

Features

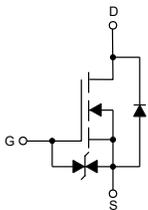
- Operated at Low Logic Level Gate Drive
- N-Channel Switch with Low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Maximum Thermal Resistance: 1250°C/W Junction to Ambient

| Parameter | Symbol | Rating | Unit |
|-----------------------------------------|----------|----------|------|
| Drain -source Voltage | V_{DS} | 20V | V |
| Gate -Source Voltage | V_{GS} | ± 12 | V |
| Drain Current-Continuous ⁽¹⁾ | I_D | 0.75 | A |
| Pulsed Drain Current | I_{DM} | 1.8 | A |
| Power Dissipation ⁽²⁾ | P_D | 0.1 | W |

Internal Structure

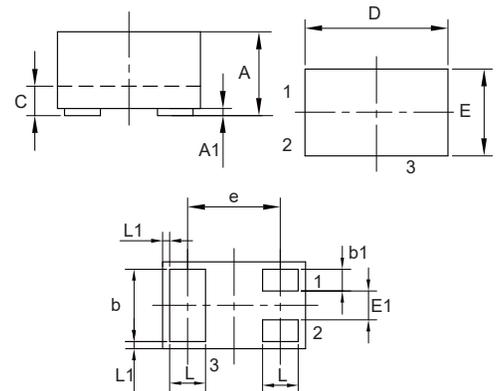


1. GATE
2. SOURCE
3. DRAIN

Marking:34

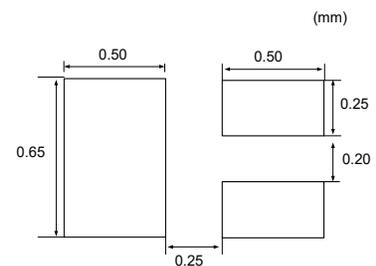
N-Channel MOSFET

DFN1006-3



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|-------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.018 | 0.022 | 0.45 | 0.55 | |
| A1 | 0.000 | 0.002 | 0.00 | 0.05 | |
| b | 0.018 | 0.022 | 0.45 | 0.55 | |
| b1 | 0.004 | 0.008 | 0.10 | 0.20 | |
| c | 0.005 | 0.007 | 0.12 | 0.18 | |
| D | 0.037 | 0.042 | 0.95 | 1.075 | |
| E | 0.022 | 0.026 | 0.55 | 0.675 | |
| E1 | 0.006 | 0.010 | 0.15 | 0.25 | |
| e | 0.026 | | 0.65 | | TYP. |
| L | 0.008 | 0.012 | 0.20 | 0.30 | |
| L1 | 0.0002 | | 0.05 | | TYP. |

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 | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 20 | | | V |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.35 | 0.75 | 1.1 | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=20V, V_{GS}=0V$ | | | 1.0 | μA |
| Gate-body Leakage Current | I_{GSS} | $V_{GS}=\pm 10V, V_{DS}=0V$ | | | ± 20 | μA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=150mA$ | | 0.25 | 0.5 | Ω |
| | | $V_{GS}=2.5V, I_D=150mA$ | | 0.30 | 0.7 | |
| | | $V_{GS}=1.8V, I_D=150mA$ | | 0.37 | 0.9 | |
| Forward transconductance | g_{FS} | $V_{DS}=10V, I_D=150mA$ | 150 | | | mS |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=150mA$ | | | 1.2 | V |
| Dynamic Characteristics | | | | | | |
| Input Capacitance ⁽³⁾ | C_{iss} | $V_{DS}=16V, V_{GS}=0V, f=1MHz$ | | 79 | 120 | pF |
| Output Capacitance ⁽³⁾ | C_{oss} | | | 13 | 20 | |
| Reverse Transfer Capacitance ⁽³⁾ | C_{rss} | | | 9 | 15 | |
| Switching Characteristics | | | | | | |
| Turn-on Delay Time ⁽⁴⁾ | $t_{d(on)}$ | $V_{DS}=10V, V_{GS}=4.5V, I_D=500mA, R_{GEN}=10\Omega$ | | 6.7 | | ns |
| Turn-off Delay Time ⁽⁴⁾ | $t_{d(off)}$ | | | 17.3 | | |
| Rise Time ⁽⁴⁾ | t_r | | | 4.8 | | |
| Fall Time ⁽⁴⁾ | t_f | | | 7.4 | | |

Note:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Guaranteed by design, not subject to producing.
4. Switching characteristics are independent of operating junction temperatures.

