

Dual P-Channel 20-V (D-S) MOSFET

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

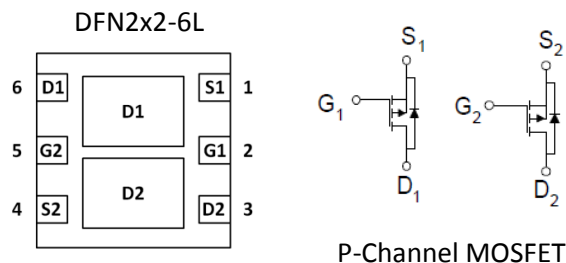
Typical Applications:

- Battery Powered Instruments
- Portable Computing
- Mobile Phones
- GPS Units and Media Players



RoHS
COMPLIANT
HALOGEN
FREE

| PRODUCT SUMMARY | | |
|-----------------|----------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (m Ω) | I_D (A) |
| -20 | 79 @ $V_{GS} = -4.5V$ | -4.2 |
| | 110 @ $V_{GS} = -2.5V$ | -3.6 |



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

| Parameter | Symbol | Limit | Units |
|---|----------------|------------------------|------------------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ± 8 | |
| Continuous Drain Current ^a | I_D | $T_A=25^\circ\text{C}$ | -4.2 |
| | | $T_A=70^\circ\text{C}$ | -3.3 |
| Pulsed Drain Current ^b | I_{DM} | -10 | A |
| Continuous Source Current (Diode Conduction) ^a | I_S | -2.3 | A |
| Power Dissipation ^a | P_D | $T_A=25^\circ\text{C}$ | 2.1 |
| | | $T_A=70^\circ\text{C}$ | 1.3 |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |

THERMAL RESISTANCE RATINGS

| Parameter | Symbol | Maximum | Units |
|--|-----------------|-----------------|-------|
| Maximum Junction-to-Ambient ^a | $R_{\theta JA}$ | t \leq 10 sec | 60 |
| | | Steady State | 110 |

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

Electrical Characteristics

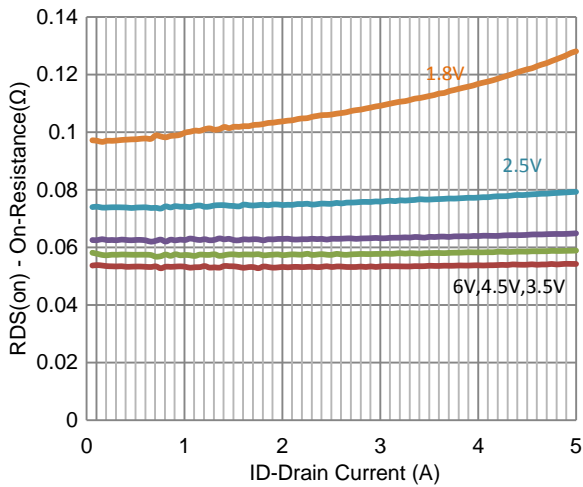
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------|--------------|---|------|-------|-----------|------------|
| Static | | | | | | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250 \mu A$ | -0.4 | | | V |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0 V, V_{GS} = \pm 8 V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -16 V, V_{GS} = 0 V$ | | | 1 | uA |
| | | $V_{DS} = -16 V, V_{GS} = 0 V, T_J = 55^\circ C$ | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} = -5 V, V_{GS} = -4.5 V$ | -10 | | | A |
| Drain-Source On-Resistance | $r_{DS(on)}$ | $V_{GS} = -4.5 V, I_D = -3.4 A$ | | | 79 | m Ω |
| | | $V_{GS} = -2.5 V, I_D = -2.9 A$ | | | 110 | |
| Forward Transconductance | g_{fs} | $V_{DS} = -15 V, I_D = -3.4 A$ | | 10 | | S |
| Diode Forward Voltage | V_{SD} | $I_S = -1.2 A, V_{GS} = 0 V$ | | -0.74 | | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = -10 V, V_{GS} = -4.5 V,$ $I_D = -3.4 A$ | | 7.6 | | nC |
| Gate-Source Charge | Q_{gs} | | | 1.5 | | |
| Gate-Drain Charge | Q_{gd} | | | 2.5 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = -10 V, R_L = 2.9 \Omega, I_D = -3.4 A,$ $V_{GEN} = -4.5 V, R_{GEN} = 6 \Omega$ | | 7 | | ns |
| Rise Time | t_r | | | 21 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 31 | | |
| Fall Time | t_f | | | 22 | | |
| Input Capacitance | C_{iss} | $V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz$ | | 677 | | pF |
| Output Capacitance | C_{oss} | | | 92 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 80 | | |

