sub>F</sub> = 1A                                                         | V <sub>SD</sub>     | --  | 0.7 | 1.1  | V    |
| Continuous Source Current                               | Integral reverse diode<br>in the MOSFET                                                           | I <sub>S</sub>      | --  | --  | 5.8  | A    |
| Pulsed Current (Note 1)                                 |                                                                                                   | I <sub>SM</sub>     | --  | --  | 30   | A    |

Notes:

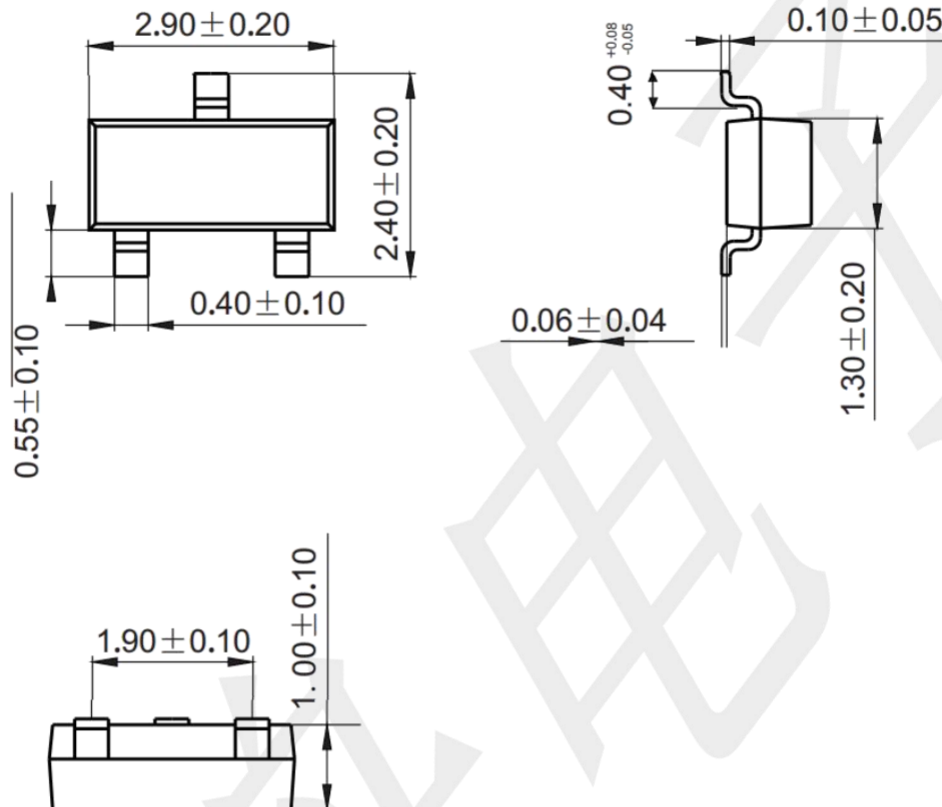
1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

### TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



**Package Outline Dimensions (unit: mm)**

SOT-23



**Mounting Pad Layout (unit: mm)**

