

Features

- Fast Switching
- Improved dv/dt Capability
- Excellent Package for Good Heat Dissipation
- 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

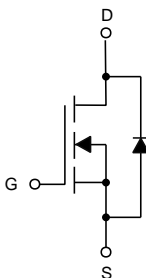
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance:1.9°C/W Junction to Case

| Parameter | Symbol | Rating | Unit | |
|---|----------|-------------------------|-------|---|
| Drain-Source Voltage | V_{DS} | 200 | V | |
| Gate-Source Voltage | V_{GS} | ±30 | V | |
| Continuous Drain Current | I_D | $T_C=25^\circ\text{C}$ | 18 | A |
| | | $T_C=100^\circ\text{C}$ | 11.45 | A |
| Pulsed Drain Current ^(Note 1) | I_{DM} | 72 | A | |
| Single Pulse Avalanche Energy ^(Note 2) | E_{AS} | 320 | mJ | |
| Peak Diode Recovery Energy ^(Note 3) | dV/dt | 8 | V/ns | |
| Total Power Dissipation | P_D | 65.8 | W | |

Note:

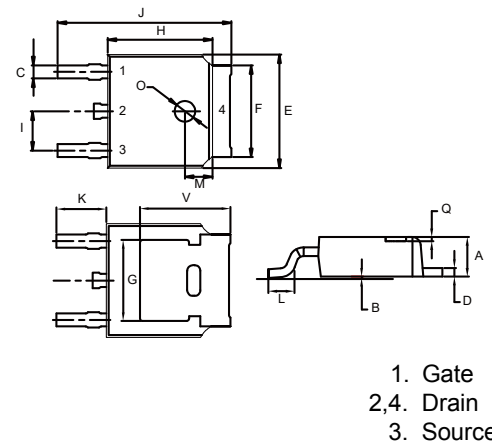
- 1.Pulse Width Limited by Maximum Junction Temperature.
- 2.L=10mH, $I_{AS}=8\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.
3. $I_{SD}\leq 18\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$.

Internal Structure



N-CHANNEL MOSFET

DPAK(TO-252)



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|------|-------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.087 | 0.094 | 2.20 | 2.40 | |
| B | 0.000 | 0.005 | 0.00 | 0.13 | |
| C | 0.026 | 0.034 | 0.66 | 0.86 | |
| D | 0.018 | 0.023 | 0.46 | 0.58 | |
| E | 0.256 | 0.264 | 6.50 | 6.70 | |
| F | 0.201 | 0.215 | 5.10 | 5.46 | |
| G | 0.190 | | 4.83 | | TYP. |
| H | 0.236 | 0.244 | 6.00 | 6.20 | |
| I | 0.086 | 0.094 | 2.18 | 2.39 | |
| J | 0.386 | 0.409 | 9.80 | 10.40 | |
| K | 0.114 | | 2.90 | | TYP. |
| L | 0.055 | 0.067 | 1.40 | 1.70 | |
| M | 0.063 | | 1.60 | | TYP. |
| O | 0.043 | 0.051 | 1.10 | 1.30 | |
| Q | 0.000 | 0.012 | 0.00 | 0.30 | |
| V | 0.211 | | 5.35 | | TYP. |

