



2N7002DW

60V N-Channel Enhancement Mode MOSFET

FEATURES

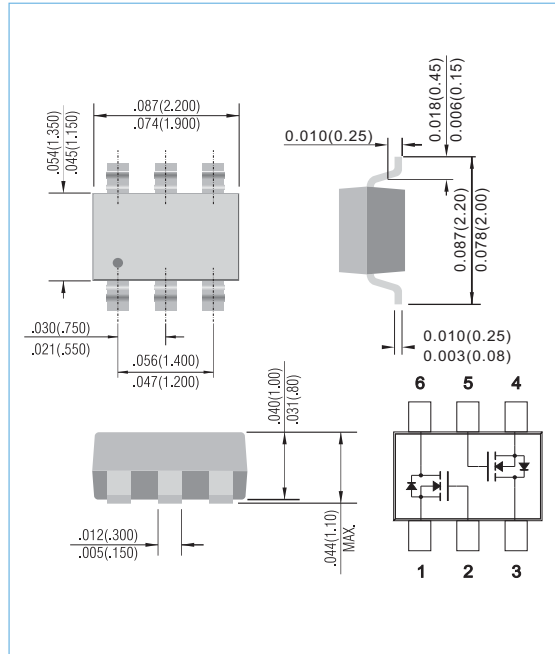
- $R_{DS(ON)}$, $V_{GS}@10V, I_{DS}@500mA=5\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V, I_{DS}@75mA=7.5\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for Battery Operated Systems, Solid-State Relays Drivers : Relays, Displays, Lamps, Solenoids, Memories, etc.
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

- Case: SOT-363 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Apporx. Weight: 0.0002 ounces , 0.006grams
- Marking : 702

SOT-363

Unit: inch (mm)



Datasheet Directory

Maximum RATINGS and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | Symbol | Limit | Units |
|---|-----------------|-------------------------------|--------------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | 115 | mA |
| Pulsed Drain Current ¹⁾ | I_{DM} | 800 | mA |
| Maximum Power Dissipation | P_D | $T_A=25^\circ\text{C}$ 200 | mW |
| | | $T_A=75^\circ\text{C}$ 120 | |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | $^\circ\text{C}$ |
| Junction-to Ambient Thermal Resistance(PCB mounted) ²⁾ | $R_{\theta JA}$ | 625 | $^\circ\text{C/W}$ |

- Note: 1. Maximum DC current limited by the package
2. Surface mounted on FR4 board, $t < 10$ sec

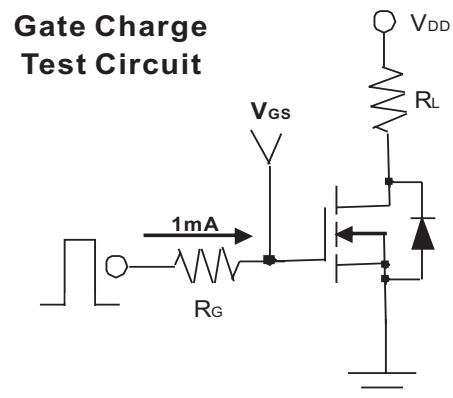
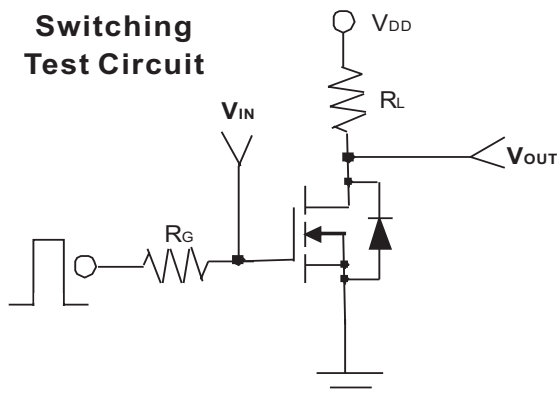
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ELECTRICAL CHARACTERISTICS

