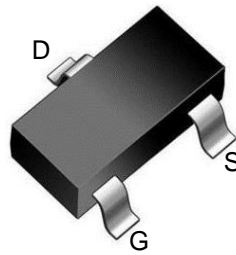
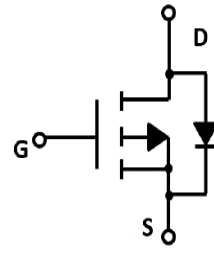


### ■ Features

- $V_{DS}(V) = 250V$
- $I_D = 400\text{ mA}$
- $R_{DS(ON)} < 3.4\ \Omega$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 4.5\ \Omega$  ( $V_{GS} = 4.5V$ )



SOT-23 top view



Schematic diagram

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

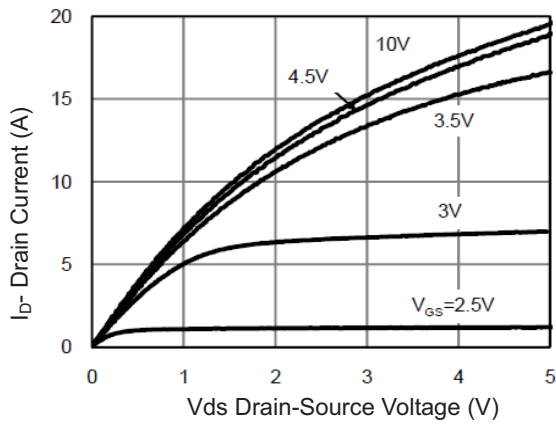
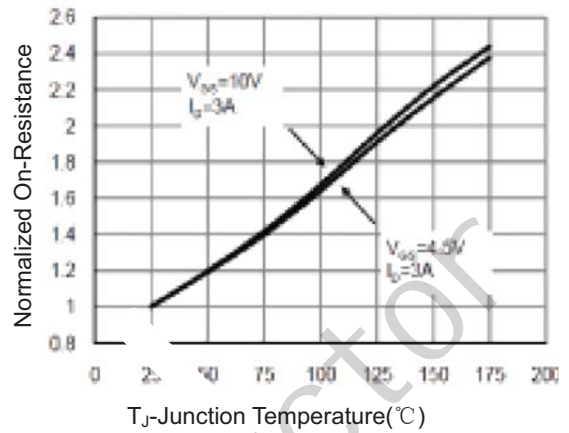
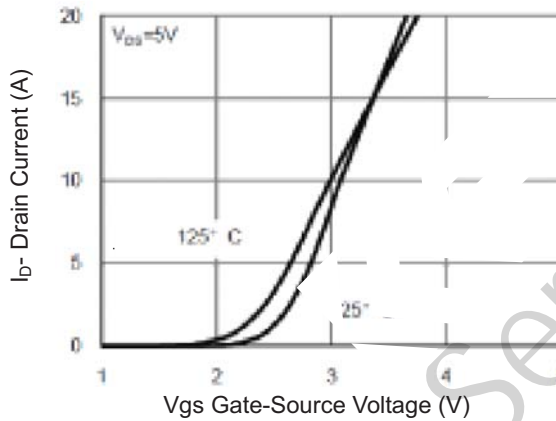
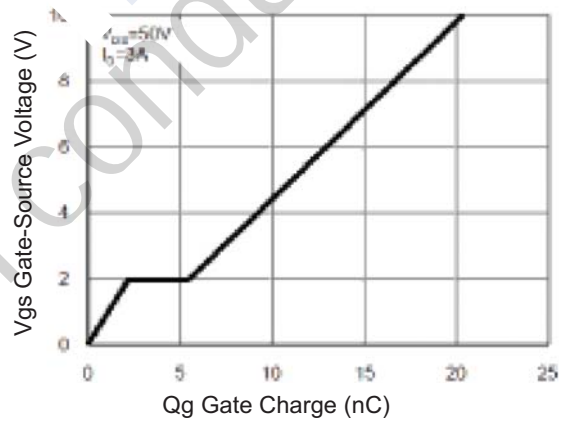
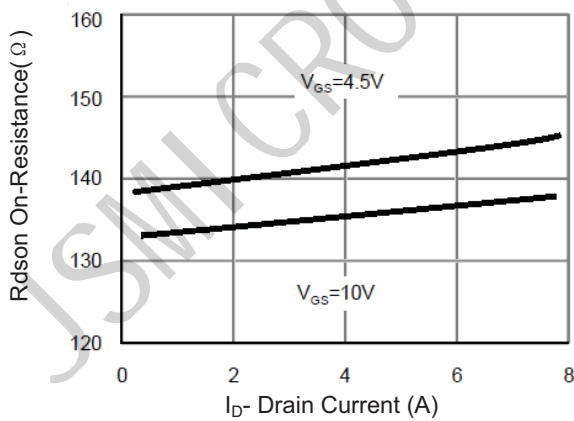
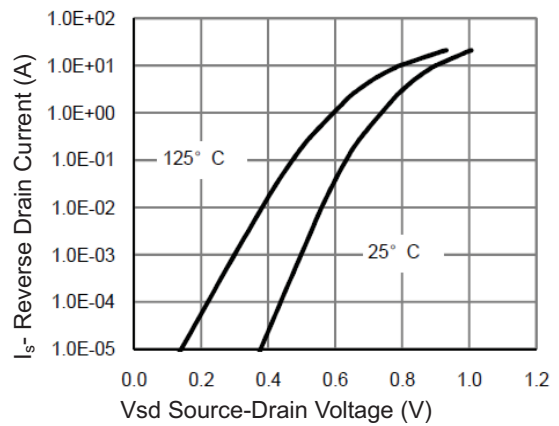
| Parameter  | Symbol     | Rating     | Unit                      |
|--|------------|------------|---------------------------|
| Drain-Source Voltage                             | $V_{DS}$   | 250        | V                         |
| Gate-Source Voltage                              | $V_{GS}$   | $\pm 20$   |                           |
| Continuous Drain Current                         | $I_D$      | 0.1        | A                         |
| Pulsed Drain Current (Note 1)                    | $I_{DM}$   | 1.0        |                           |
| Power Dissipation                                | $P_D$      | 1.5        | W                         |
| Thermal Resistance Junction- to-Ambient (Note 2) | $R_{thJA}$ | 100        | $^\circ\text{C}/\text{W}$ |
| Junction Temperature                             | $T_J$      | 150        | $^\circ\text{C}$          |
| Storage Temperature Range                        | $T_{stg}$  | -55 to 150 |                           |

