

Features

- High Density Cell Design for Extremely Low $R_{DS(on)}$
- Rugged and Reliable
- 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 Range: -55°C to +150°C
- Thermal Resistance: 104°C/W Junction to Ambient (Note 2)

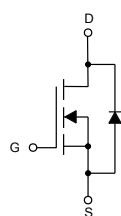
| Parameter | Symbol | Rating | Unit |
|-------------------------------|----------|--------|------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current | I_D | 5.8 | A |
| Pulsed Drain Current (Note 3) | I_{DM} | 30 | A |
| Total Power Dissipation | P_D | 1.2 | 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.

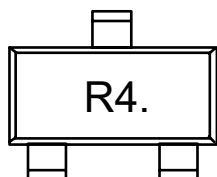
2. Surface Mounted on FR4 Board, $t < 5$ sec.

3. Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature.

Internal Structure and Marking Code

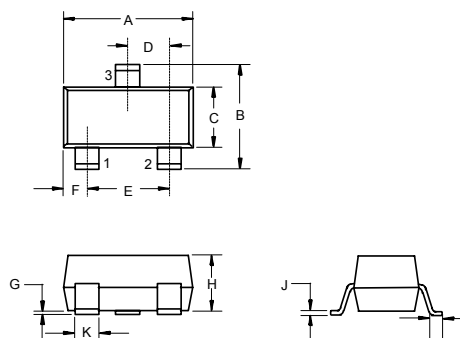


1. GATE
2. SOURCE
3. DRAIN



N-CHANNEL MOSFET

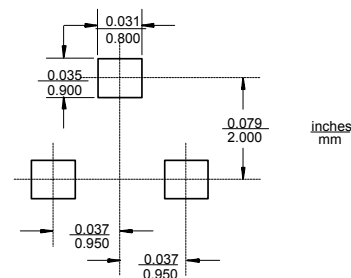
SOT-23



DIMENSIONS

| 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 | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 30 | | | V |
| Gate-Source Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | | | 1 | μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | | 3 | V |
| Drain-Source On-Resistance ^(Note 4) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=5.8A$ | | | 28 | m Ω |
| | | $V_{GS}=4.5V, I_D=4.8A$ | | | 42 | |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=1A$ | | | 1 | V |
| Forward tranconductance ^(Note 4) | g_{FS} | $V_{DS}=5V, I_D=5.8A$ | 5 | | | S |
| Total Gate Charge | Q_g | $V_{GS}=10V, V_{DS}=15V, I_D=5.6A$ | | 12.22 | | nC |
| Gate-Source Charge | Q_{gs} | | | 2.37 | | |
| Gate-Drain Charge | Q_{gd} | | | 2.31 | | |
| Dynamic Characteristics^(Note 5) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V, f=1MHz$ | | | 820 | pF |
| Output Capacitance | C_{oss} | | | 118 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 85 | | |
| Gate Resistance | R_g | $V_{DS}=0V, V_{GS}=0V, f=1MHz$ | | | 1.5 | Ω |
| Switching Characteristics^(Note 5) | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}=10V, V_{DS}=15V, R_L=2.6\Omega, R_{GEN}=3\Omega$ | | | 6.5 | ns |
| Turn-On Rise Time | t_r | | | 3.1 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 15.1 | | |
| Turn-Off Fall Time | t_f | | | 2.7 | | |

