

N-Channel Enhancement Mode MOSFET

TDM3482

DESCRIPTION

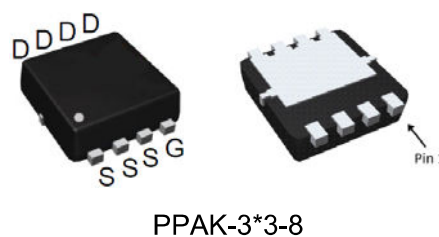
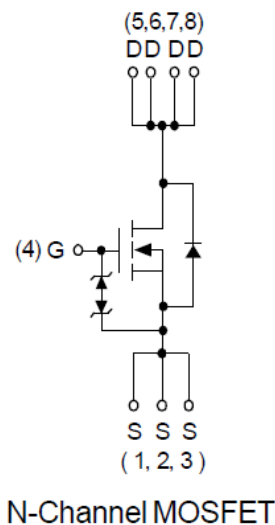
The TDM3482 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

- RDS(ON) < 16mΩ @ VGS=4.5V
RDS(ON) < 9.5mΩ @ VGS=10V
- High Power and current handling capability
- ESD protection
- Lead free product is available
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management



泰德半导体--提供样品, 技术支持 手机13418601901 QQ409545144

ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$ unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|--|------------|------|
| Drain-Source Voltage | V _{DS} | 40 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Diode Continuous Forward Current | I _S | 10 | A |
| Drain Current @ Continuous | I _D (T _C =25°C) | 43 | A |
| | I _D (T _C =100°C) | 28 | A |
| Drain Current @ Current-Pulsed (Note 1) | I _{DM} (T _C =25°C) | 60 | A |
| Maximum Power Dissipation | P _D (T _C =25°C) | 27.8 | W |
| | P _D (T _C =100°C) | 11.1 | W |
| Drain Current @ Continuous | I _D (T _A =25°C) | 12 | A |
| | I _D (T _A =70°C) | 9.6 | A |
| Maximum Power Dissipation | P _D (T _A =25°C) | 2.08 | W |
| | P _D (T _A =70°C) | 1.3 | W |
| Maximum Operating Junction Temperature | T _J | 150 | °C |
| Storage Temperature Range | T _{STG} | -55 To 150 | °C |

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THERMAL CHARACTERISTICS

| | | | |
|--|----------------------------------|-----|---------------|
| Thermal Resistance, Junction-to-Ambient (Note 4) | $R_{\theta JA}$ ($t \leq 10s$) | 40 | $^{\circ}C/W$ |
| | $R_{\theta JA}$ (Steady State) | 60 | $^{\circ}C/W$ |
| Thermal Resistance-Junction to Case | $R_{\theta JC}$ (Steady State) | 4.5 | $^{\circ}C/W$ |

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}C$ unless otherwise noted)