Curve Characteristics

Fig. 1 - Output Characteristics

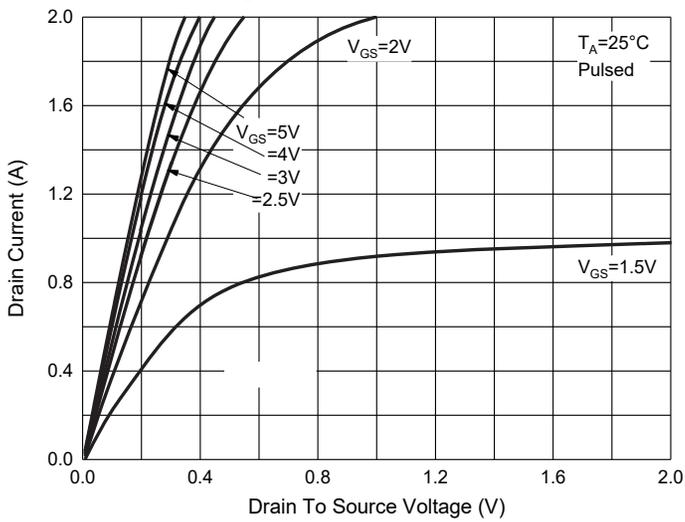


Fig. 2 - Transfer Characteristics

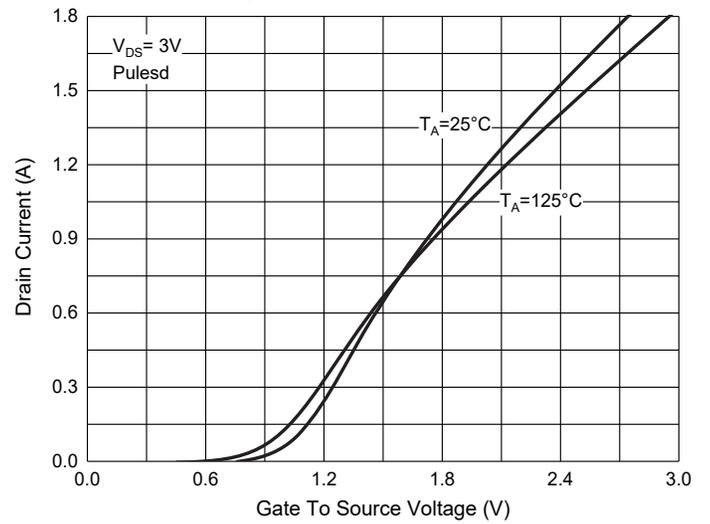


Fig. 3 - $R_{DS(ON)} - I_D$

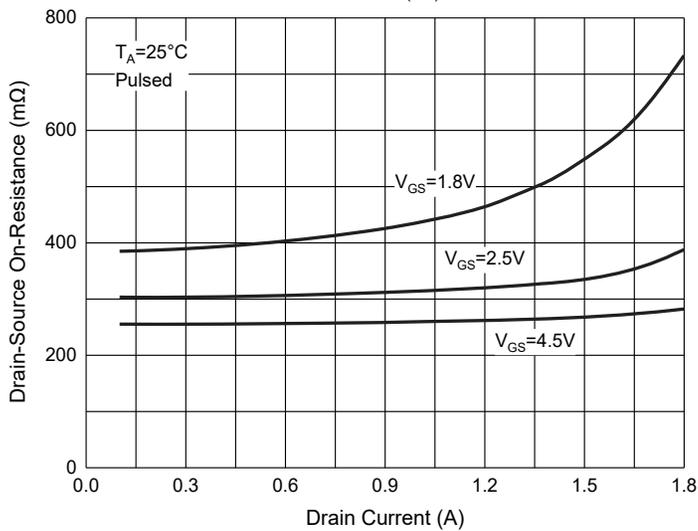


Fig. 4 - $R_{DS(ON)} - V_{GS}$

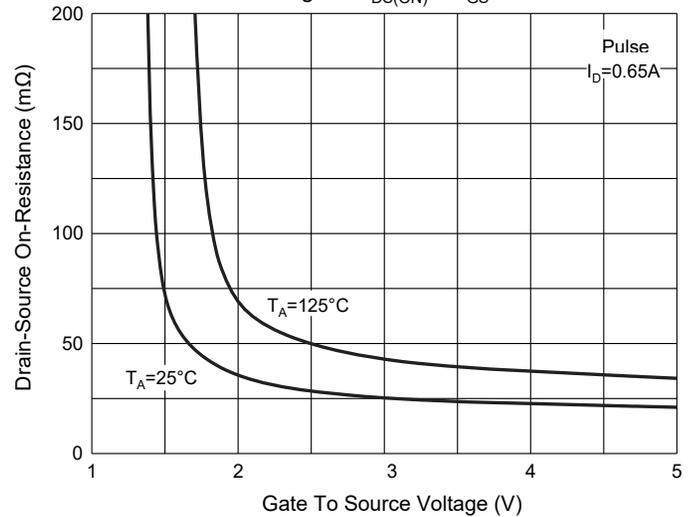


Fig. 5 - $I_S - V_{SD}$

