

Features

- Advanced Trench Process Technology
- Low Threshold Voltage
- Fast Switching Speed
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

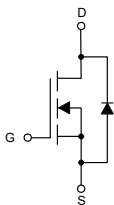
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 115°C/W Junction to Ambient^(Note2)

| Parameter | Symbol | Rating | Unit |
|--------------------------|----------|----------|------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ±20 | V |
| Drain Current-Continuous | I_D | TA=25°C | 0.34 |
| | | TA=100°C | 0.22 |
| Pulsed Drain Current | I_{DM} | 2 | A |
| Power Dissipation | P_D | 1.08 | W |

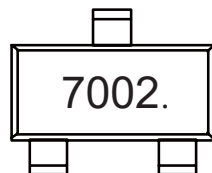
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

Internal Structure and Marking Code

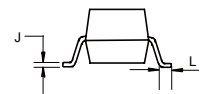
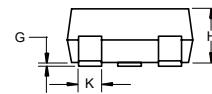
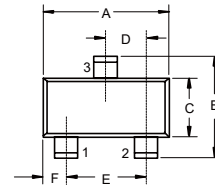


1. GATE
2. SOURCE
3. DRAIN



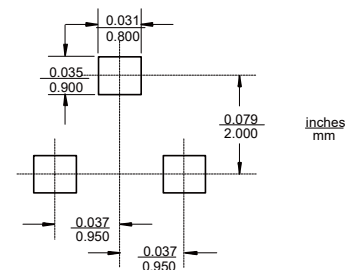
N-Channel MOSFET

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 | 1.5 | 2.5 | V |
| Gate-Body Leakage | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 10 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=60V, V_{GS}=0V$ | | | 80 | nA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=300mA$ | | 1.2 | 2.5 | Ω |
| | | $V_{GS}=4.5V, I_D=200mA$ | | 1.3 | 3.0 | |
| Forward Transconductance | g_{fs} | $V_{DS}=10V, I_D=200mA$ | 80 | | | ms |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=300mA$ | | | 1.2 | V |
| Diode Forward Current | I_S | | | | 340 | mA |
| Static Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ | | 35 | | pF |
| Output Capacitance | C_{oss} | | | 5 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 4 | | |
| Reverse Recovery Charge | Q_{rr} | $I_F=0.34A, di/dt=100A/us$ | | 8.5 | | nC |
| Reverse Recovery Time | t_{rr} | | | 8 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=30V, V_{GS}=10V, I_D=0.34A$ | | 1.7 | | nC |
| Gate-Source Charge | Q_{gs} | | | 0.5 | | |
| Gate-Drain Charge | Q_{gd} | | | 0.3 | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=30V, V_{GS}=10V, I_D=340mA, R_{GEN}=6\Omega$ | | 0.9 | | ns |
| Turn-on Rise Time | t_r | | | 15 | | |
| Turn-off Delay Time | $t_{d(off)}$ | | | 4.5 | | |
| Turn-off fall Time | t_f | | | 33 | | |