Notes

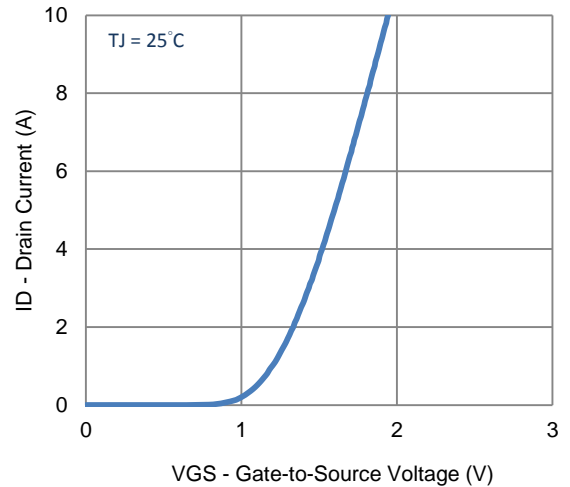
- Pulse test: PW \leq 300us duty cycle \leq 2%.
- Guaranteed by design, not subject to production testing.

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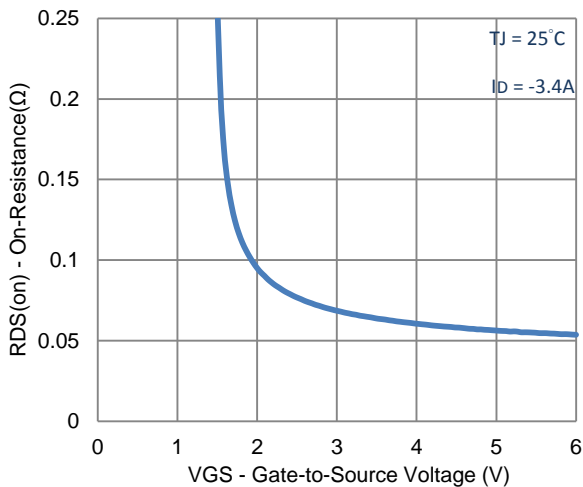
Typical Electrical Characteristics