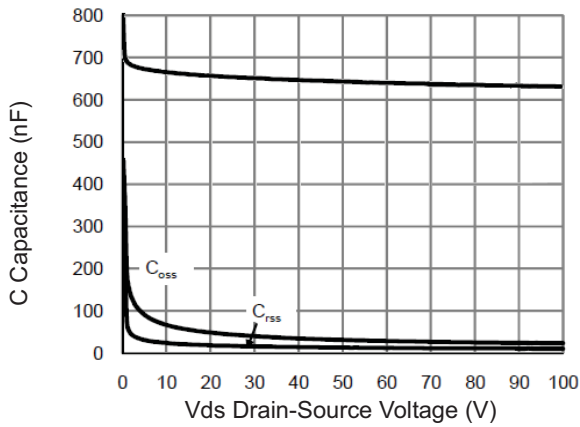
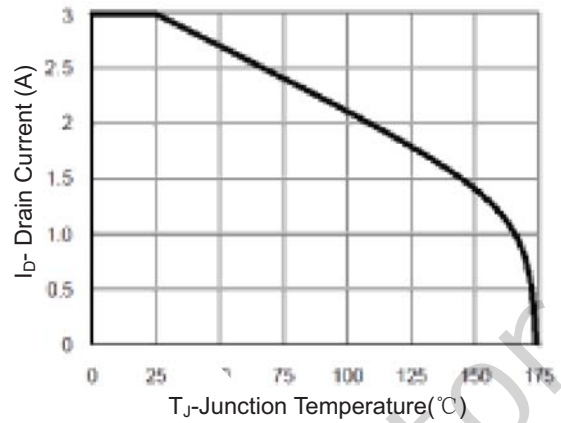
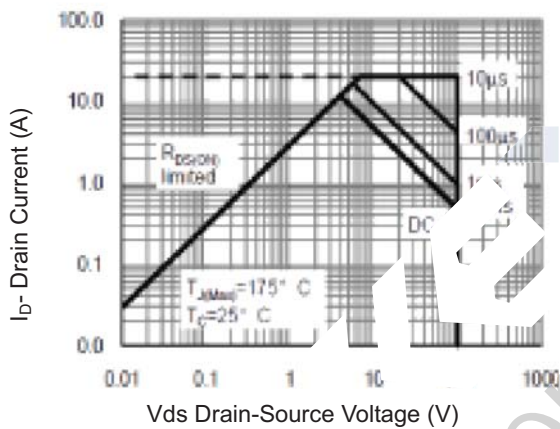
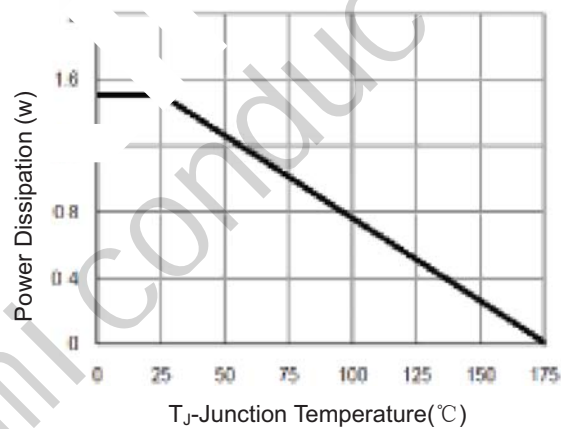
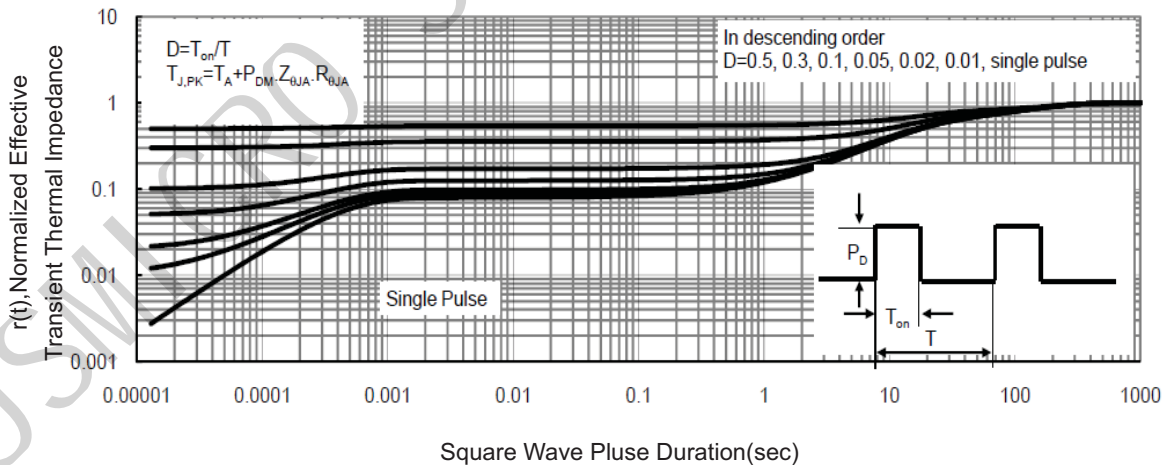
### ■ Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                  | Symbol       | Test Conditions  | Min | Typ | Max       | Unit          |
|--|--------------|--|-----|-----|-----------|---------------|
| Drain-Source Breakdown Voltage             | $V_{DSS}$    | $I_D=250\mu\text{A}, V_{GS}=0V$                              | 100 |     |           | V             |
| Zero Gate Voltage Drain Current            | $I_{DSS}$    | $V_{DS}=100V, V_{GS}=0V$                                     |     |     | 1         | $\mu\text{A}$ |
| Gate-Body Leakage Current                  | $I_{GSS}$    | $V_{DS}=0V, V_{GS}=\pm 20V$                                  |     |     | $\pm 100$ | nA            |
| Gate Threshold Voltage (Note 3)            | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$                          | 1   |     | 2         | V             |
| Static Drain-Source On-Resistance (Note 3) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=3A$   |     |     | 3.4       | $\Omega$      |
|  |              | $V_{GS}=4.5V, I_D=3A$  |     |     | 4.5       |               |
| Forward Transconductance (Note 3)          | $g_{FS}$     | $V_{DS}=5V, I_D=3A$  |     | 5   |           | S             |
| Input Capacitance                          | $C_{iss}$    | $V_{GS}=0V, V_{DS}=50V, f=1\text{MHz}$ (Note 4)              |     | 650 |           | pF            |
| Output Capacitance                         | $C_{oss}$    |  |     | 24  |           |               |