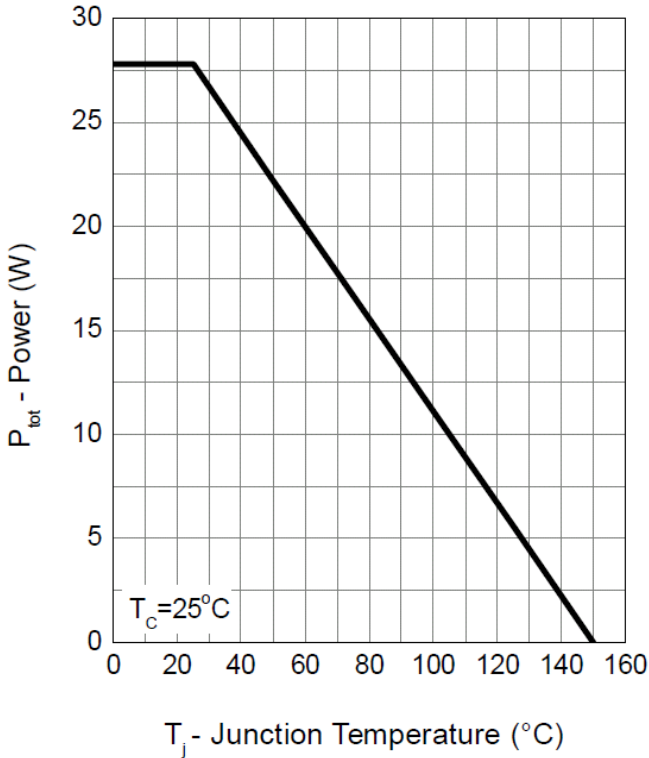
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|--------------|--|-----|------|----------|-----------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 40 | - | - | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=32V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 10 | μA |
| ON CHARACTERISTICS (Note 2) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.4 | 1.7 | 2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=8A$ | - | 11.5 | 16 | $m\Omega$ |
| | | $V_{GS}=10V, I_D=15A$ | - | 7.9 | 9.5 | $m\Omega$ |
| | | $T_J=125^{\circ}C$ | - | 11.8 | - | $m\Omega$ |
| DYNAMIC CHARACTERISTICS (Note 3) | | | | | | |
| Gate Resistance | R_G | $V_{DS}=20V, V_{GS}=0V, F=1.0MHz$ | - | 1.7 | - | Ω |
| Input Capacitance | C_{iss} | $V_{DS}=20V, V_{GS}=0V, F=1.0MHz$ | - | 700 | - | PF |
| Output Capacitance | C_{oss} | | - | 191 | - | PF |
| Reverse Transfer Capacitance | C_{rss} | | - | 30 | - | PF |
| SWITCHING CHARACTERISTICS (Note 3) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DS}=20V, R_L=20\Omega, V_{GEN}=10V, R_G=6\Omega, I_D=1A$ | - | 10 | - | nS |
| Turn-on Rise Time | t_r | | - | 6.6 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 18 | - | nS |
| Turn-Off Fall Time | t_f | | - | 12 | - | nS |
| Total Gate Charge | Q_g | $V_{DS}=20V, I_D=15A, V_{GS}=4.5V$ | - | 5.1 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 2.9 | - | nC |
| Gate-Drain Charge | Q_{gd} | | - | 1.1 | - | nC |
| Body Diode Reverse Recovery Time | T_{rr} | $I_F=5A, di/dt=100A/\mu s$ | - | 18.8 | - | nS |
| Body Diode Reverse Recovery Charge | Q_{rr} | | - | 4.5 | - | nC |
| DRAIN-SOURCE DIODE CHARACTERISTICS | | | | | | |
| Diode Forward Voltage (Note 2) | V_{SD} | $V_{GS}=0V, I_S=20A$ | - | 0.8 | 1.1 | V |

NOTES:

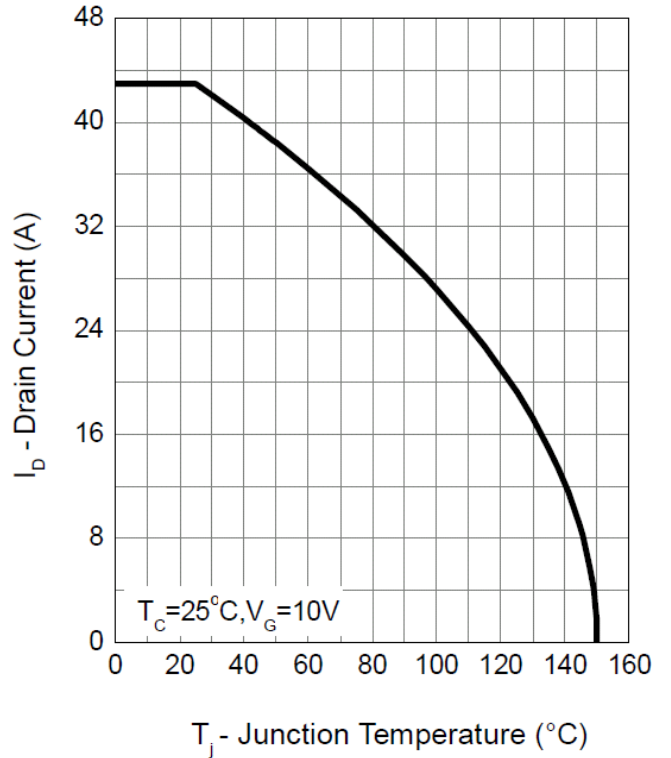
1. Pulse width limited by max. junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production testing
4. $R_{\theta JA}$ steady state $t=100s$. $R_{\theta JA}$ is measured with the device mounted on 1in2, FR-4 board with 2oz. Copper.

