

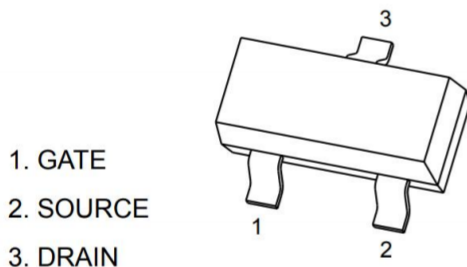
### Product Summary

- $V_{DS}$  20 V
- $R_{DS(ON)}$  ( $V_{GS}=4.5V$ )  $\leq 250m\Omega$
- $R_{DS(ON)}$  ( $V_{GS}=2.5V$ )  $\leq 300m\Omega$

### Application

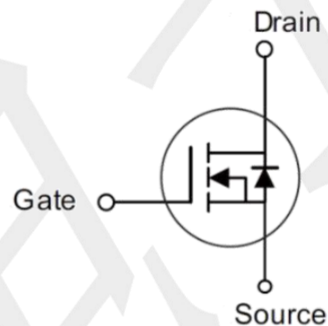
- Interfacing Switching
- Load Switch
- Portable equipment and battery

### Package and Pin Configuration



SOT-23

### Circuit diagram



Marking:A

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

| PARAMETER                                  | SYMBOL    | LIMIT       | UNIT       |
|--------------------------------------------|-----------|-------------|------------|
| Drain-Source Voltage                       | $V_{DS}$  | 20          | V          |
| Gate-Source Voltage                        | $V_{GS}$  | $\pm 8$     | V          |
| Continuous Drain Current $T_A=25^\circ C$  | $I_D$     | 0.8         | A          |
| Continuous Drain Current $T_A=70^\circ C$  | $I_D$     | 0.7         | A          |
| Pulsed Drain Current ( $t = 100 \mu s$ )   | $I_{DM}$  | 1.8         | A          |
| Maximum Power Dissipation $T_A=25^\circ C$ | $P_D$     | 0.54        | W          |
| Operating Junction Temperature Range       | $T_J$     | -55 to +150 | $^\circ C$ |
| Storage Temperature Range                  | $T_{stg}$ | -55 to +150 | $^\circ C$ |

### Thermal Characteristic

| PARAMETER                                                   | Symbol          | Value | Unit         |
|-------------------------------------------------------------|-----------------|-------|--------------|
| Thermal Resistance from Junction to Ambient( $t \leq 10s$ ) | $R_{\theta JA}$ | 450   | $^\circ C/W$ |

