

Features

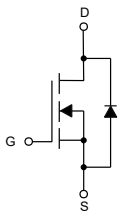
- High Density Cell Design for Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 417°C/W Junction to Ambient

| Parameter | Symbol | Rating | Unit |
|---|-----------|----------|------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 30 | V |
| Peak Gate-Source Voltage $T_p < 50\mu\text{s}$, Duty Cycle=0.25 | V_{GSM} | ± 40 | V |
| Drain Current-Continuous | I_D | 0.115 | A |
| Power Dissipation | P_D | 0.3 | W |

Internal Structure

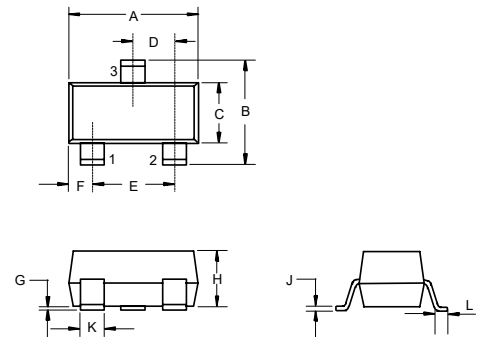


1. GATE
2. SOURCE
3. DRAIN

Marking: 7002A

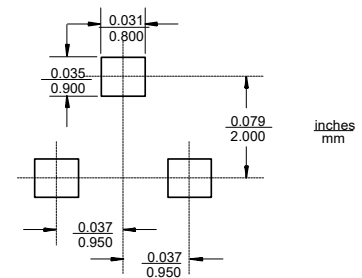
N-Channel MOSFET

SOT-23



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.110 | 0.120 | 2.80 | 3.04 | |
| B | 0.083 | 0.104 | 2.10 | 2.64 | |
| C | 0.047 | 0.055 | 1.20 | 1.40 | |
| D | 0.034 | 0.041 | 0.85 | 1.05 | |
| E | 0.067 | 0.083 | 1.70 | 2.10 | |
| F | 0.018 | 0.024 | 0.45 | 0.60 | |
| G | 0.0004 | 0.006 | 0.01 | 0.15 | |
| H | 0.035 | 0.043 | 0.90 | 1.10 | |
| J | 0.003 | 0.007 | 0.08 | 0.18 | |
| K | 0.012 | 0.020 | 0.30 | 0.51 | |
| L | 0.007 | 0.020 | 0.20 | 0.50 | |

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---------------|---|-----|------|---------|----------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 60 | | | V |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | 1.4 | 2.5 | V |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 30V, V_{DS}=0V$ | | | ± 1 | μA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=60V, V_{GS}=0V$ | | | 1 | μA |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}=7.0V, V_{GS}=10V$ | 500 | | | mA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=500mA$ | | | 3 | Ω |
| | | $V_{GS}=4.5V, I_D=200mA$ | | | 4 | |
| On-State Drain-Source Voltage | $V_{DS(on)}$ | $V_{GS}=10V, I_D=500mA$ | | | 3 | V |
| | | $V_{GS}=5V, I_D=50mA$ | | | 0.375 | |
| Dynami Characteristics | | | | | | |
| Input Capacitance ⁽¹⁾ | C_{iss} | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ | | | 50 | pF |
| Output Capacitance ⁽¹⁾ | C_{oss} | | | | 25 | |
| Reverse Transfer Capacitance ⁽¹⁾ | C_{rss} | | | | 5 | |
| Switching Characteristics | | | | | | |
| Turn-On Delay Time ⁽¹⁾ | $t_{d(on)}$ | $V_{DD}=25V, V_{GEN}=10V, R_L=50\Omega,$ $I_D=500mA, R_{GEN}=25\Omega$ | | | 20 | ns |
| Turn-Off Delay Time ⁽¹⁾ | $t_{d(off)}$ | | | | 40 | |
| Source-Drain Diode Characteristics | | | | | | |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=115mA$ | 0.6 | 0.82 | 1 | V |
| Source Current Continuous | I_S | | | | 115 | mA |

Note: 1. These parameters have no way to verify.