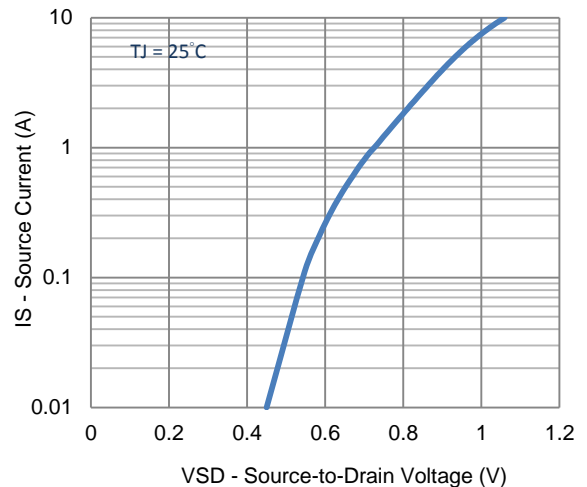
1. On-Resistance vs. Drain Current



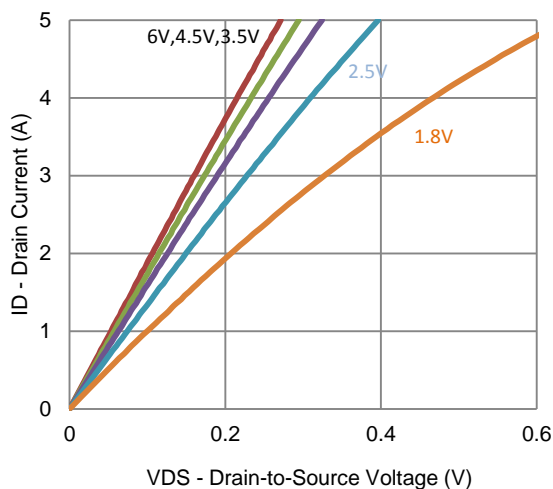
2. Transfer Characteristics



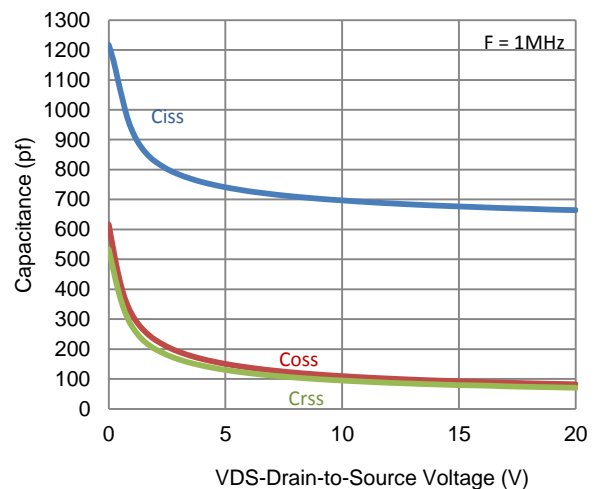
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

