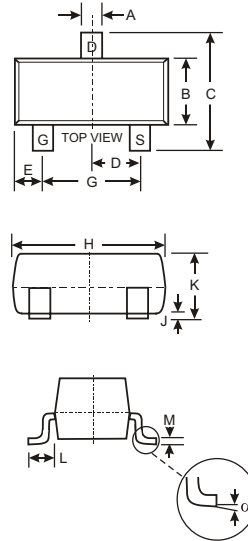


### Features

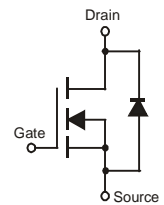
- Low On-Resistance.
- Low Gate Threshold Voltage.
- Low Input Capacitance.
- Fast Switching Speed.
- Low Input/Output Leakage.
- Marking Code:7002



| SOT-23               |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Max   |
| A                    | 0.37  | 0.51  |
| B                    | 1.20  | 1.40  |
| C                    | 2.30  | 2.50  |
| D                    | 0.89  | 1.03  |
| E                    | 0.45  | 0.60  |
| G                    | 1.78  | 2.05  |
| H                    | 2.80  | 3.00  |
| J                    | 0.013 | 0.10  |
| K                    | 0.903 | 1.10  |
| L                    | 0.45  | 0.61  |
| M                    | 0.085 | 0.180 |
| $\alpha$             | 0°    | 8°    |
| All Dimensions in mm |       |       |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Parameter  | Symbol                            | Limit                               | Unit |
|--|-----------------------------------|-------------------------------------|------|
| Drain-source Voltage   | V <sub>DS</sub>                   | 60                                  | V    |
| Gate-source Voltage  | V <sub>GS</sub>                   | ±20                                 | V    |
| Drain Current  | I <sub>D</sub>                    | T <sub>A</sub> =25°C @ Steady State | 340  |
|  |                                   | T <sub>A</sub> =70°C @ Steady State | 272  |
| Pulsed Drain Current <sup>A</sup>                                  | I <sub>DM</sub>                   | 1.5                                 | A    |
| Total Power Dissipation @ T <sub>A</sub> =25°C                     | P <sub>D</sub>                    | 350                                 | mW   |
| Thermal Resistance Junction-to-Ambient @ Steady State <sup>B</sup> | R <sub>θJA</sub>                  | 357                                 | °C/W |
| Junction and Storage Temperature Range                             | T <sub>J</sub> , T <sub>STG</sub> | -55~+150                            | °C   |



Equivalent Circuit

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

## N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

### Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Parameter                             | Symbol       | Conditions   | Min | Typ | Max       | Units    |
|---------------------------------------|--------------|--|-----|-----|-----------|----------|
| <b>Static Parameter</b>               |              |  |     |     |           |          |
| Drain-Source Breakdown Voltage        | $BV_{DSS}$   | $V_{GS} = 0V, I_D = 250\mu A$                                | 60  |     |           | V        |
| Zero Gate Voltage Drain Current       | $I_{DSS}$    | $V_{DS} = 60V, V_{GS} = 0V$                                  |     |     | 1         | $\mu A$  |
| Gate-Body Leakage Current             | $I_{GSS1}$   | $V_{GS} = \pm 20V, V_{DS} = 0V$                              |     |     | $\pm 100$ | nA       |
|                                       | $I_{GSS2}$   | $V_{GS} = \pm 10V, V_{DS} = 0V$                              |     |     | $\pm 50$  | nA       |
| Gate Threshold Voltage                | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$                            | 0.9 | 1.5 | 2.7       | V        |
| Static Drain-Source On-Resistance     | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 300mA$                                  |     | 1.2 | 3.5       | $\Omega$ |
|                                       |              | $V_{GS} = 4.5V, I_D = 200mA$                                 |     | 1.3 | 4.5       |          |
| Diode Forward Voltage                 | $V_{SD}$     | $I_S = 300mA, V_{GS} = 0V$                                   |     |     | 1.2       | V        |
| Maximum Body-Diode Continuous Current | $I_S$        |  |     |     | 340       | mA       |
| <b>Dynamic Parameters</b>             |              |  |     |     |           |          |
| Input Capacitance                     | $C_{iss}$    | $V_{DS} = 60V, V_{GS} = 0V, f = 1MHz$                        |     | 16  |           |          |
| Output Capacitance                    | $C_{oss}$    |  |     | 10  |           | $\mu F$  |
| Reverse Transfer Capacitance          | $C_{rss}$    |  |     | 5.5 |           |          |
| <b>Switching Parameters</b>           |              |  |     |     |           |          |
| Total Gate Charge                     | $Q_g$        | $V_{GS} = 10V, V_{DS} = 60V, I_D = 0.3A$                     |     | 1.7 | 2.4       | nC       |
| Turn-on Delay Time                    | $t_{D(on)}$  | $V_{GS} = 10V, V_{DD} = 30V, I_D = 300mA, R_{GEN} = 6\Omega$ |     | 5   |           | ns       |
| Turn-off Delay Time                   | $t_{D(off)}$ |  |     | 17  |           |          |
| Reverse recovery Time                 | $t_{rr}$     | $V_{GS} = 0V, I_S = 300mA, V_R = 25V, di_S/dt = -100A/\mu s$ |     | 30  |           | ns       |

