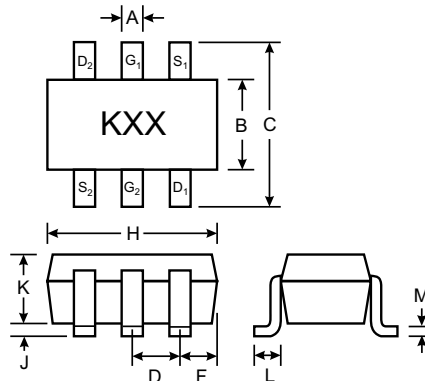


### Features

- Dual N-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package

### Mechanical Data

- Case: SOT-363, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: K72
- Weight: 0.006 grams (approx.)



| SOT-363              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 0.10         | 0.30 |
| B                    | 1.15         | 1.35 |
| C                    | 2.00         | 2.20 |
| D                    | 0.65 Nominal |      |
| F                    | 0.30         | 0.40 |
| H                    | 1.80         | 2.20 |
| J                    | —            | 0.10 |
| K                    | 0.90         | 1.00 |
| L                    | 0.25         | 0.40 |
| M                    | 0.10         | 0.25 |
| All Dimensions in mm |              |      |

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic   | Symbol                            | 2N7002DW           | Units |
|--|-----------------------------------|--------------------|-------|
| Drain-Source Voltage   | V <sub>DS</sub>                   | 60                 | V     |
| Drain-Gate Voltage R <sub>GS</sub> ≤ 1.0MΩ                               | V <sub>DGR</sub>                  | 60                 | V     |
| Gate-Source Voltage (Note 1)   | V <sub>GSS</sub>                  | Continuous         | ±20   |
|  |                                   | Pulsed             | ±40   |
| Drain Current (Note 1)   | I <sub>D</sub>                    | Continuous         | 115   |
|  |                                   | Continuous @ 100°C | 73    |
|  |                                   | Pulsed             | 800   |
| Total Power Dissipation<br>Derating above T <sub>A</sub> = 25°C (Note 1) | P <sub>d</sub>                    | 200                | mW    |
|  |                                   | 1.60               | mW/°C |
| Thermal Resistance, Junction to Ambient                                  | R <sub>θJA</sub>                  | 625                | K/W   |
| Operating and Storage Temperature Range                                  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150        | °C    |

- Note: 1. Valid provided that terminals are kept at specified ambient temperature.  
2. Pulse width ≤ 300μs, duty cycle ≤ 2%.

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

| Characteristic                      | Symbol       | Min | Typ        | Max         | Unit     | Test Condition   |
|-------------------------------------|--------------|-----|------------|-------------|----------|--|
| <b>OFF CHARACTERISTICS (Note 2)</b> |              |     |            |             |          |  |
| Drain-Source Breakdown Voltage      | $BV_{DSS}$   | 60  | 70         | —           | V        | $V_{GS} = 0V, I_D = 10\mu A$   |
| Zero Gate Voltage Drain Current     | $I_{DSS}$    | —   | —          | 1.0<br>500  | $\mu A$  | $V_{DS} = 60V, V_{GS} = 0V$<br>@ $T_C = 25^\circ\text{C}$<br>@ $T_C = 125^\circ\text{C}$ |
| Gate-Body Leakage                   | $I_{GSS}$    | —   | —          | $\pm 10$    | nA       | $V_{GS} = \pm 20V, V_{DS} = 0V$  |
| <b>ON CHARACTERISTICS (Note 2)</b>  |              |     |            |             |          |  |
| Gate Threshold Voltage              | $V_{GS(th)}$ | 1.0 | —          | 2.0         | V        | $V_{DS} = V_{GS}, I_D = -250\mu A$   |
| Static Drain-Source On-Resistance   | $R_{DS(ON)}$ | —   | 3.2<br>4.4 | 7.5<br>13.5 | $\Omega$ | $V_{GS} = 5.0V, I_D = 0.05A$<br>$V_{GS} = 10V, I_D = 0.5A$                               |
| On-State Drain Current              | $I_{D(ON)}$  | 0.5 | 1.0        | —           | A        | $V_{GS} = 10V, V_{DS} = 7.5V$  |
| Forward Transconductance            | $g_{FS}$     | 80  | —          | —           | mS       | $V_{DS} = 10V, I_D = 0.2A$   |
| <b>DYNAMIC CHARACTERISTICS</b>      |              |     |            |             |          |  |
| Input Capacitance                   | $C_{iss}$    | —   | 22         | 50          | pF       | $V_{DS} = 25V, V_{GS} = 0V$<br>$f = 1.0\text{MHz}$                                       |
| Output Capacitance                  | $C_{oss}$    | —   | 11         | 25          | pF       |  |
| Reverse Transfer Capacitance        | $C_{rss}$    | —   | 2.0        | 5.0         | pF       |  |
| <b>SWITCHING CHARACTERISTICS</b>    |              |     |            |             |          |  |
| Turn-On Delay Time                  | $t_{D(ON)}$  | —   | 7.0        | 20          | ns       | $V_{DD} = 30V, I_D = 0.2A,$<br>$R_L = 150\Omega, V_{GEN} = 10V,$<br>$R_{GEN} = 25\Omega$ |
| Turn-Off Delay Time                 | $t_{D(OFF)}$ | —   | 11         | 20          | ns       |  |

- Note: 1. Valid provided that terminals are kept at specified ambient temperature.  
2. Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