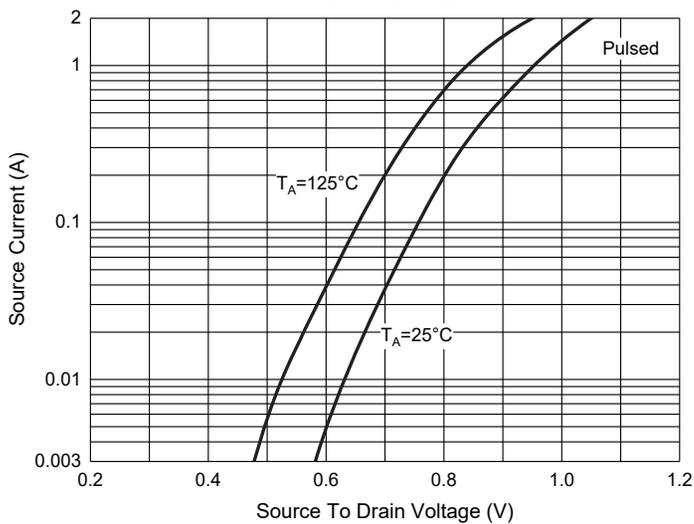
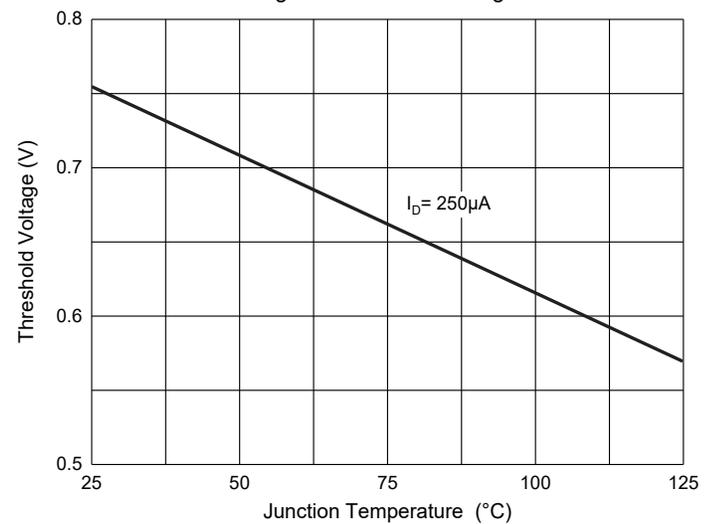


Fig. 6 - Threshold Voltage



Ordering Information

| Device | Packing |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel:10Kpcs/Reel |

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

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