### TYPICAL TRANSIENT CHARACTERISTICS

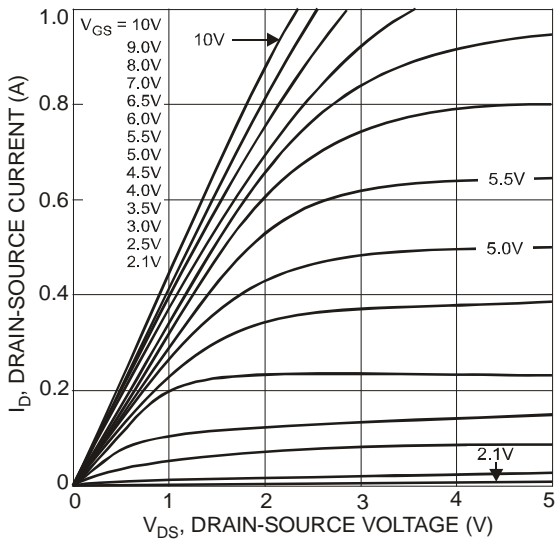


Fig. 1 On-Region Characteristics

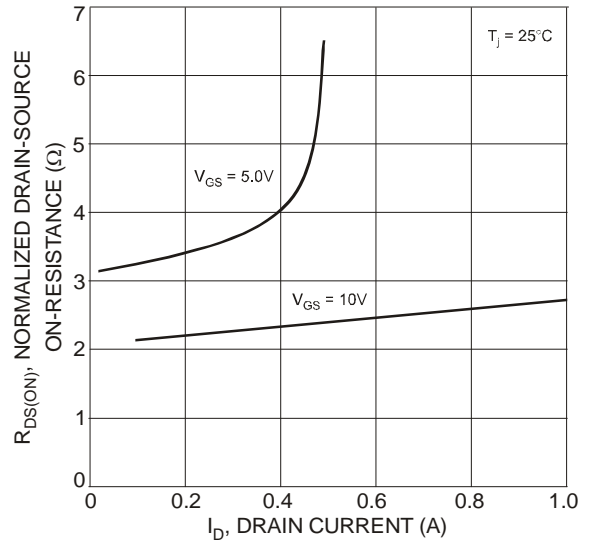


Fig. 2 On-Resistance vs. Drain Current

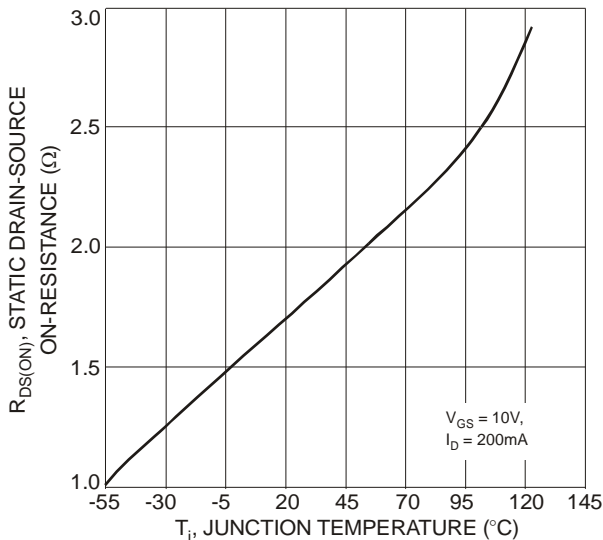


Fig. 3 On-Resistance vs. Junction Temperature