Typical Operating Characteristics

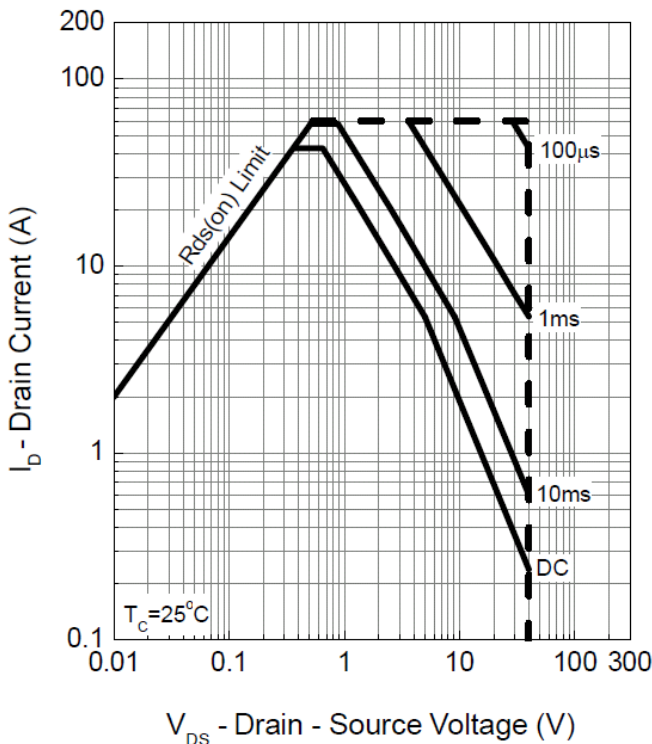
Power Dissipation



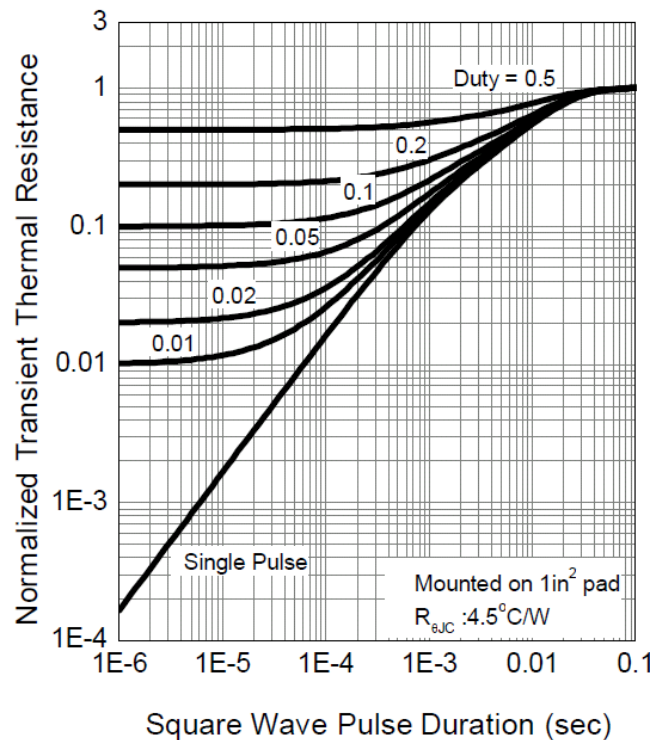
Drain Current



Safe Operation Area