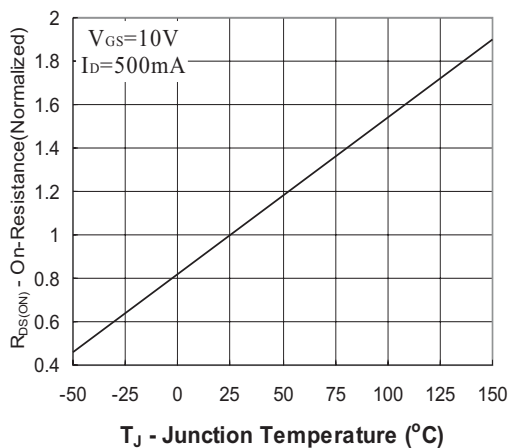
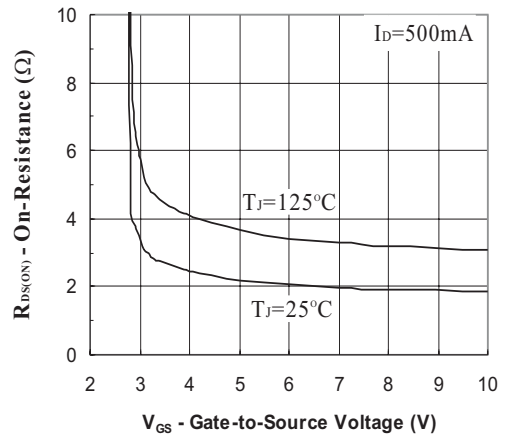
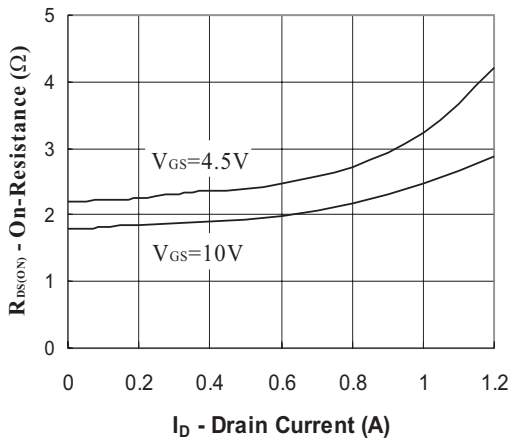
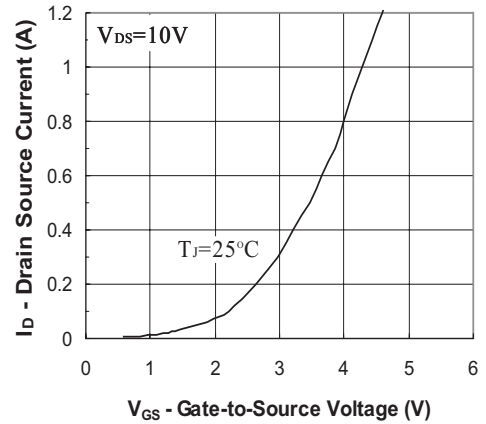
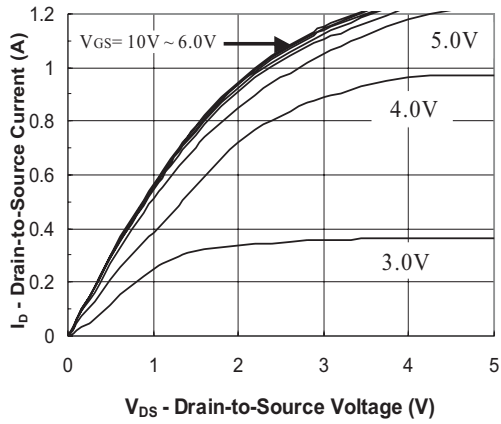
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Units |
|----------------------------------|--------------|--|------|------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=10\mu A$ | 60 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | - | 2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=75mA$ | - | - | 7.5 | Ω |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=500mA$ | - | - | 5 | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=60V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate Body Leakage | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 100 | nA |
| Forward Transconductance | g_{fs} | $V_{DS}=15V, I_D=250mA$ | 200 | - | - | mS |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=15V, I_D=500mA$ $V_{GS}=5V$ | - | 0.6 | 0.7 | nC |
| Gate-Source Charge | Q_{gs} | | - | 0.1 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 0.08 | - | |
| Turn-On Delay Time | t_{on} | $V_{DD}=10V, R_L=20\Omega$ $I_D=500mA, V_{GEN}=10V$ $R_G=10\Omega$ | - | 9 | 15 | ns |
| Turn-Off Delay Time | t_{off} | | - | 21 | 26 | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V$ $f=1.0MHz$ | - | - | 50 | pF |
| Output Capacitance | C_{oss} | | - | - | 25 | |
| Reverse Transfer Capacitance | C_{rss} | | - | - | 5 | |
| Source-Drain Diode | | | | | | |
| Max. Diode Forward Current | I_s | - | - | - | 250 | mA |
| Diode Forward Voltage | V_{SD} | $I_s=250mA, V_{GS}=0V$ | - | 0.93 | 1.2 | V |





