

Features

- 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°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 4.2°C/W Junction to Case ^(Note 1)

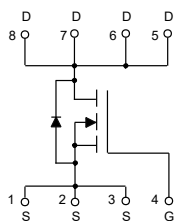
| Parameter | Symbol | Rating | Unit | |
|---|----------|-------------------------|------|---|
| Drain-Source Voltage | V_{DS} | 30 | V | |
| Gate-Source Voltage | V_{GS} | ±20 | V | |
| Continuous Drain Current | I_D | $T_C=25^\circ\text{C}$ | 16 | A |
| | | $T_C=100^\circ\text{C}$ | 11 | A |
| Pulsed Drain Current ^(Note 2) | I_{DM} | 50 | A | |
| Single Pulse Avalanche Energy ^(Note 3) | E_{AS} | 70 | mJ | |
| Total Power Dissipation | P_D | 30 | W | |

Note: 1.Surface Mounted on FR4 Board, $t \leq 10$ sec.

2.Pulse Width Limited by Maximum Junction Temperature.

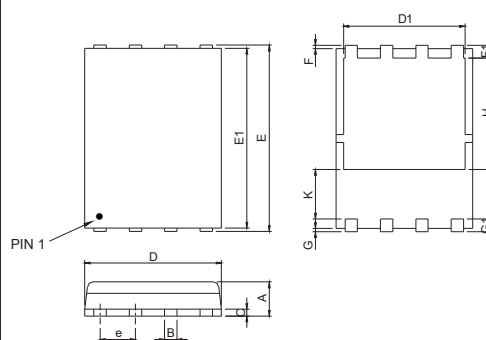
3.EAS Condition: $T_J=25^\circ\text{C}, V_{DD}=15\text{V}, V_G=10\text{V}, L=0.1\text{mH}, R_g=25\Omega$.

Internal Structure



N-CHANNEL MOSFET

DFN5060-8L



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|-------|-------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.035 | 0.047 | 0.90 | 1.20 | |
| B | 0.012 | 0.020 | 0.30 | 0.51 | |
| C | 0.007 | 0.010 | 0.19 | 0.25 | |
| D | 0.189 | 0.209 | 4.80 | 5.30 | |
| D1 | 0.157 | 0.173 | 4.00 | 4.40 | |
| E | 0.232 | 0.244 | 5.90 | 6.20 | |
| E1 | 0.217 | 0.228 | 5.50 | 5.80 | |
| e | 0.050 | | 1.27 | | TYP. |
| F | 0.002 | 0.012 | 0.05 | 0.30 | |
| F1 | 0.014 | 0.030 | 0.35 | 0.75 | |
| G | 0.002 | 0.012 | 0.05 | 0.30 | |
| G1 | 0.014 | 0.030 | 0.35 | 0.75 | |
| H | 0.131 | 0.154 | 3.34 | 3.90 | |
| K | 0.030 | ----- | 0.762 | ----- | |

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 | 36 | | 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 ^(Note 4) | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | 1.6 | 3 | V |
| Drain-Source On-Resistance ^(Note 4) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=10A$ | | 7 | 9 | m Ω |
| | | $V_{GS}=4.5V, I_D=10A$ | | 10.5 | 14 | |
| Forward Transconductance ^(Note 4) | g_{FS} | $V_{DS}=5V, I_D=8A$ | 15 | | | S |
| Dynamic Characteristics^(Note 5) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V, f=1MHz$ | | 1530 | | pF |
| Output Capacitance | C_{oss} | | | 250 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 198 | | |
| Total Gate Charge | Q_g | $V_{DS}=15V, V_{GS}=10V, I_D=9A$ | | 15 | | nC |
| Gate-Source Charge | Q_{gs} | | | 3 | | |
| Gate-Drain Charge | Q_{gd} | | | 4.5 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=15V, I_D=10A$ $V_{GS}=10V, R_{GEN}=1.8\Omega$ | | 10 | | ns |
| Turn-On Rise Time | t_r | | | 8 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 30 | | |
| Turn-Off Fall Time | t_f | | | 5 | | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | | | | 25 | A |
| Body Diode Voltage ^(Note 4) | V_{SD} | $I_{SD}=10A, V_{GS}=0V$ | | 0.85 | 1.2 | V |
| Reverse Recovery Time | t_{rr} | $T_J=25^\circ C, I_F=10A$ $di/dt=100A/\mu s$ | | 22 | 35 | ns |
| Reverse Recovery Charge | Q_{rr} | | | 12 | 20 | nC |
| Forward Turn-On Time | t_{on} | Intrinsic Turn-On Time is Negligible (Turn-On is Dominated by LS+LD) | | | | |

