

N-Channel 100-V (D-S) MOSFET

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- Small Footprint DFN3x2-8L package

Typical Applications:

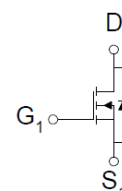
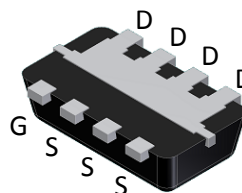
- Telecom DC/DC converters
- White LED boost converters
- Industrial DC/DC conversion
- Automotive Entertainment and GPS DC/DC conversion

| PRODUCT SUMMARY | | |
|-----------------|----------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (m Ω) | I_D (A) |
| 100 | 280 @ $V_{GS} = 10V$ | 2.1 |
| | 355 @ $V_{GS} = 4.5V$ | 1.9 |



RoHS
COMPLIANT
HALOGEN
FREE

DFN3x2-8L EP



N-Channel MOSFET

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

| Parameter | Symbol | Limit | Units |
|---|----------------|--------------------------|------------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current ^a | I_D | $T_A = 25^\circ\text{C}$ | 2.1 |
| | | $T_A = 70^\circ\text{C}$ | 1.7 |
| Pulsed Drain Current ^b | I_{DM} | ± 10 | A |
| Continuous Source Current (Diode Conduction) ^a | I_S | 3 | A |
| Power Dissipation ^a | P_D | $T_A = 25^\circ\text{C}$ | 2.5 |
| | | $T_A = 70^\circ\text{C}$ | 1.6 |
| 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 | 50 |
| | | Steady State | 90 |

Notes

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

Electrical Characteristics

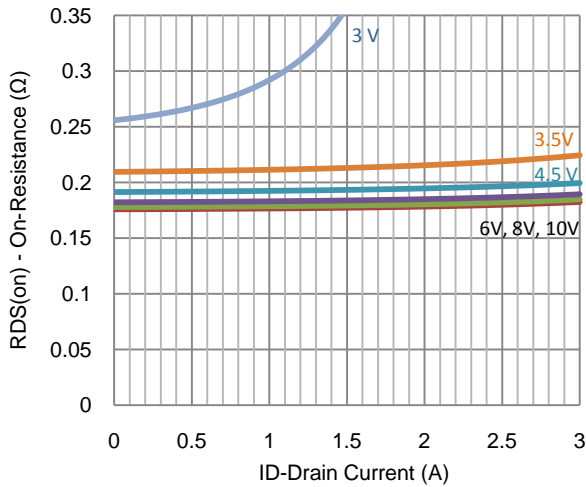
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------|--------------|--|-----|-----|-----------|------------|
| Static | | | | | | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250 \mu A$ | 1 | | 3.5 | V |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0 V, V_{GS} = \pm 20 V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 80 V, V_{GS} = 0 V$ | | | 1 | uA |
| | | $V_{DS} = 80 V, V_{GS} = 0 V, T_J = 55^\circ C$ | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} = 5 V, V_{GS} = 10 V$ | 10 | | | A |
| Drain-Source On-Resistance | $r_{DS(on)}$ | $V_{GS} = 10 V, I_D = 1.7 A$ | | | 280 | m Ω |
| | | $V_{GS} = 4.5 V, I_D = 1.5 A$ | | | 355 | |
| Forward Transconductance | g_{fs} | $V_{DS} = 15 V, I_D = 1.7 A$ | | 5 | | S |
| Diode Forward Voltage | V_{SD} | $I_S = 1.5 A, V_{GS} = 0 V$ | | 0.8 | | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = 50 V, V_{GS} = 4.5 V, I_D = 1.7 A$ | | 4.1 | | nC |
| Gate-Source Charge | Q_{gs} | | | 1 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.9 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 50 V, R_L = 30 \Omega, I_D = 1.7 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$ | | 3 | | ns |
| Rise Time | t_r | | | 3 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 10 | | |
| Fall Time | t_f | | | 3 | | |
| Input Capacitance | C_{iss} | $V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz$ | | 420 | | pF |
| Output Capacitance | C_{oss} | | | 50 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 30 | | |