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|-----|-------|------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 200 | | | V |
| Breakdown Voltage Temperature Coefficient | $\frac{\Delta V_{(BR)DSS}}{\Delta T_J}$ | Reference to 25°C, $I_D=250\mu A$ | | 0.3 | | V/°C |
| Gate-Source Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=200V, V_{GS}=0V$ | | | 1 | μA |
| | | $V_{DS}=160V, V_{GS}=0V, T_C=125^\circ C$ | | | 10 | |
| Gate-Threshold Voltage ^(Note 4) | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | | 3 | V |
| Drain-Source On-Resistance ^(Note 4) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=9A$ | | 0.136 | 0.16 | Ω |
| Forward Transconductance ^(Note 4) | g_{FS} | $V_{DS}=30V, I_D=9A$ | | 8 | | S |
| Dynamic Characteristics^(Note 5) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ | | 836 | | pF |
| Output Capacitance | C_{oss} | | | 81.2 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 3.81 | | |
| Total Gate Charge | Q_g | $V_{DD}=160V, V_{GS}=10V, I_D=18A$ | | 17.7 | | nC |
| Gate-Source Charge | Q_{gs} | | | 3.9 | | |
| Gate-Drain Charge | Q_{gd} | | | 5.2 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=100V, I_D=18A, R_G=5\Omega, V_{GS}=10V$ | | 12.3 | | ns |
| Turn-On Rise Time | t_r | | | 21.1 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 22.5 | | |
| Turn-Off Fall Time | t_f | | | 7.7 | | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Continuous Body Diode Current | I_S | $T_C=25^\circ C$ | | | 18 | A |
| Pulsed Diode Forward Current | I_{SM} | | | | 72 | |
| Body Diode Voltage | V_{SD} | $I_S=9A, V_{GS}=0V$ | | | 1.5 | V |
| Reverse Recovery Time | t_{rr} | $V_{GS}=0V, I_F=18A, di/dt=100A/\mu s$ | | 235 | | ns |
| Reverse Recovery Charge | Q_{rr} | | | | 1045 | |

