

Features

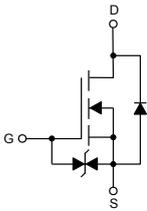
- High Density Cell Design for Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See 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: 625°C/W Junction to Ambient

| Parameter | Symbol | Rating | Unit |
|--------------------------|----------|----------|------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Drain Current-Continuous | I_D | 0.34 | A |
| Power Dissipation | P_D | 0.20 | W |

Internal Structure

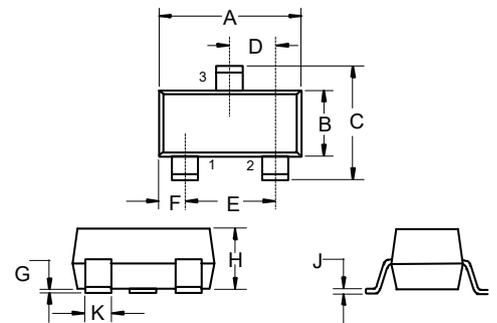


1. GATE
2. SOURCE
3. DRAIN

Marking: 72K

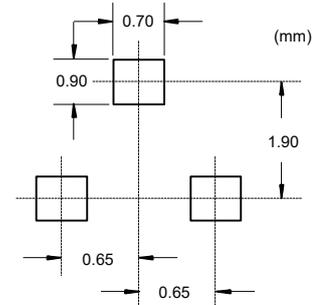
N-Channel MOSFET

SOT-323



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.071 | 0.087 | 1.80 | 2.20 | |
| B | 0.045 | 0.053 | 1.15 | 1.35 | |
| C | 0.083 | 0.096 | 2.10 | 2.45 | |
| D | 0.026 | | 0.65 | | TYP. |
| E | 0.047 | 0.055 | 1.20 | 1.40 | |
| F | 0.012 | 0.016 | 0.30 | 0.40 | |
| G | 0.000 | 0.004 | 0.00 | 0.10 | |
| H | 0.035 | 0.044 | 0.90 | 1.10 | |
| J | 0.002 | 0.010 | 0.05 | 0.25 | |
| K | 0.006 | 0.016 | 0.15 | 0.40 | |

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 ⁽¹⁾ | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=1mA$ | 1.0 | | 2.5 | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=48V, V_{GS}=0V$ | | | 1.0 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | | | ± 10 | μA |
| Drain-Source On-Resistance ⁽¹⁾ | $R_{DS(on)}$ | $V_{GS}=10V, I_D=500mA$ | | | 5.0 | Ω |
| | | $V_{GS}=4.5V, I_D=200mA$ | | | 5.3 | |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=300mA$ | | | 1.5 | V |
| Recovered Charge | Q_r | $V_{GS}=0V, I_S=300mA, V_R=25V$ $di/dt=-100A/\mu s$ | | 30 | | nC |
| Dynamic Characteristics | | | | | | |
| Input Capacitance ⁽²⁾ | C_{iss} | $V_{DS}=10V, V_{GS}=0V, f=1MHz$ | | | 40 | μF |
| Output Capacitance ⁽²⁾ | C_{oss} | | | | 30 | |
| Reverse Transfer Capacitance ⁽²⁾ | C_{rss} | | | | 10 | |
| Switching Characteristics | | | | | | |
| Turn-On Delay Time ⁽²⁾ | $t_{d(on)}$ | $V_{DD}=50V, V_{GS}=10V, R_L=250\Omega,$ $R_{GS}=50\Omega, R_{GEN}=25\Omega$ | | | 10 | ns |
| Turn-Off Delay Time ⁽²⁾ | $t_{d(off)}$ | | | | 15 | |
| Reverse Recovery Time | t_{rr} | $V_{GS}=0V, I_S=300mA, V_R=25V,$ $di/dt=-100A/\mu s$ | | 30 | | |
| Gate-Source Zener Diode | | | | | | |
| Gate-Source Breakdown Voltage | BV_{GSO} | $I_{GS}=\pm 1mA$ (Open Drain) | ± 21.5 | | ± 30 | V |