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Typical Characteristics Curves ($T_J=25^\circ\text{C}$, unless otherwise noted)





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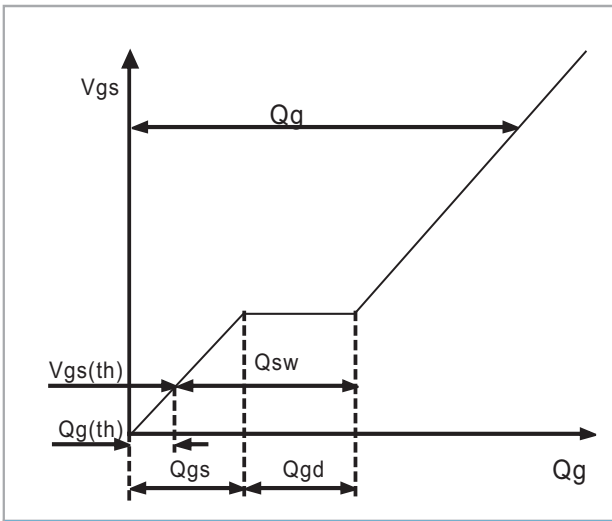


Fig.6 - Gate Charge Waveform

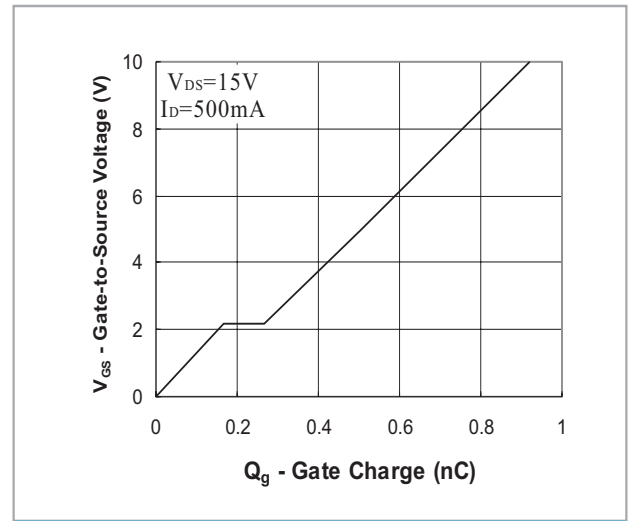


Fig.7 - Gate Charge

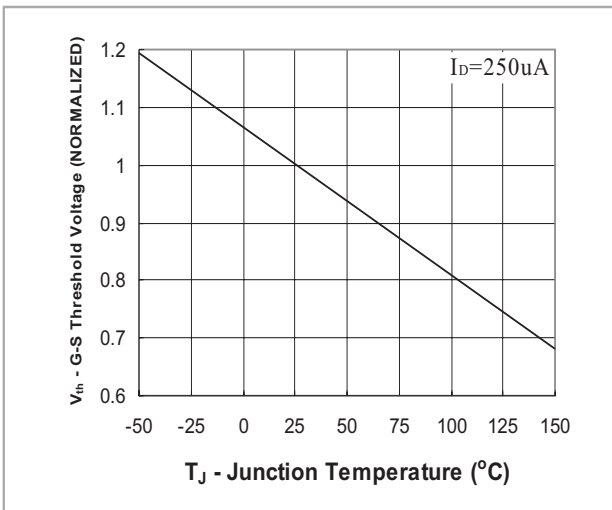


Fig.8 - Threshold Voltage vs Temperature

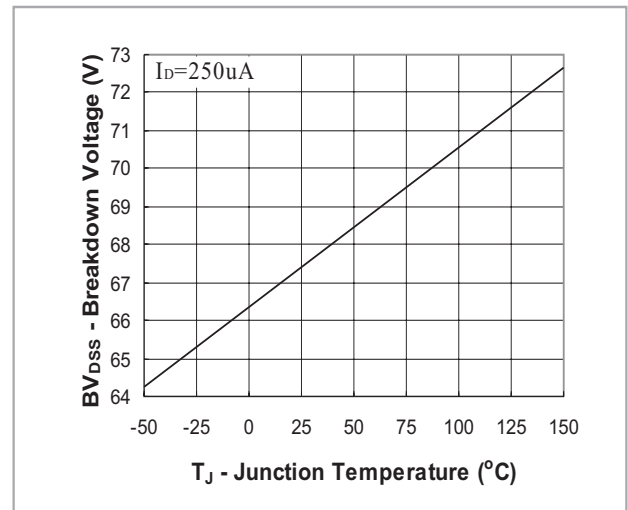