Curve Characteristics

Fig. 1 - Typical Output Characteristics

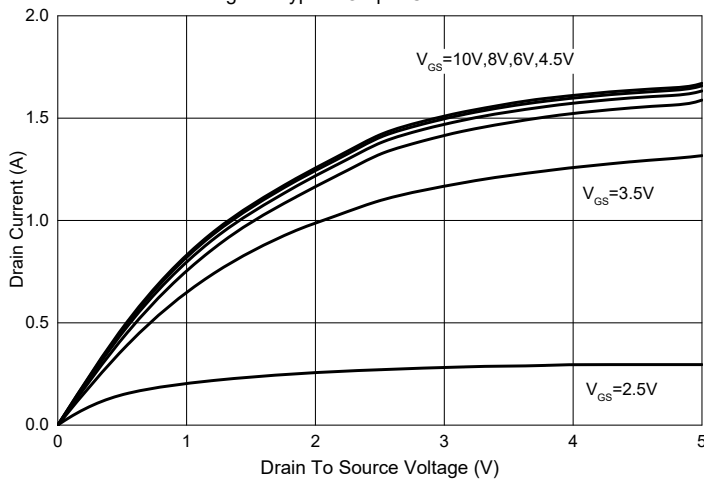


Fig. 2 - Transfer Characteristics

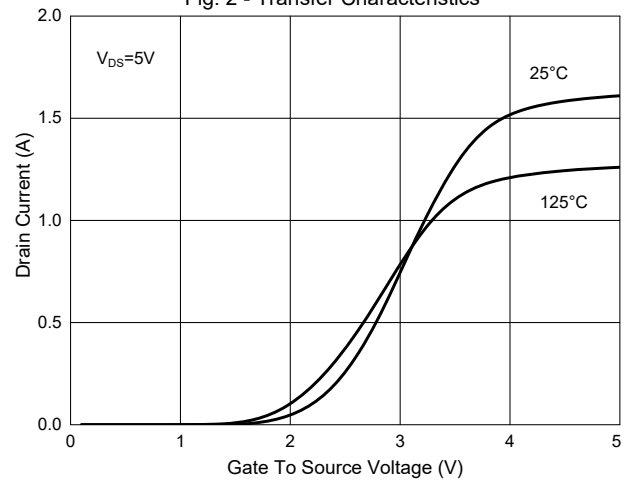


Fig. 3 - Normalized On Resistance Characteristics

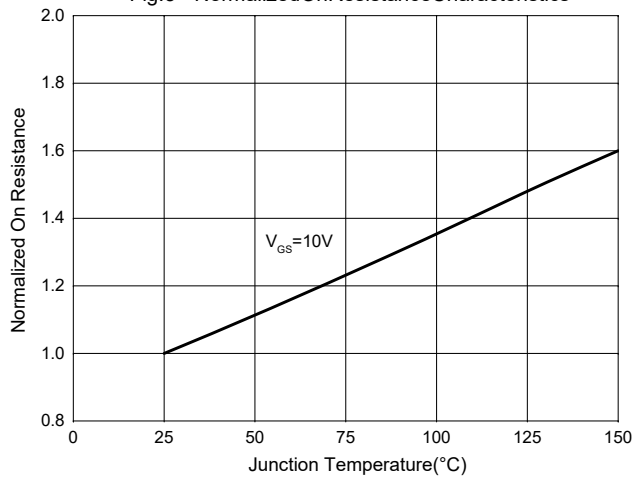


Fig. 4 - $R_{DS(ON)} - I_D$

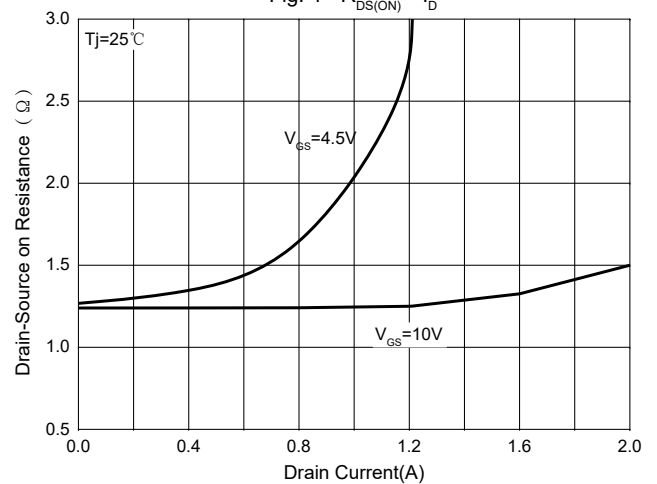


Fig. 5 - Gate Charge

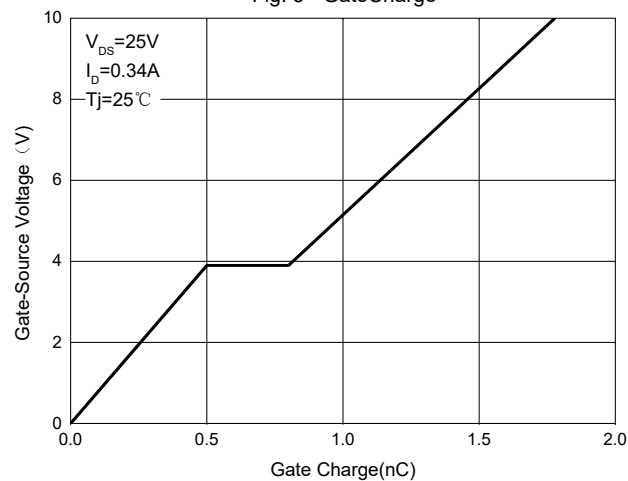
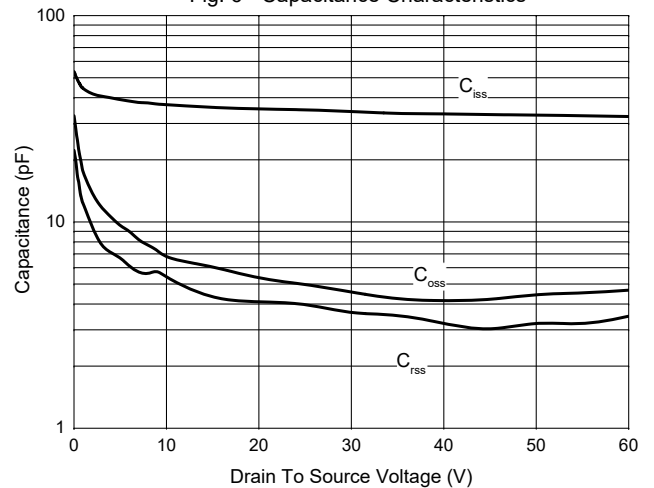