Note 4. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

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

Curve Characteristics

Fig. 1 - Output Characteristics

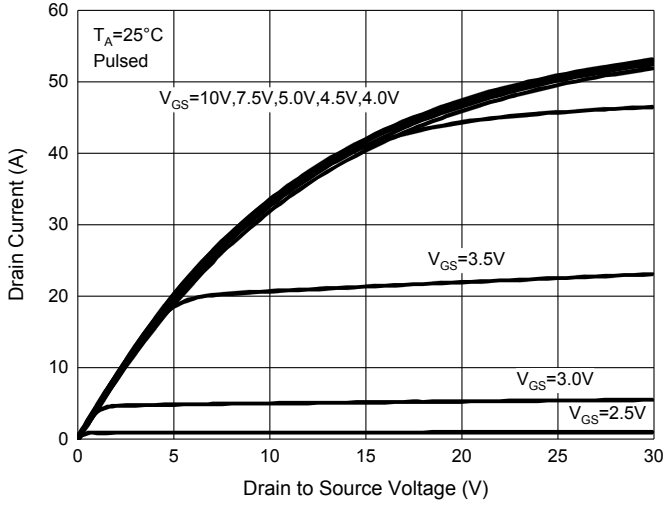


Fig. 2 - Transfer Characteristics

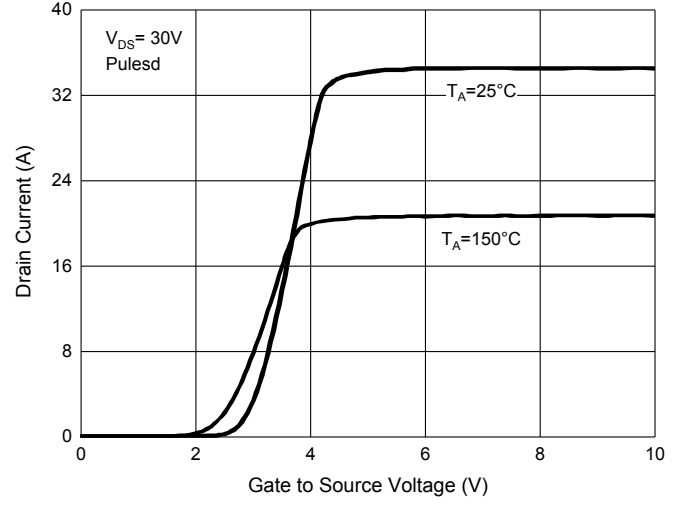


Fig. 3 - $R_{DS(ON)} - I_D$

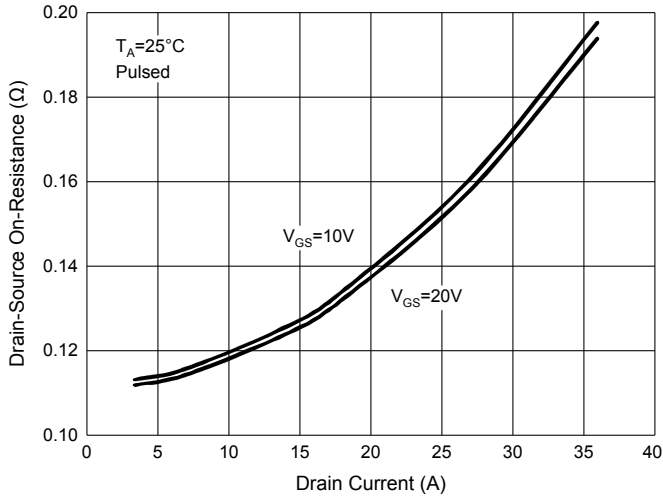


Fig. 4 - $I_S - V_{SD}$

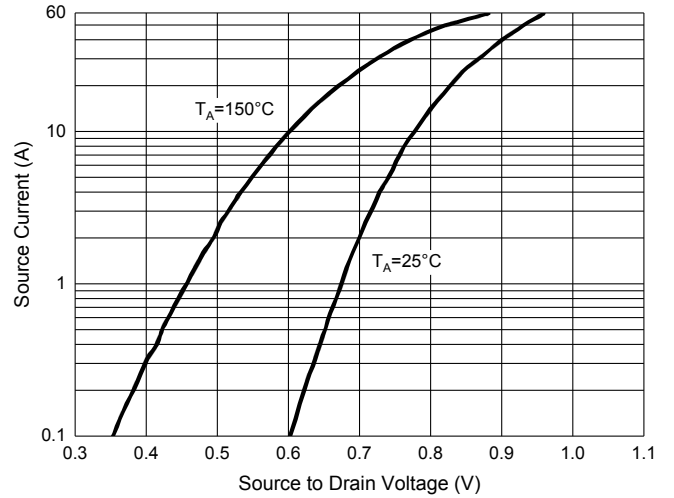


Fig. 5 - Capacitance Characteristics

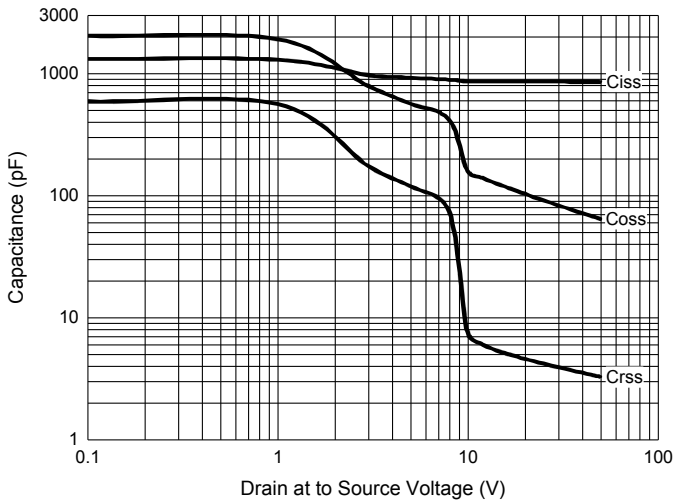
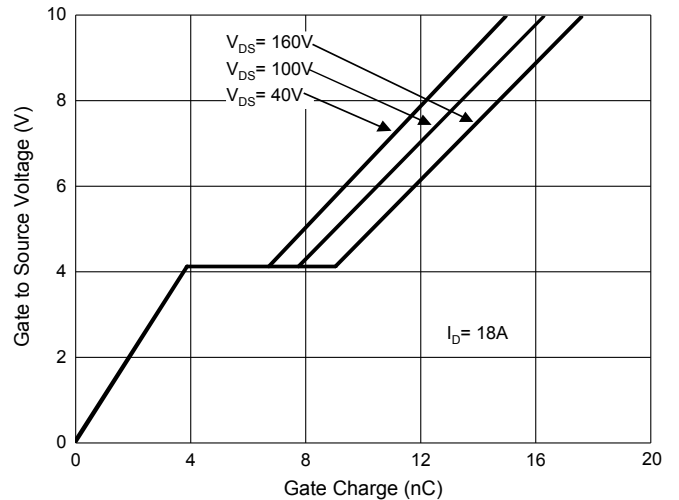


Fig. 6 - Gate Charge



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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