 Note: 1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

2. These Parameters Have No Way to Verify.

Curve Characteristics

Fig. 1 - Output Characteristics

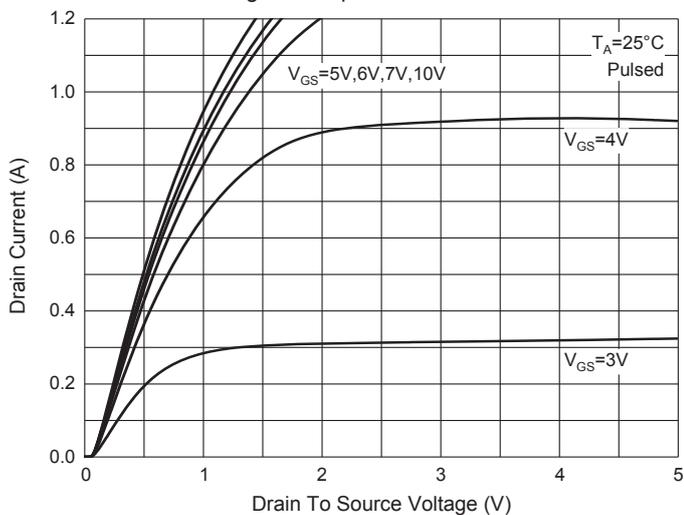


Fig. 2 - Transfer Characteristics

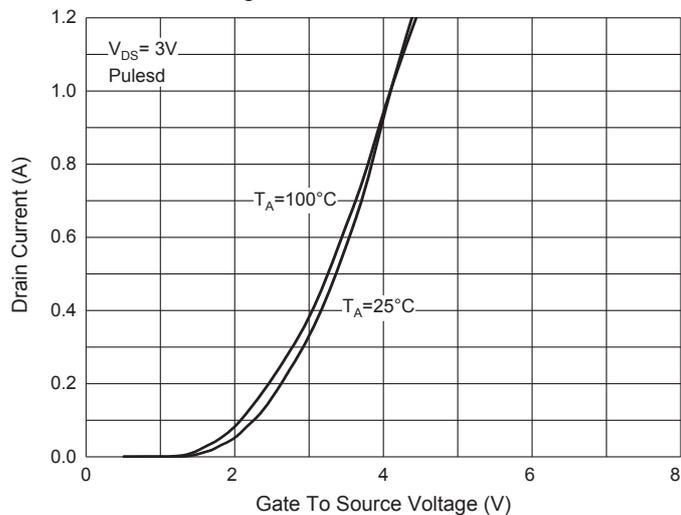


Fig. 3 - $R_{DS(ON)} - I_D$

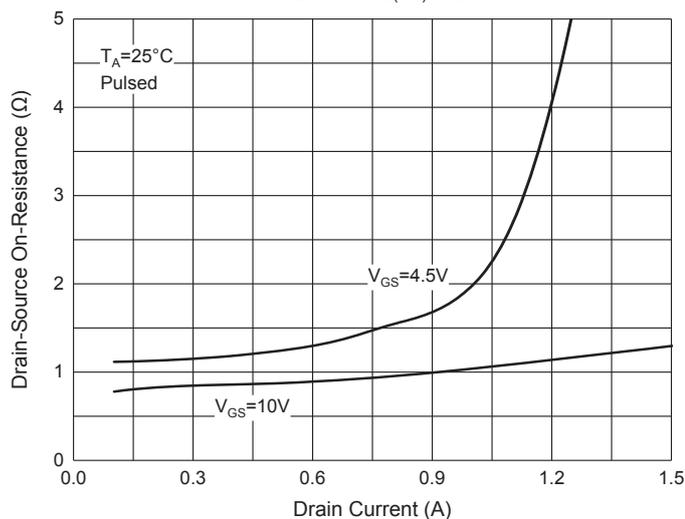