| Reverse Transfer Capacitance               | $C_{rss}$    |  |     | 20  |           |               |
| Total Gate Charge                          | $Q_g$        | $V_{GS}=10V, V_{DS}=50V, I_D=3A$ (Note 4)                    |     | 20  |           | nC            |
| Gate Source Charge                         | $Q_{gs}$     |  |     | 2.1 |           |               |
| Gate Drain Charge                          | $Q_{gd}$     |  |     | 3.3 |           |               |
| Turn-On DelayTime                          | $t_{d(on)}$  | $V_{GS}=10V, V_{DD}=50V, R_L=19\Omega, R_G=3\Omega$ (Note 4) |     | 6   |           | ns            |
| Turn-On Rise Time                          | $t_r$        |  |     | 4   |           |               |
| Turn-Off DelayTime                         | $t_{d(off)}$ |  |     | 20  |           |               |
|  | $f$          |  |     | 4   |           |               |
| Body-Diode Forward Current (Note 2)        | $I_S$        |  |     |     | 3         | A             |
| Diode Forward Voltage (Note 3)             | $V_{SD}$     | $I_S=3A, V_{GS}=0V$  |     |     | 1.2       | V             |

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production.

**■ Typical Characteristics and Thermal Characteristics (Curves)**

**Figure 1 Output Characteristics**

**Figure 4 Rds(on)-Junction Temperature**

**Figure 2 Transfer Characteristics**

**Figure 5 Gate Charge**

**Figure 3 Rds(on)-Drain Current**

**Figure 6 Source-Drain Diode Forward**


**Figure 7 Capacitance vs Vds**

**Figure 9  $BV_{DSS}$  vs Junction Temperature**

**Figure 8 Safe Operation Area**

**Figure 10 Power De-rating**

**Figure 11 Normalized Maximum Transient Thermal Impedance**

**Package Outline**

SOT-23

Dimensions in mm