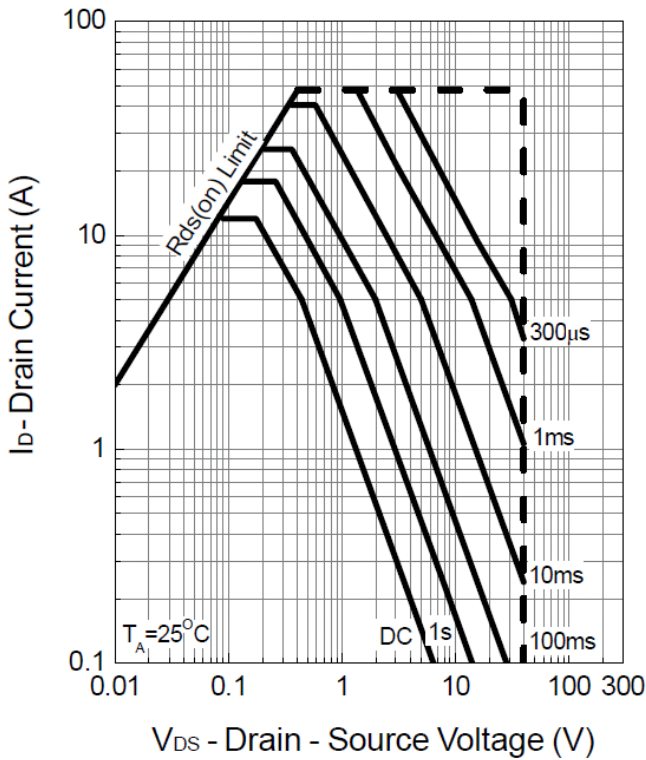


Thermal Transient Impedance

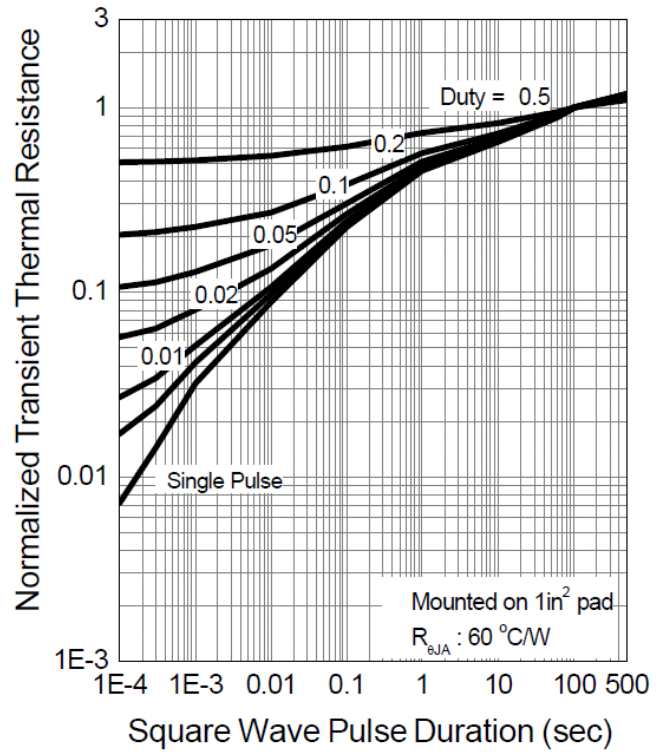


Typical Operating Characteristics(Cont.)