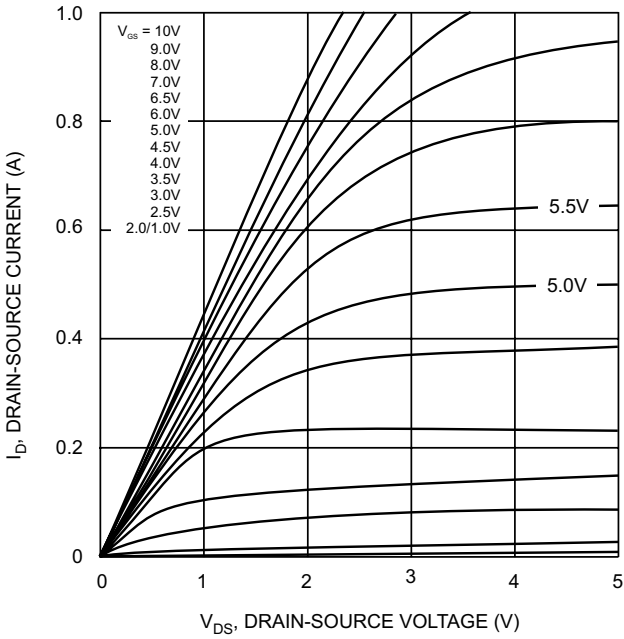


Fig. 1 On-Region Characteristics

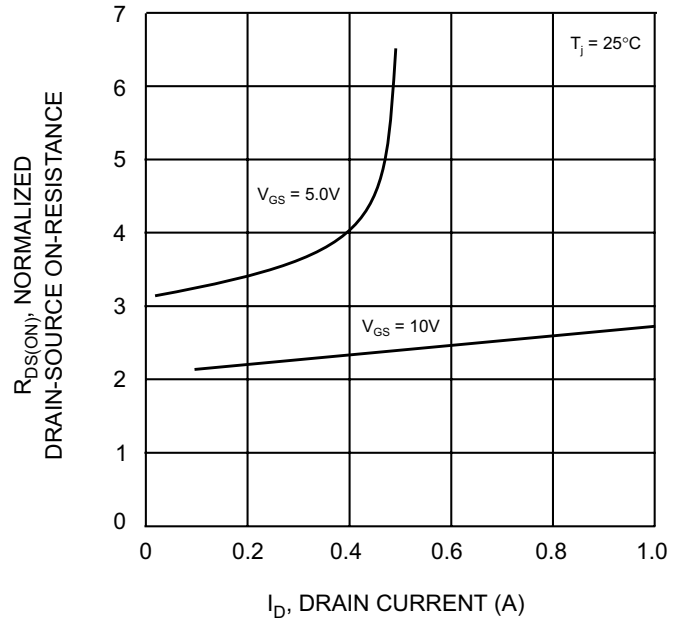


Fig. 2 On-Resistance vs Drain Current

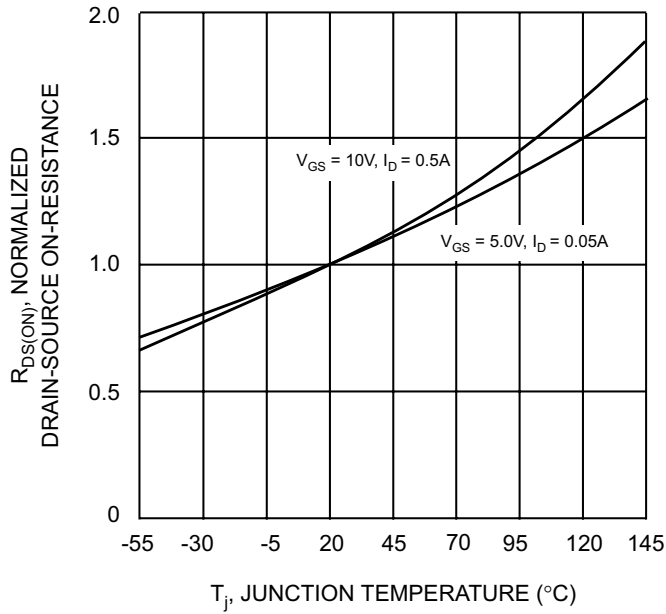


Fig. 3 On-Resistance vs Junction Temperature

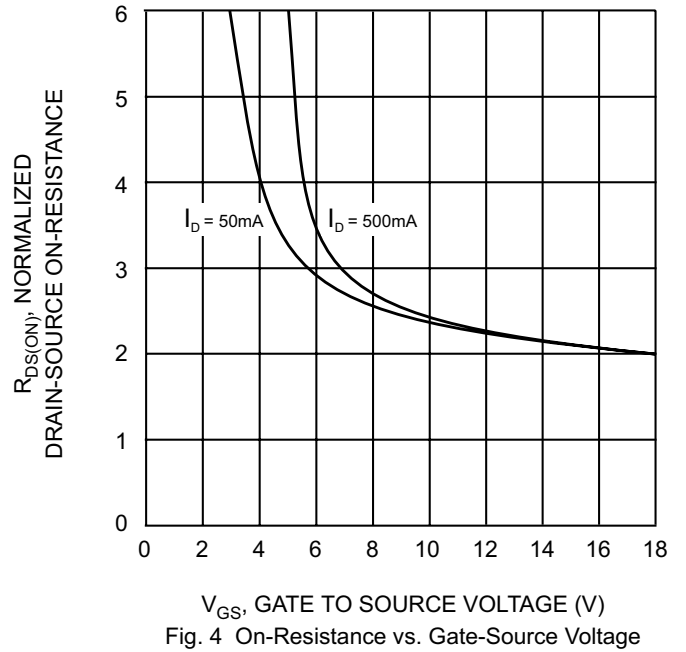


Fig. 4 On-Resistance vs. Gate-Source Voltage