Fig. 4 - $R_{DS(ON)} - V_{GS}$

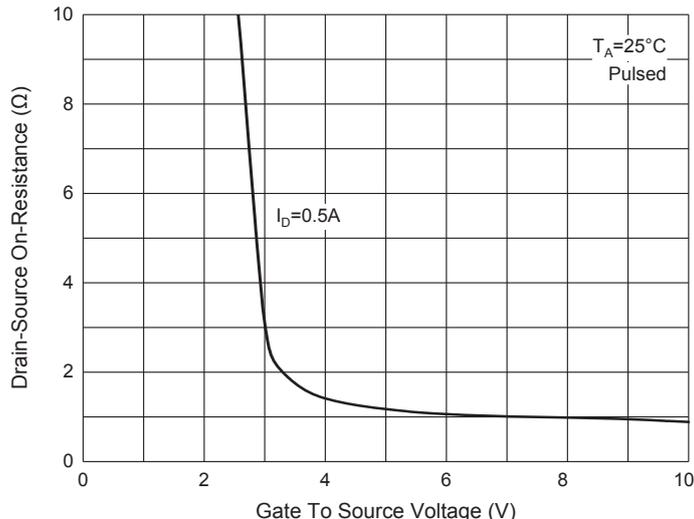


Fig. 5 - $I_S - V_{SD}$

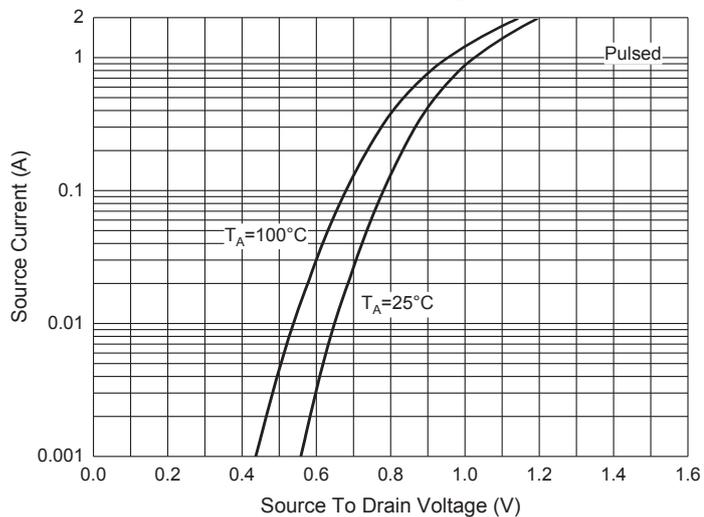
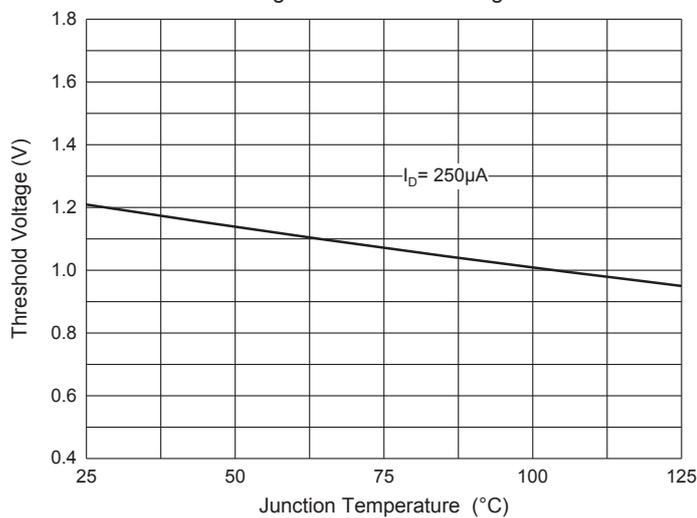


Fig. 6 - Threshold Voltage



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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