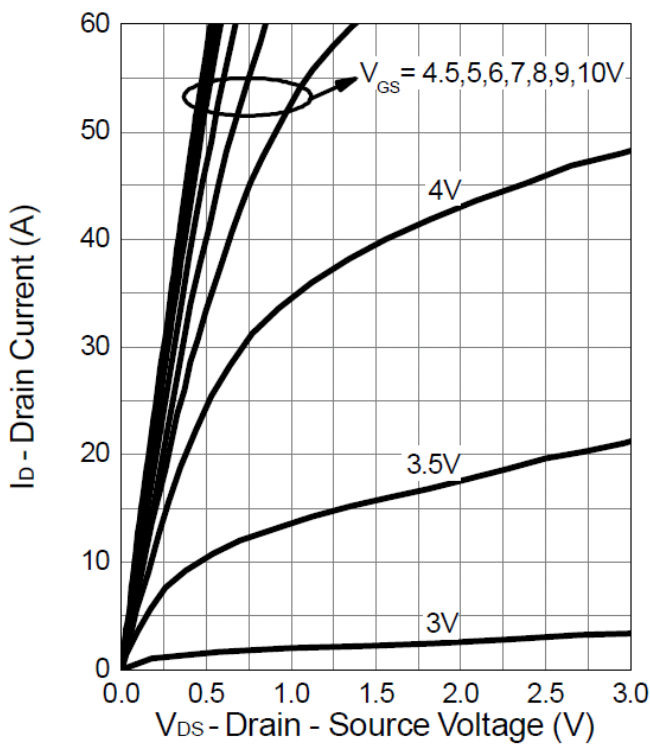
Safe Operation Area



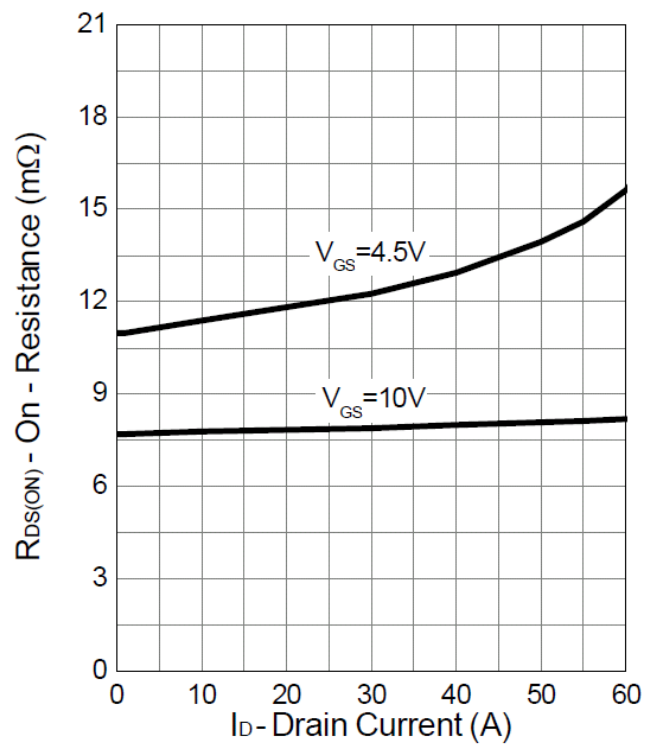
Thermal Transient Impedance



Output Characteristics



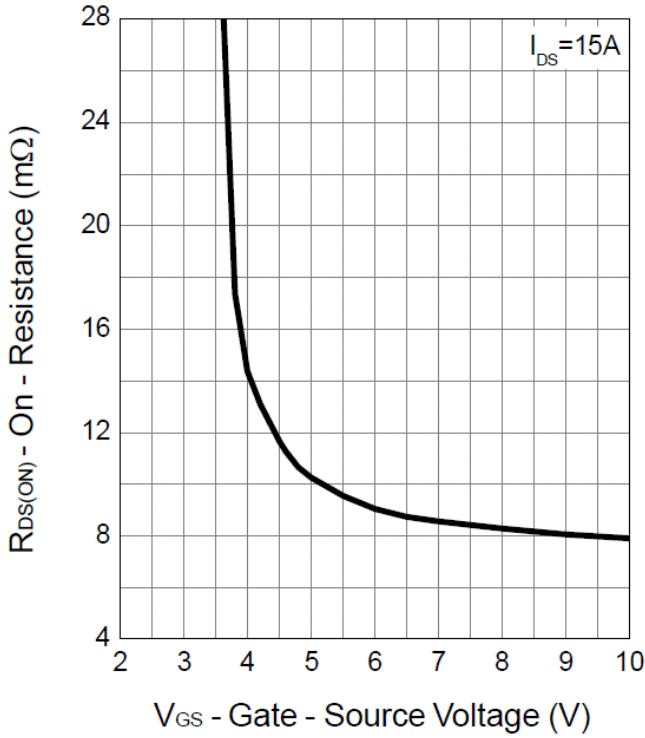
Drain-Source On Resistance



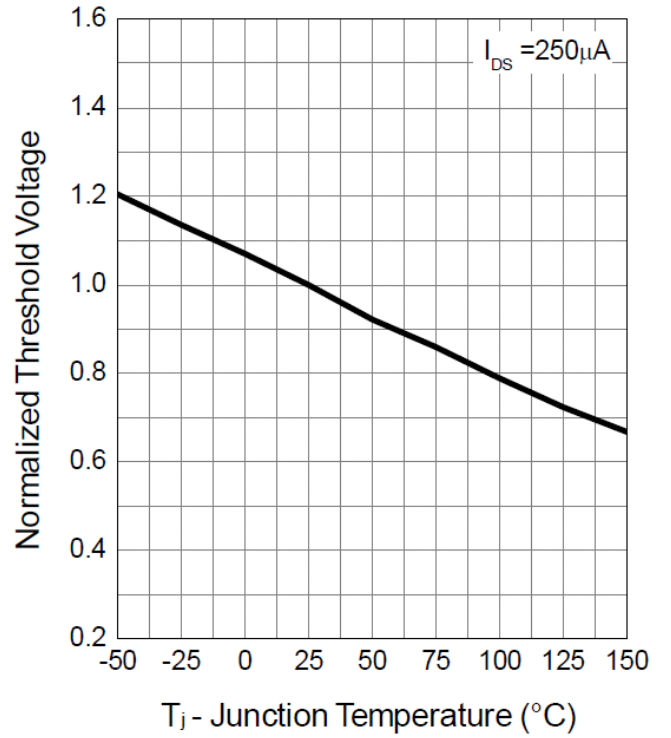
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Typical Operating Characteristics(Cont.)