 Note 4. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

5. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Output Characteristics

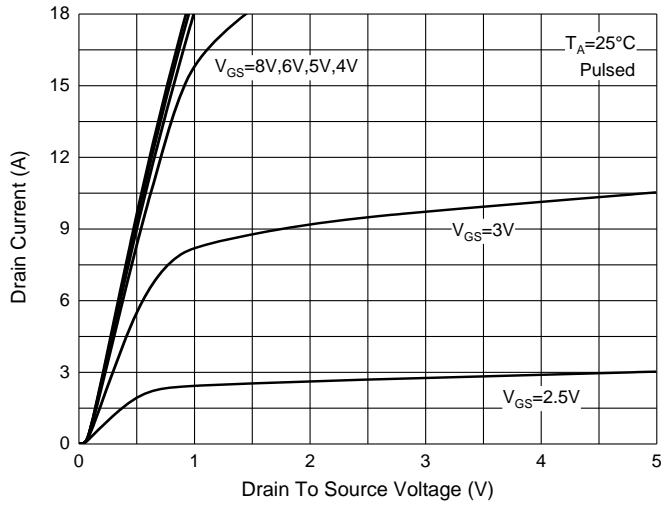


Fig. 2 - Transfer Characteristics

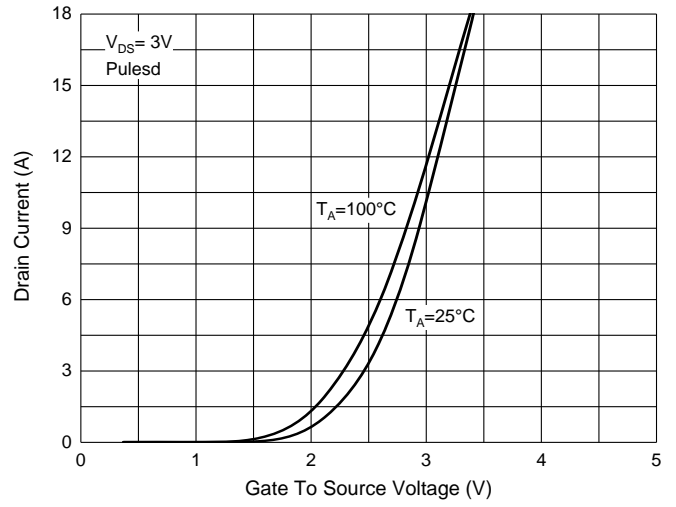


Fig. 3 - $R_{DS(ON)} - I_D$

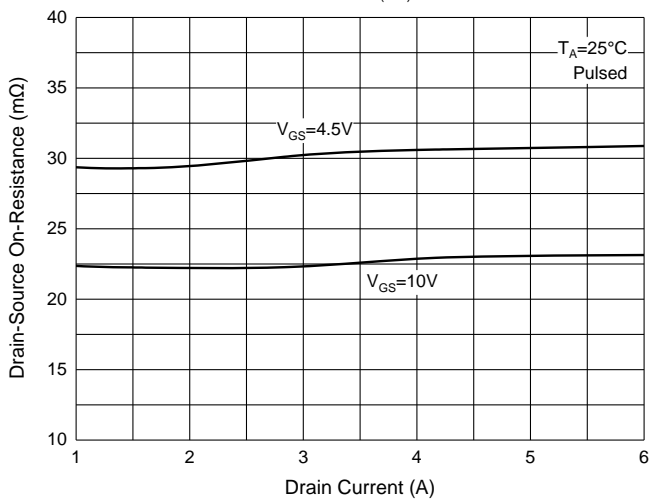


Fig. 4 - $R_{DS(ON)} - V_{GS}$

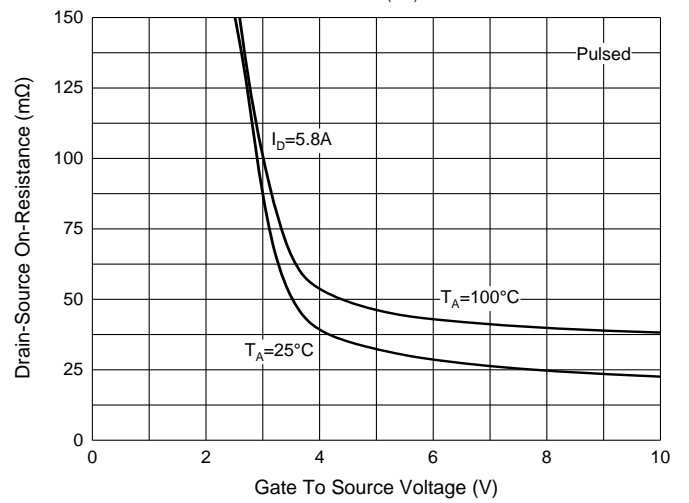


Fig. 5 - $I_S - V_{SD}$

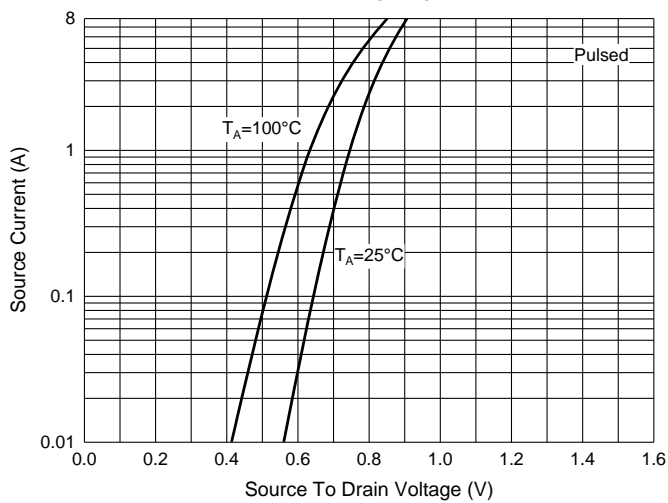
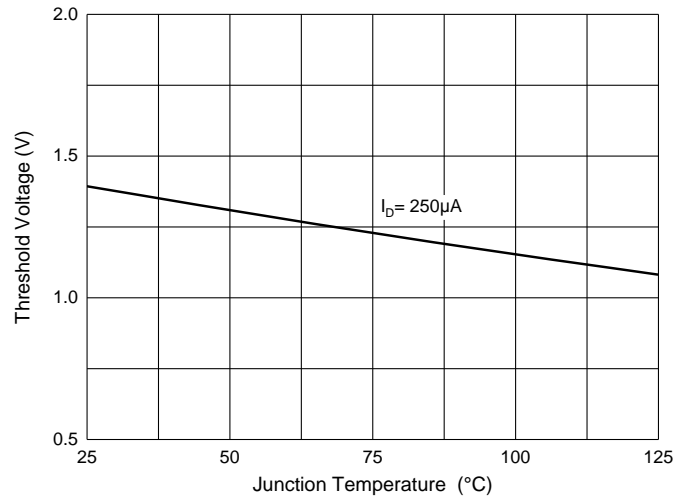


Fig. 6 - Threshold Voltage



Ordering Information

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

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