Curve Characteristics

Fig. 1 - Output Characteristics

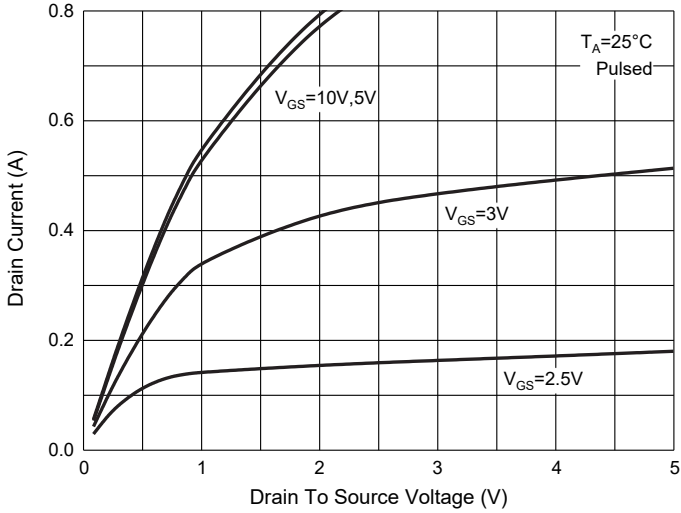


Fig. 2 - Transfer Characteristics

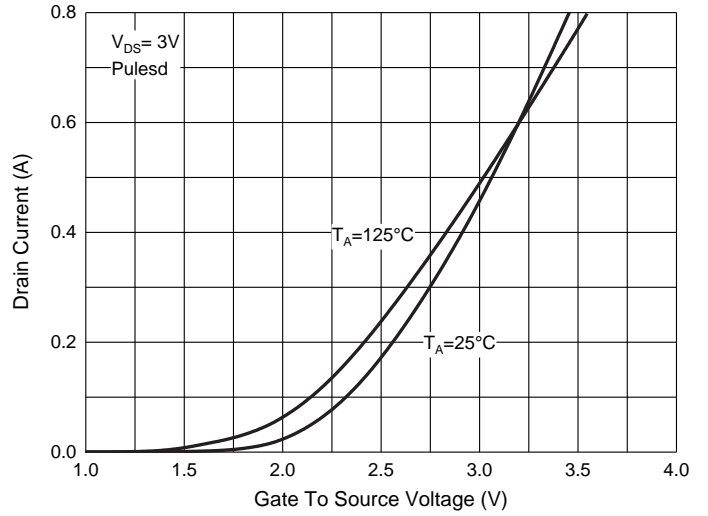


Fig. 3 - $R_{DS(ON)} - I_D$

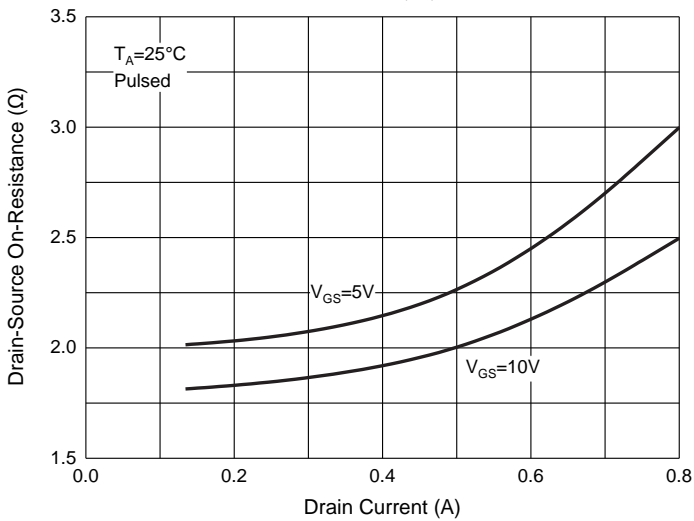


Fig. 4 - $R_{DS(ON)} - V_{GS}$

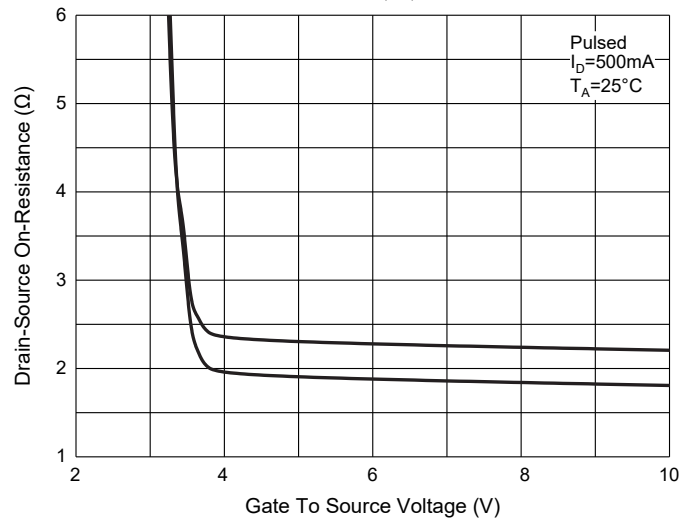