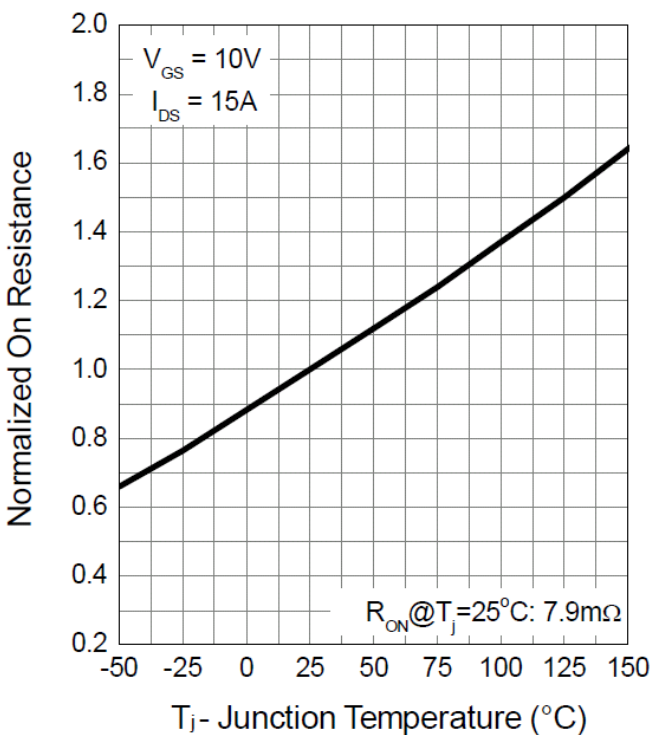
Gate-Source On Resistance



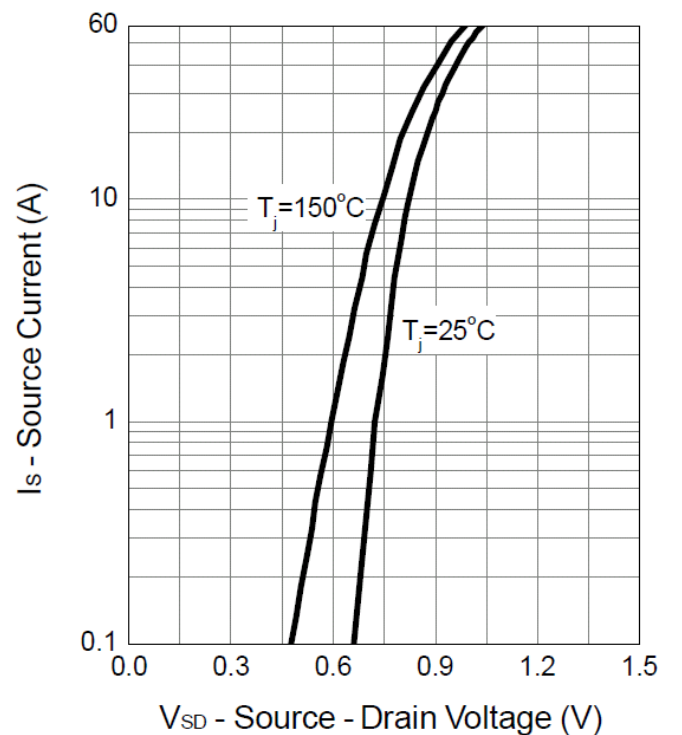
Gate Threshold Voltage



Drain-Source On Resistance

