

Features

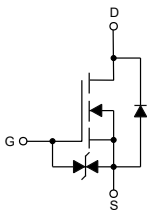
- Low $R_{DS(ON)}$
- Rugged and Reliable
- ESD Protected Gate
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 417°C/W Junction to Ambient^(Note 1)

| Parameter | Symbol | Rating | Unit |
|---|----------|--------|------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ±12 | V |
| Drain Current | I_D | 7.0 | A |
| Pulsed Drain Current ^(Note1) | I_{DM} | 30 | A |
| Total Power Dissipation | P_D | 0.3 | W |

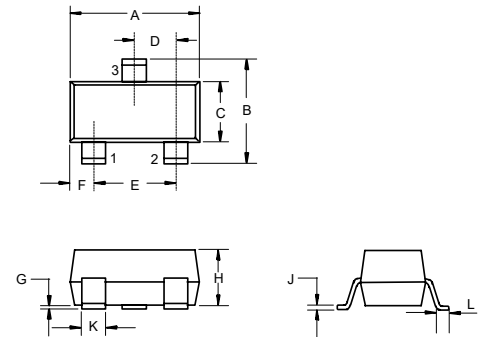
Internal Structure:



Marking Code: 8810

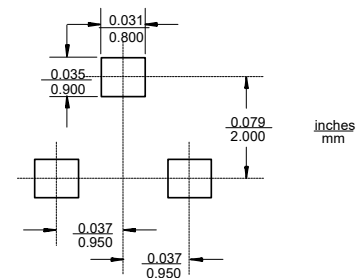
N-Channel MOSFET

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 @ 25°C (Unless Otherwise Specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---------------|--|-----|------|----------|------------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 20 | | | V |
| Gate-Threshold Voltage ^(Note 1) | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.4 | | 1.0 | V |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS} = \pm 4.5V, V_{DS} = 0V$ | | | ± 1 | μA |
| | | $V_{GS} = \pm 8V, V_{DS} = 0V$ | | | ± 10 | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 16V, V_{GS} = 0V$ | | | 1 | μA |
| Drain-Source On-Resistance ^(Note 1) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=7A$ | | | 20 | m Ω |
| | | $V_{GS}=4.5V, I_D=6.6A$ | | | 22 | |
| | | $V_{GS}=3.8V, I_D=6A$ | | | 24 | |
| | | $V_{GS}=2.5V, I_D=5.5A$ | | | 26 | |
| | | $V_{GS}=1.8V, I_D=5A$ | | | 39 | |
| Forward Transconductance ^(Note 1) | g_{fs} | $V_{DS}=5V, I_D=7A$ | 9 | | | S |
| Diode Forward Voltage ^(Note 1) | V_{SD} | $V_{GS}=0V, I_S=1A$ | | | 1 | V |
| Dynamic Characteristics^(Note 2) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=10V, V_{GS}=0V, f=1MHz$ | | 1150 | | μF |
| Output Capacitance | C_{oss} | | | 185 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 145 | | |
| Switching Characteristics^(Note 2) | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=10V, V_{GS}=5V, R_L=1.35\Omega, R_{GEN}=3\Omega$ | | 6 | | ns |
| Turn-On Rise Time | t_r | | | 13 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 52 | | |
| Turn-Off Fall Time | t_f | | | 16 | | |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=4.5V, I_D=7A$ | | 15 | | nC |
| Gate-Source Charge | Q_{gs} | | | 0.8 | | |
| Gate-Drain Charge | Q_{gd} | | | 3.2 | | |

Note:

1. Pulse Test: Pulse Width=300 μs , Duty Cycle $\leq 2\%$.
2. Guaranteed by Design, Not Subject to Production Testing

Curve Characteristics

Fig. 1 - Output Characteristics

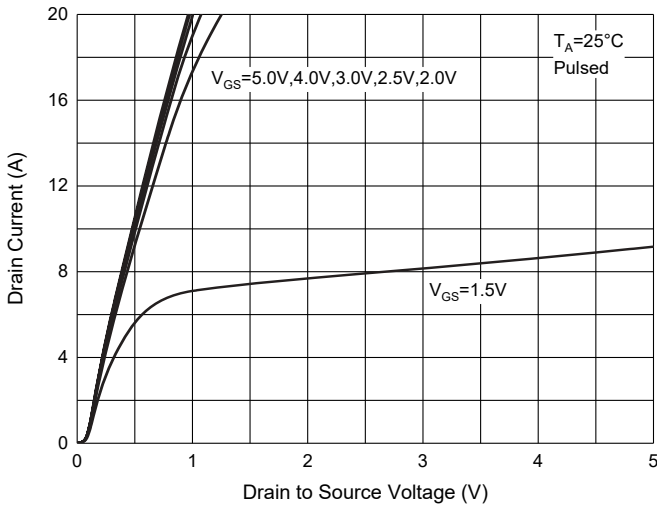


Fig. 2 - Transfer Characteristics

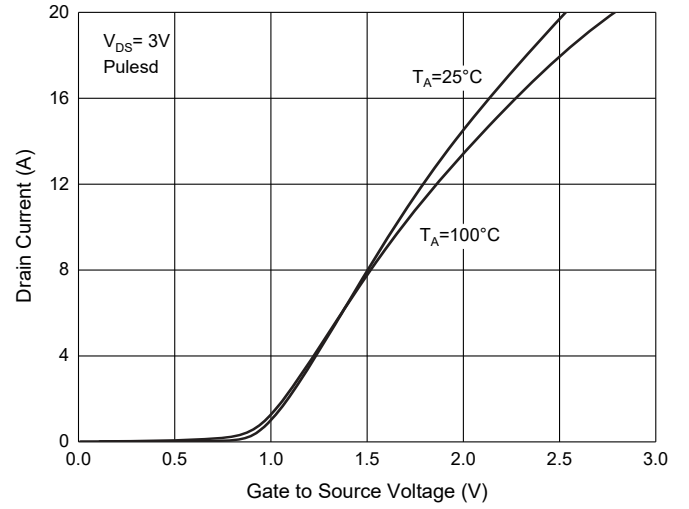


Fig. 3 - $R_{DS(ON)} - I_D$

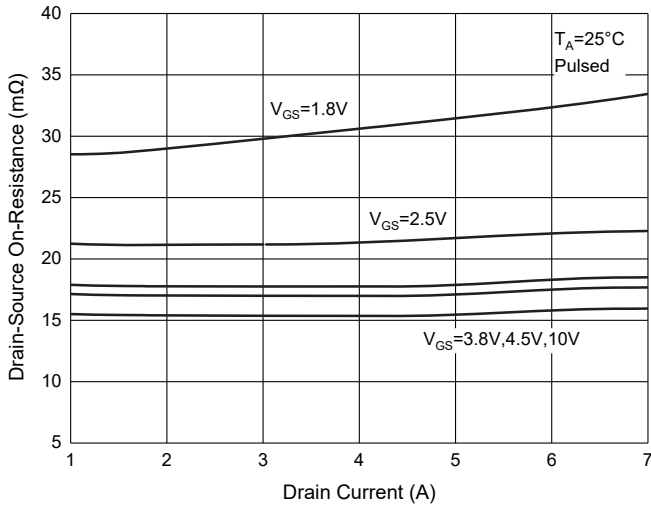


Fig. 4 - $R_{DS(ON)} - V_{GS}$

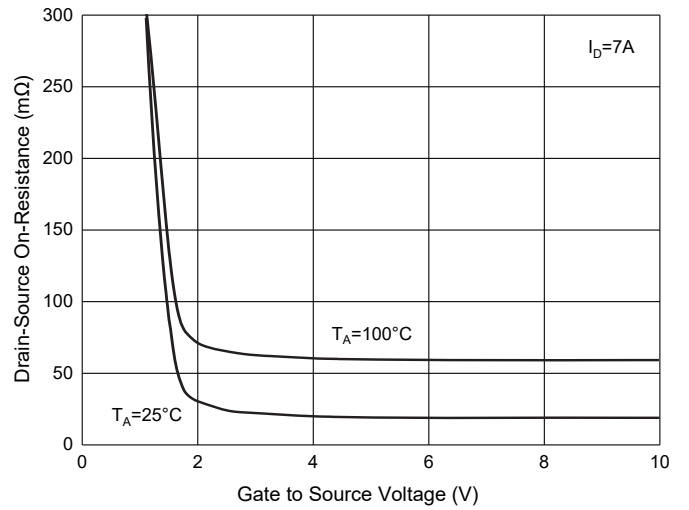


Fig. 5 - $I_S - V_{SD}$

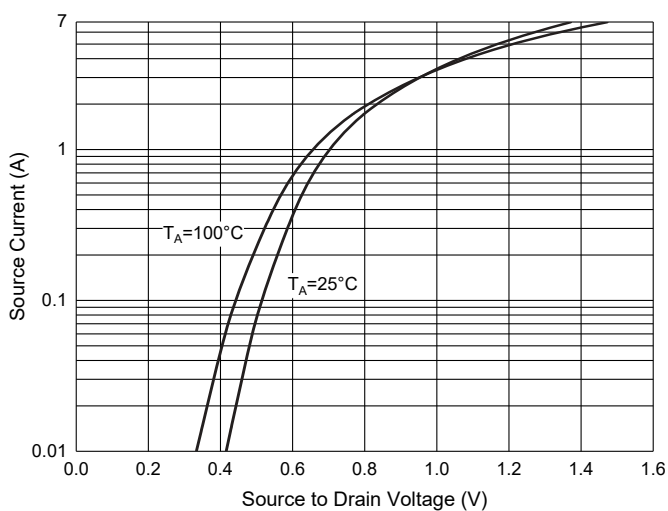
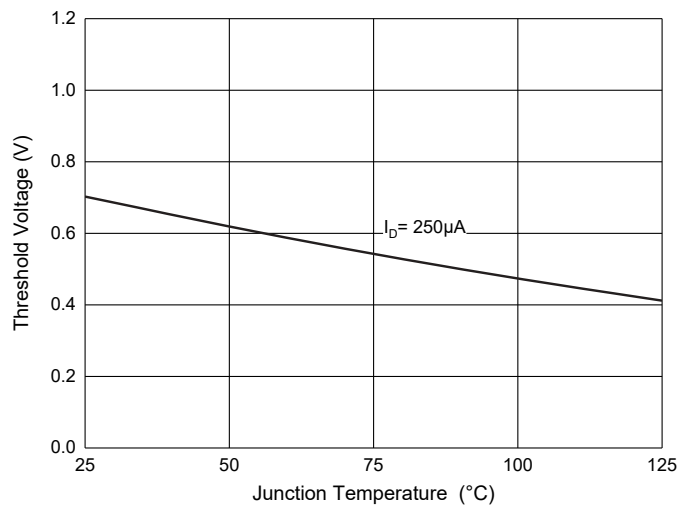


Fig. 6 - Threshold Voltage



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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