Fig. 6 - Capacitance Characteristics



Curve Characteristics

Fig. 7 - $I_S - V_{SD}$

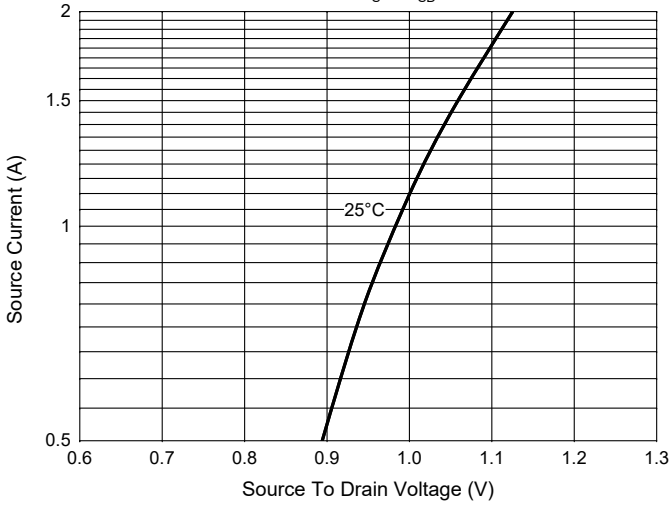


Fig. 8 - Safe Operation Area

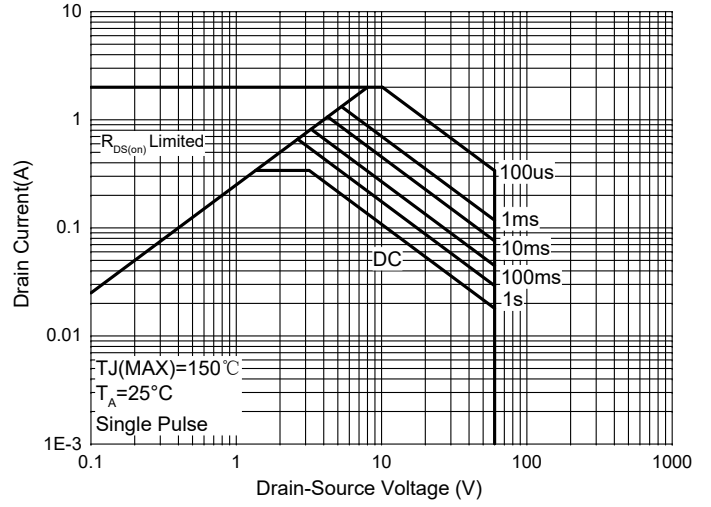
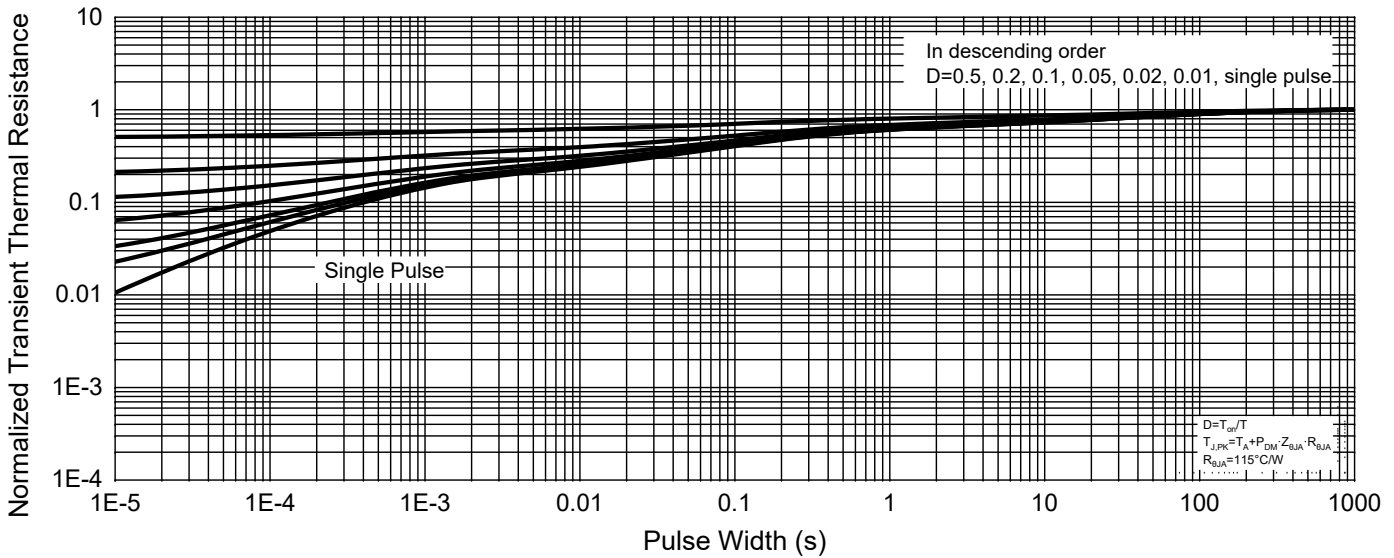


Fig. 9 - Normalized Transient Thermal Impedance



Ordering Information

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

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