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

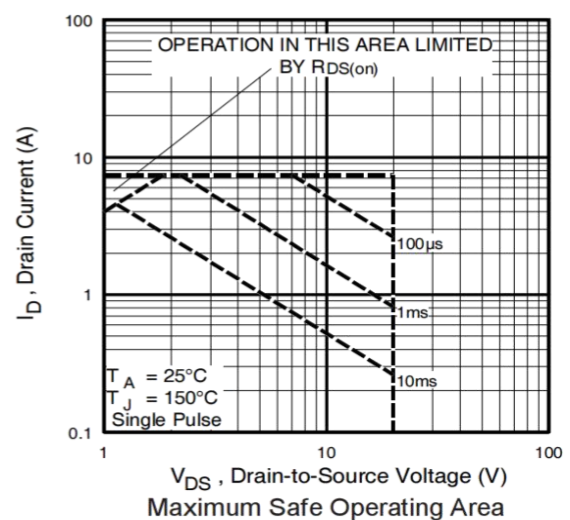
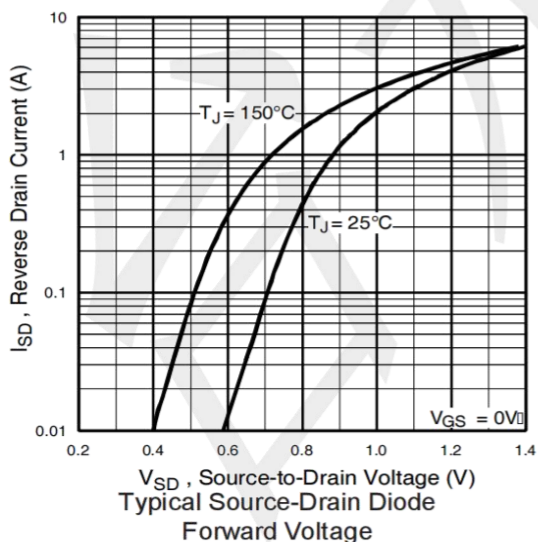
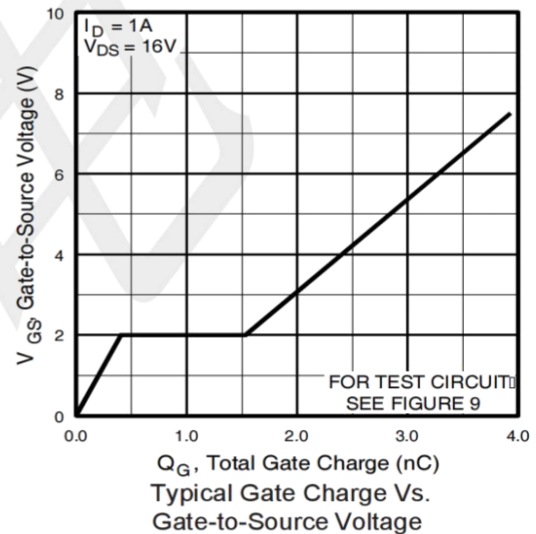
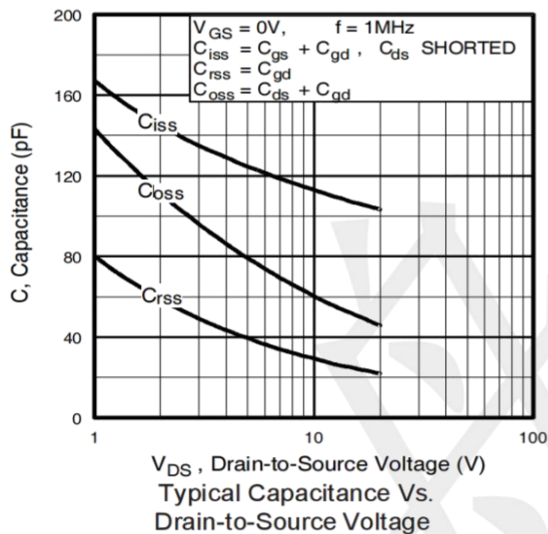
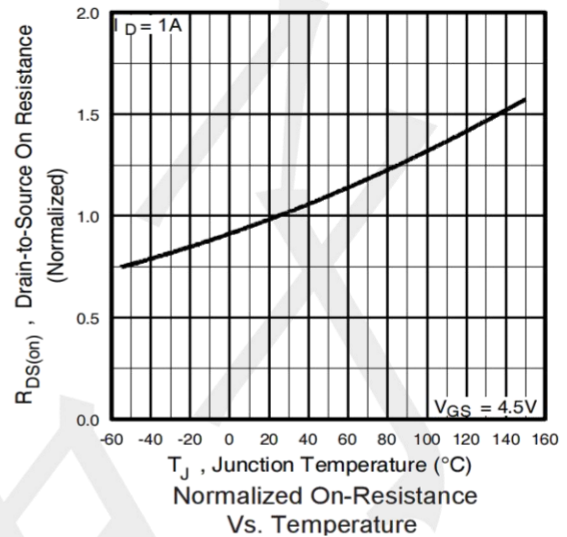
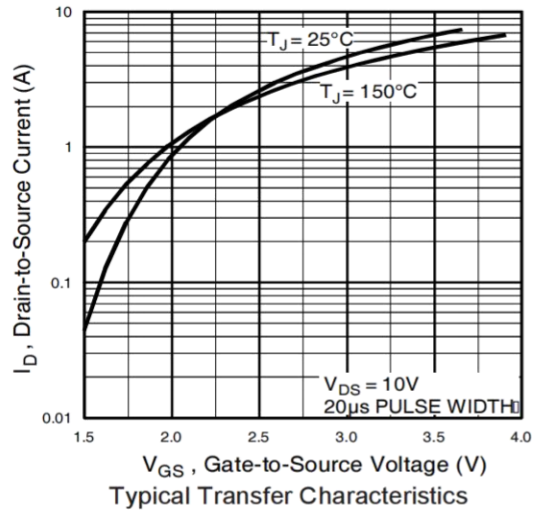
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                               | CONDITIONS                                                                                        | SYMBOL              | MIN | TYP  | MAX  | UNIT |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------|-----|------|------|------|
| Static                                                  |                                                                                                   |                     |     |      |      |      |
| Drain-Source Breakdown Voltage                          | V <sub>GS</sub> =0V, I <sub>D</sub> = 250μA                                                       | BV <sub>DSS</sub>   | 20  | --   | --   | V    |
| Gate-Source Threshold Voltage                           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = 250μA                                         | V <sub>GS(th)</sub> | 0.5 | 0.75 | 1.1  | 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> = 20V, V <sub>GS</sub> =0V                                                        | I <sub>DSS</sub>    | --  | --   | 1.0  | μA   |
| Drain-Source On-State Resistance<br>(Note 1)            | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 0.55A                                                    | R <sub>DS(on)</sub> | --  | 180  | 250  | mΩ   |
|                                                         | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 0.45A                                                    |                     | --  | 230  | 300  |      |
| Forward Transconductance (Note 2)                       | V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.5A                                                      | g <sub>fs</sub>     | --  | 1.7  | --   | S    |
| Dynamic (Note 2)                                        |                                                                                                   |                     |     |      |      |      |
| Input Capacitance                                       | V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V,<br>F = 1.0MHz                                        | C <sub>iss</sub>    | --  | 120  | --   | pF   |
| Output Capacitance                                      |                                                                                                   | C <sub>oss</sub>    | --  | 55   | --   |      |
| Reverse Transfer Capacitance                            |                                                                                                   | C <sub>rss</sub>    | --  | 26   | --   |      |
| Switching                                               |                                                                                                   |                     |     |      |      |      |
| Turn-On Delay Time (Note 3)                             | V <sub>DS</sub> = 10V,<br>V <sub>GS</sub> =4.5V,<br>I <sub>D</sub> = 1.0A<br>R <sub>G</sub> = 6Ω, | t <sub>d(on)</sub>  | --  | 2.6  | --   | nS   |
| Rise Time (Note 3)                                      |                                                                                                   | t <sub>r</sub>      | --  | 9.4  | --   |      |
| Turn-Off Delay Time (Note 3)                            |                                                                                                   | t <sub>d(off)</sub> | --  | 9.8  | --   |      |
| Fall Time (Note 3)                                      |                                                                                                   | t <sub>f</sub>      | --  | 4.8  | --   |      |
| Total Gate Charge                                       | V <sub>DS</sub> = 10V,<br>I <sub>D</sub> = 1.0A,<br>V <sub>GS</sub> = 4.5V                        | Q <sub>g</sub>      | --  | 2.8  | --   | nC   |
| Gate Source Charge                                      |                                                                                                   | Q <sub>gs</sub>     | --  | 0.5  | --   |      |
| Gate Drain Charge                                       |                                                                                                   | Q <sub>gd</sub>     | --  | 1.2  | --   |      |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                                                                   |                     |     |      |      |      |
| Forward Voltage                                         | V <sub>GS</sub> = 0V, I <sub>F</sub> = 0.5A                                                       | V <sub>SD</sub>     | --  | 0.7  | 1.2  | V    |
| Continuous Source Current                               | Integral reverse diode<br>in the MOSFET                                                           | I <sub>S</sub>      | --  | --   | 0.8  | A    |
| Pulsed Current (Note 1)                                 |                                                                                                   | I <sub>SM</sub>     | --  | --   | 1.8  | A    |