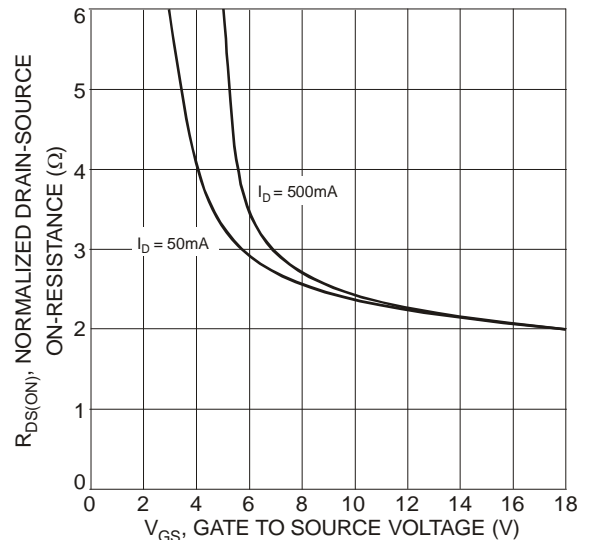


Fig. 4 On-Resistance vs. Gate-Source Voltage

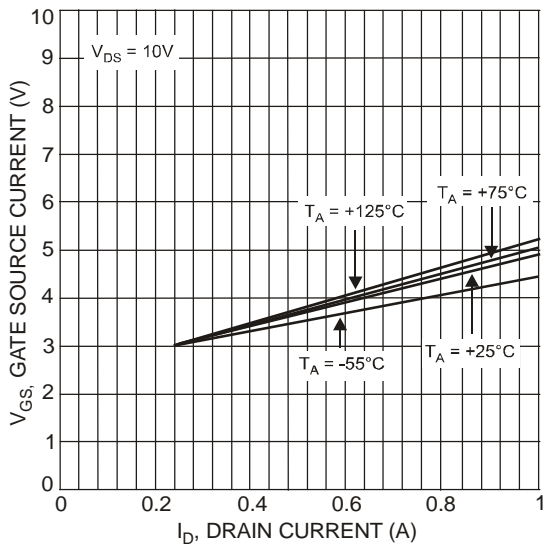


Fig. 5 Typical Transfer Characteristics

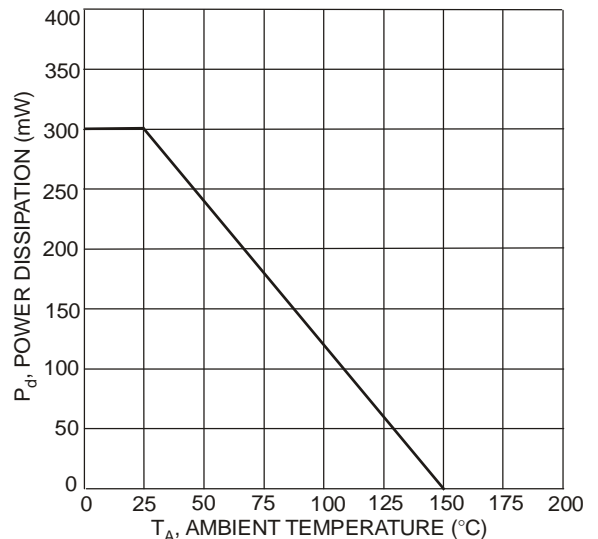


Fig. 6 Max Power Dissipation vs. Ambient Temperature

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