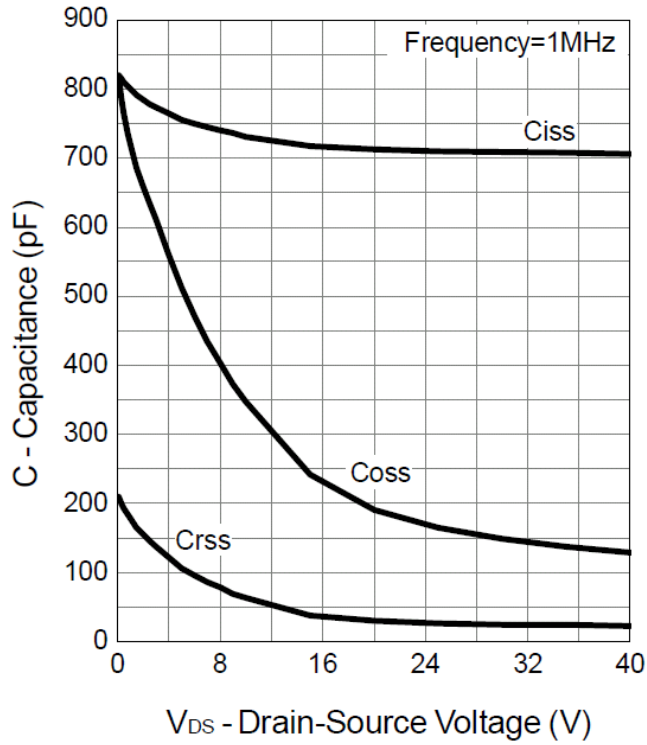


Source-Drain Diode Forward

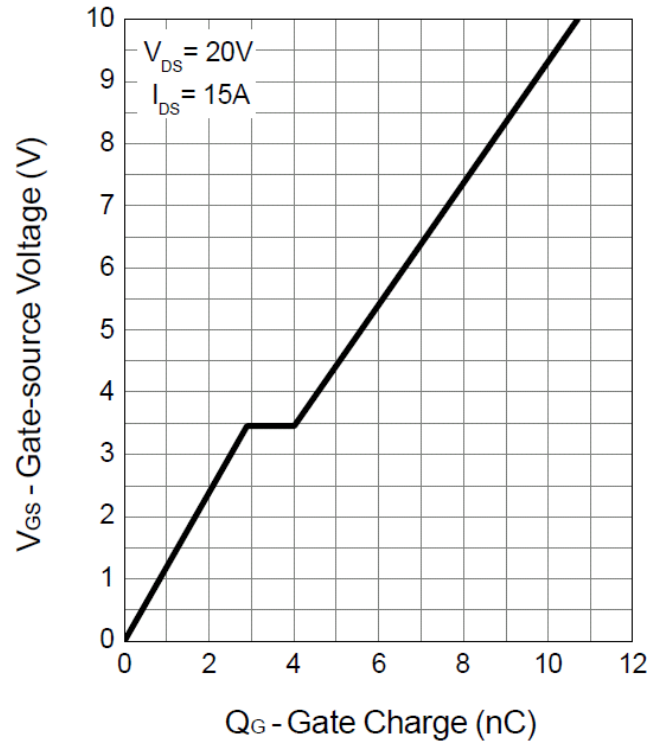


Typical Operating Characteristics(Cont.)