Fig.9 - Breakdown Voltage vs Junction Temperature

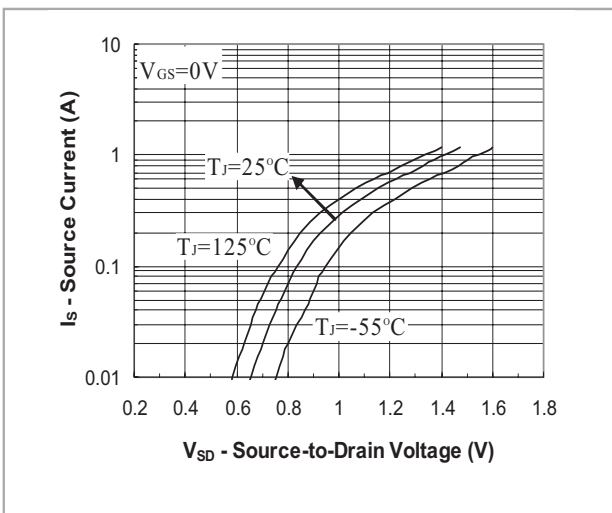
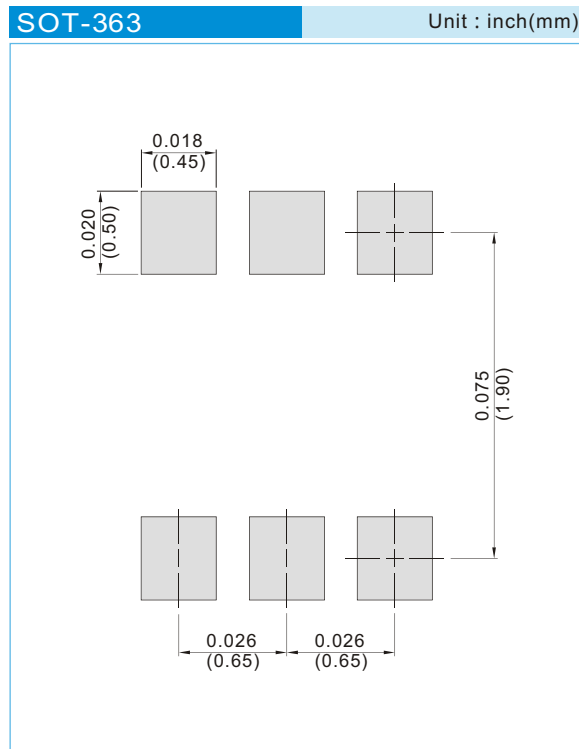


Fig.10 - Source-Drain Diode Forward Voltage



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MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
T/R - 10K per 13" plastic Reel
T/R - 3K per 7" plastic Reel

LEGAL STATEMENT

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