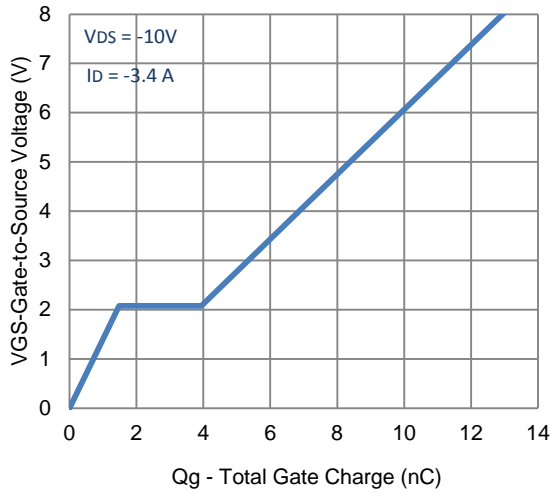


5. Output Characteristics

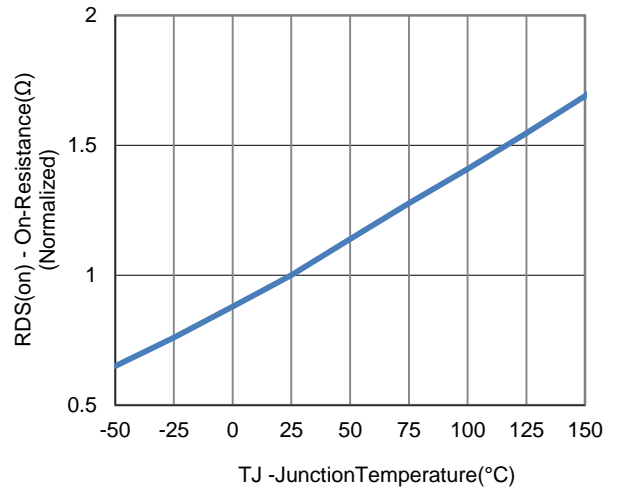


6. Capacitance

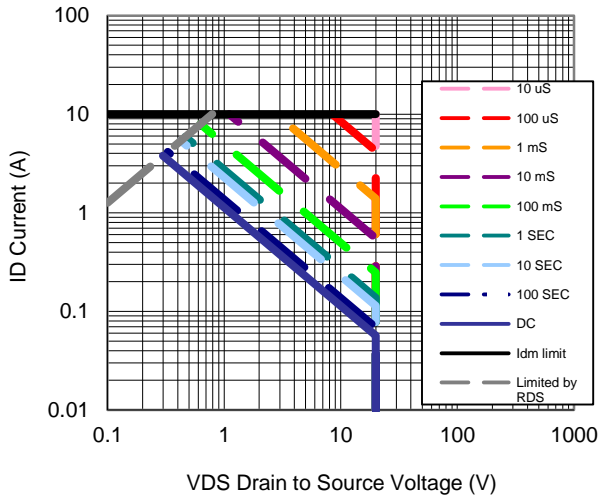
Typical Electrical Characteristics



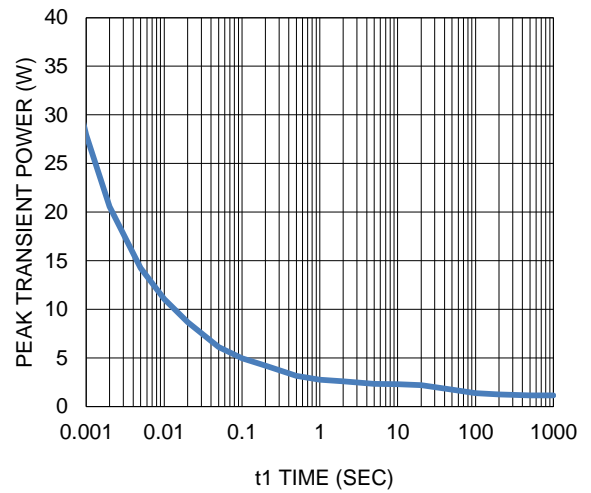
7. Gate Charge



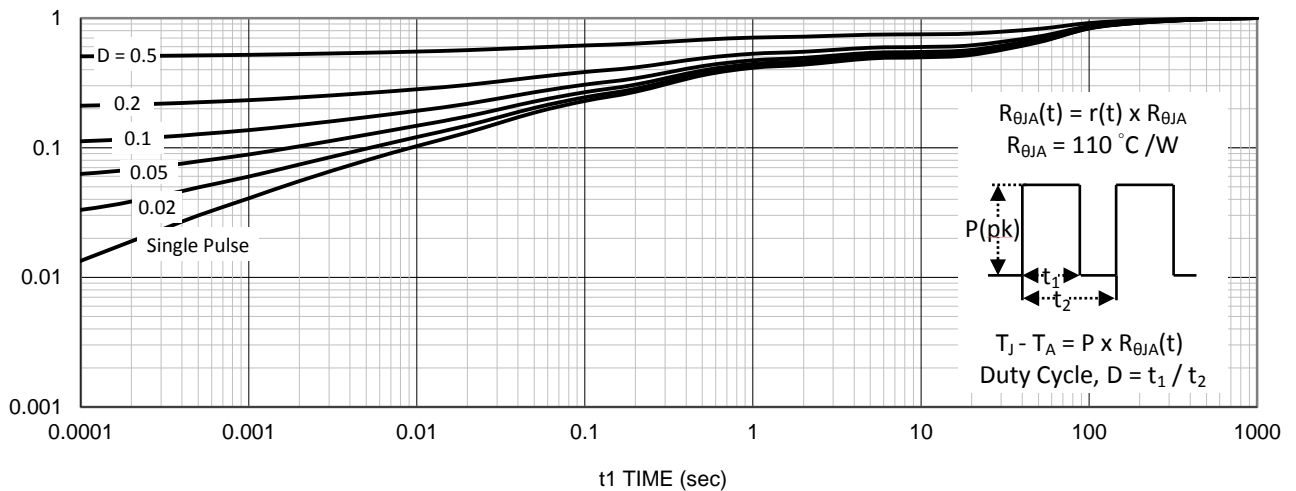
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