Fig. 5 - $I_S - V_{SD}$

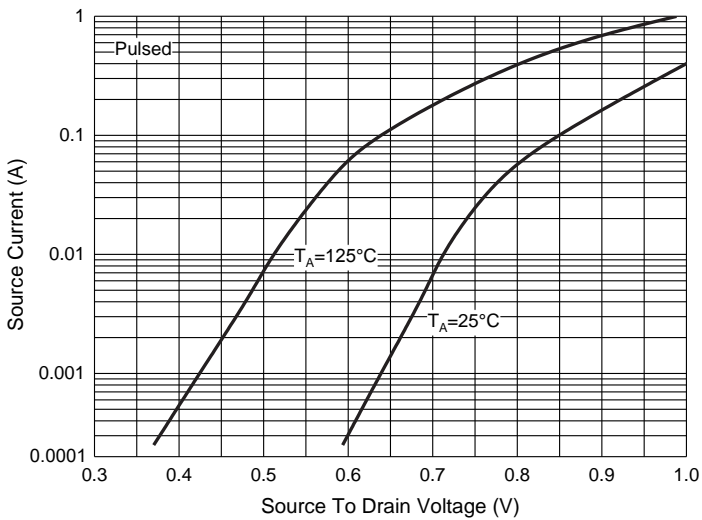
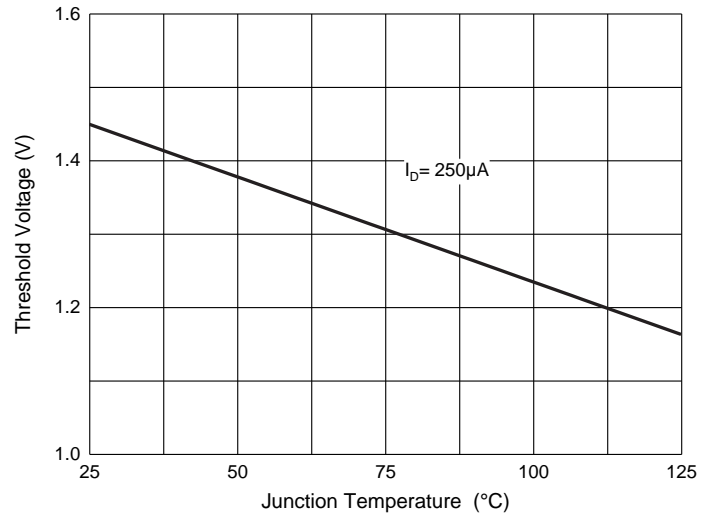


Fig. 6 - Threshold Voltage



Ordering Information

| Device | Packing |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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