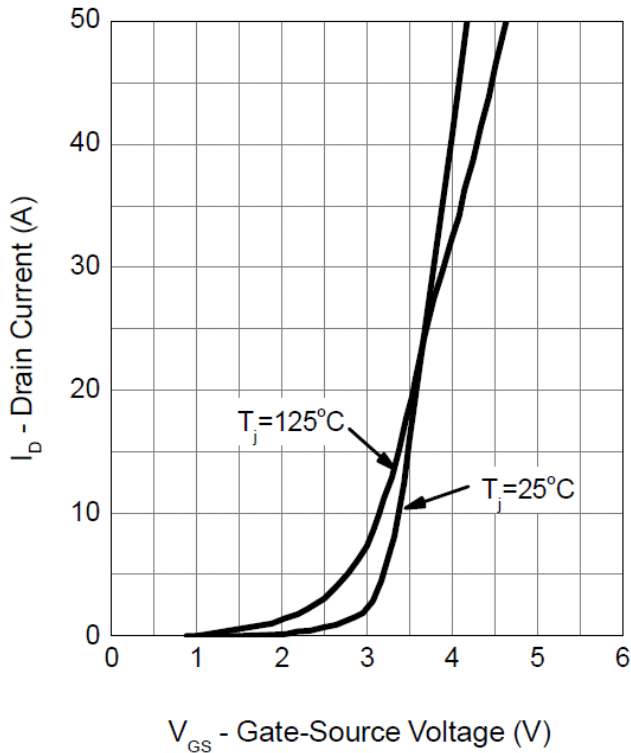
Capacitance



Gate Charge

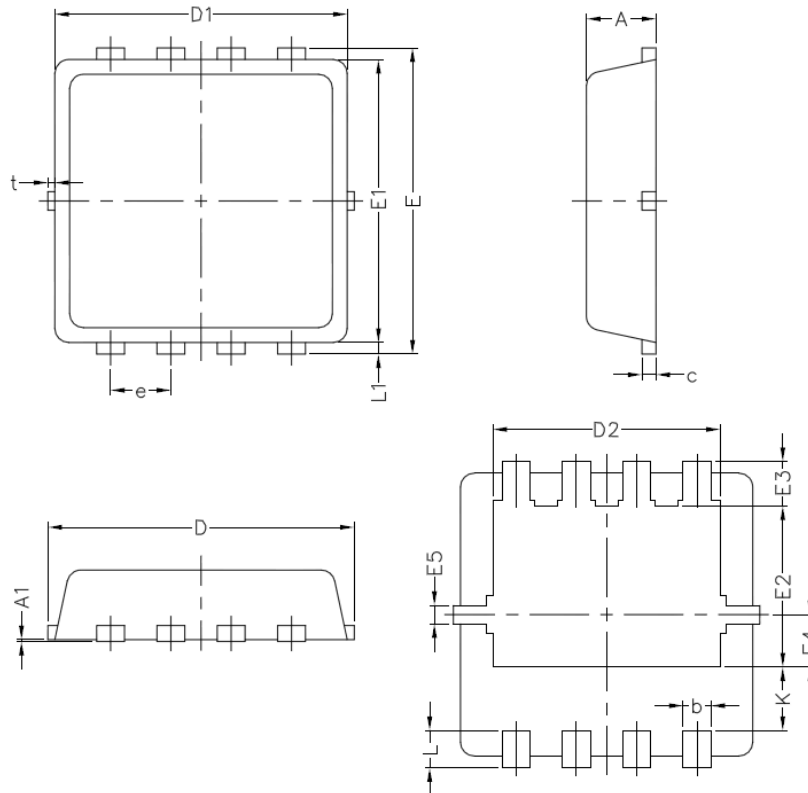


Transfer Characteristics



Package Information

PPAK-3*3-8 Package



| Symbol | PPAK-3*3-8(mm) | | |
|--------|----------------|-------|------|
| | Min | Nom | Max |
| A | 0.70 | 0.75 | 0.85 |
| A1 | / | / | 0.05 |
| b | 0.20 | 0.30 | 0.40 |
| c | 0.10 | 0.152 | 0.25 |
| D | 3.15 | 3.3 | 3.45 |
| D1 | 3.00 | 3.15 | 3.30 |
| D2 | 2.25 | 2.45 | 2.65 |
| E | 3.15 | 3.30 | 3.45 |
| E1 | 2.90 | 3.05 | 3.20 |
| E2 | 1.54 | 1.74 | 1.94 |
| E3 | 0.28 | 0.48 | 0.68 |
| E4 | 0.37 | 0.57 | 0.77 |
| E5 | 0.10 | 0.20 | 0.30 |
| e | 0.60 | 0.65 | 0.70 |
| K | 0.49 | 0.69 | 0.89 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | 0.06 | 0.125 | 0.20 |
| t | / | / | 0.13 |

Design Notes