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

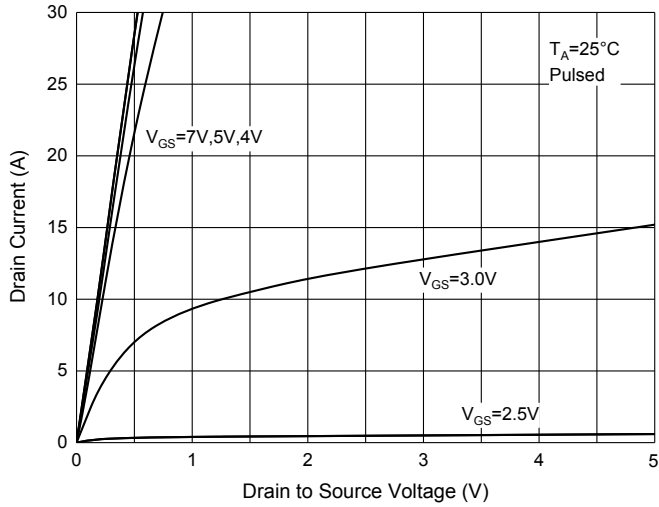


Fig. 2 - Transfer Characteristics

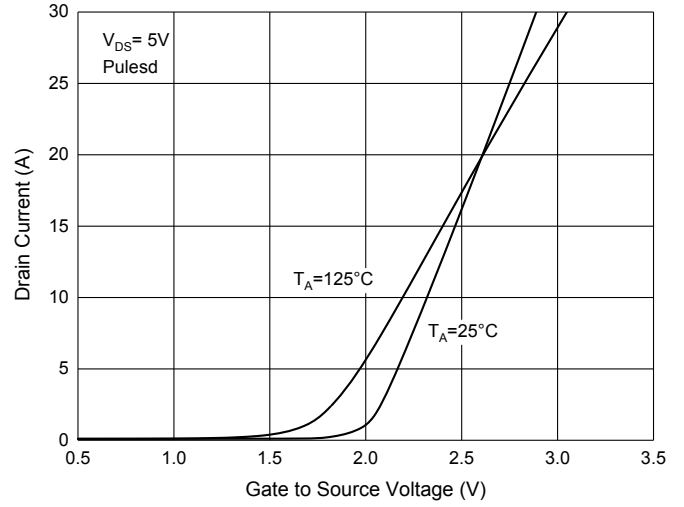


Fig. 3 - $R_{DS(ON)} - I_D$

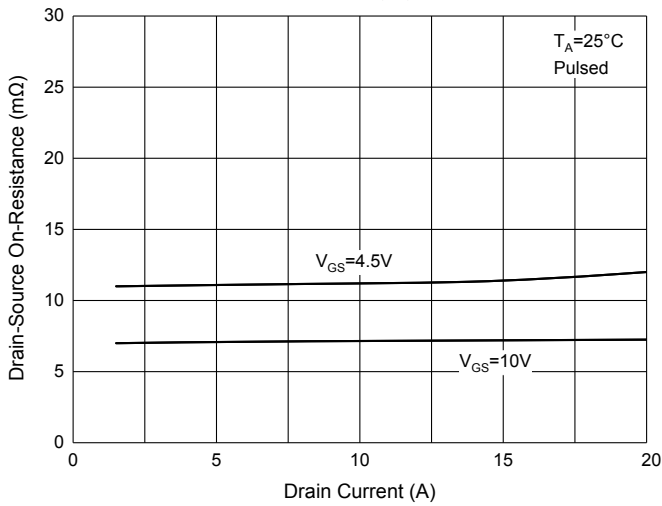


Fig. 4 - $I_S - V_{SD}$

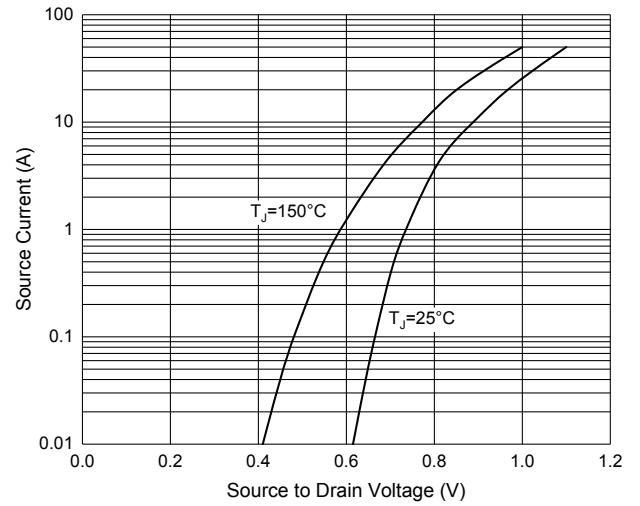


Fig. 5 - $R_{DS(ON)} - \text{Temperature}$