Notes:

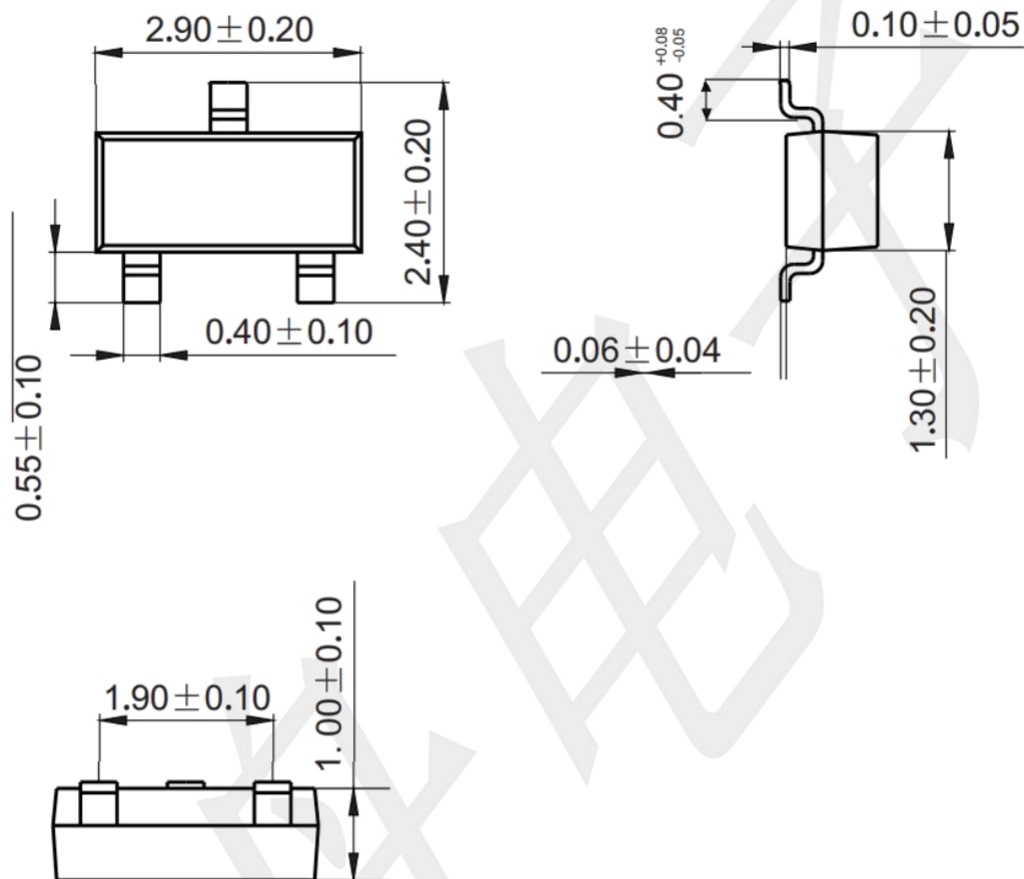
1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

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



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

SOT-23



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