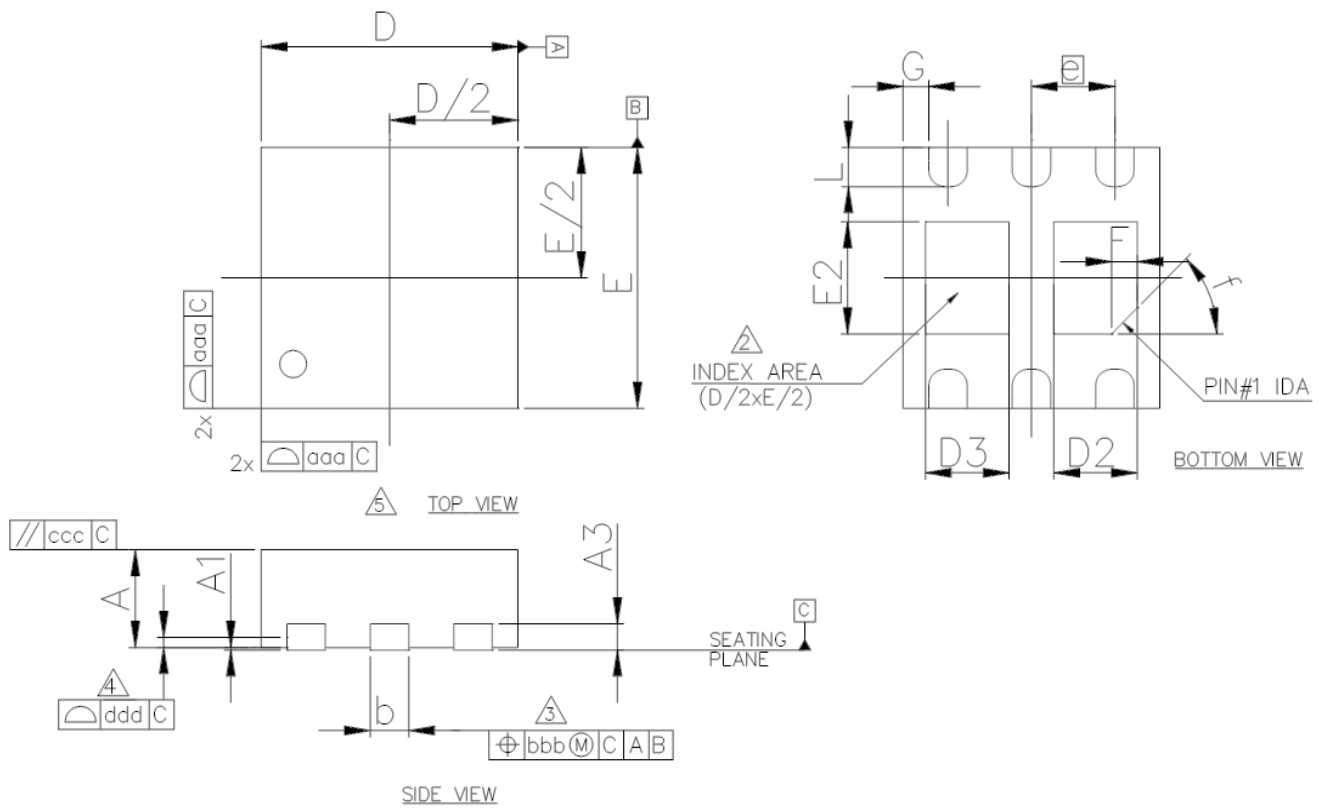


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



| SYMBOL | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|----------|---------------------------|----------|------|----------------------|-----------|-------|
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A | 0.70 | 0.75 | 0.80 | 0.028 | 0.030 | 0.032 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| A3 | --- | 0.20 ref | --- | --- | 0.008 ref | --- |
| b | 0.25 | 0.30 | 0.35 | 0.010 | 0.012 | 0.014 |
| D | 2.00 BSC | | | 0.079 BSC | | |
| D2 | 0.60 | 0.65 | 0.70 | 0.024 | 0.026 | 0.028 |
| D3 | 0.60 | 0.65 | 0.70 | 0.024 | 0.026 | 0.028 |
| E | 2.00 BSC | | | 0.079 BSC | | |
| E2 | 0.81 | 0.86 | 0.91 | 0.032 | 0.034 | 0.036 |
| Δ | 0.65 BSC | | | 0.026 BSC | | |
| L | 0.25 | 0.30 | 0.35 | 0.010 | 0.012 | 0.014 |
| F | 0.20 REF | | | 0.008 REF | | |
| f | 45? | | | 45? | | |
| G | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| aaa | 0.15 | | | 0.006 | | |
| bbb | 0.10 | | | 0.004 | | |