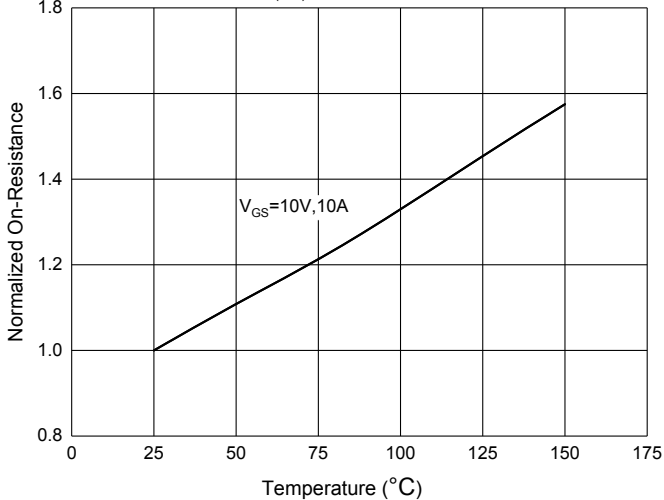
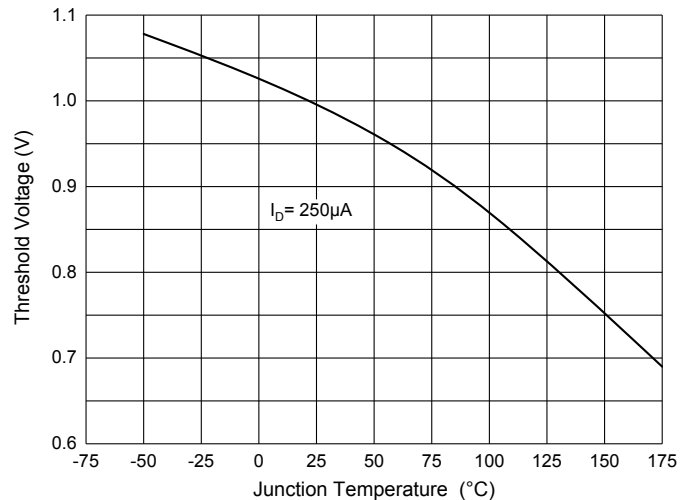


Fig. 6 - Threshold Voltage



Ordering Information

| Device | Packing |
|----------------|-------------------------|
| Part Number-TP | Tape&Reel: 2.5Kpcs/Reel |

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

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