Notes

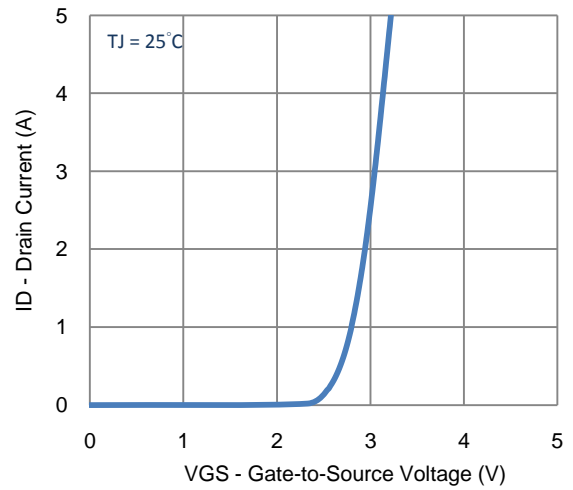
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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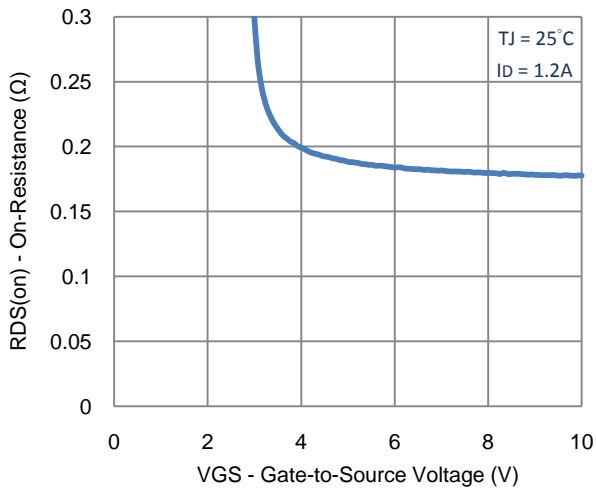
Typical Electrical Characteristics



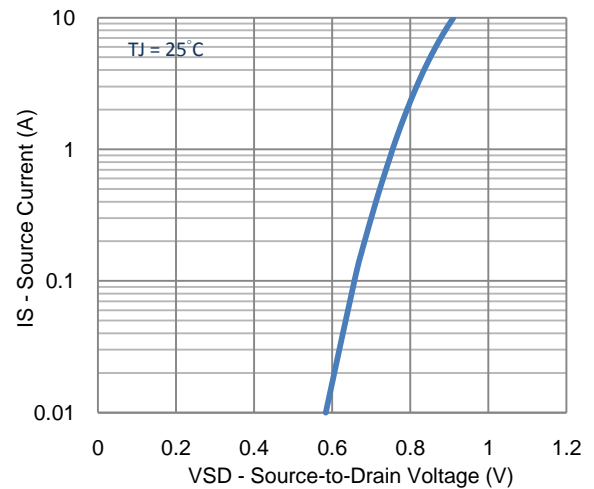
1. On-Resistance vs. Drain Current



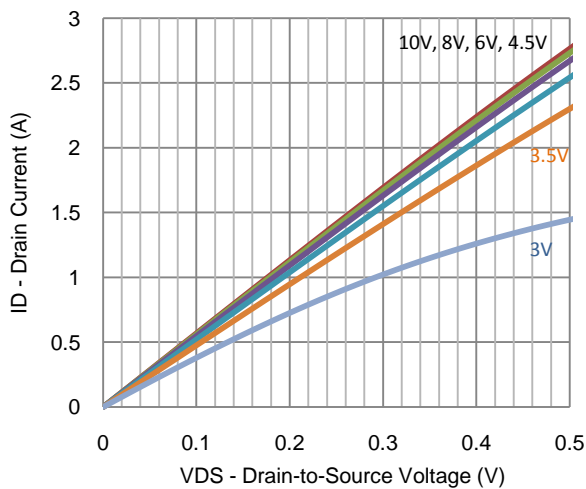
2. Transfer Characteristics



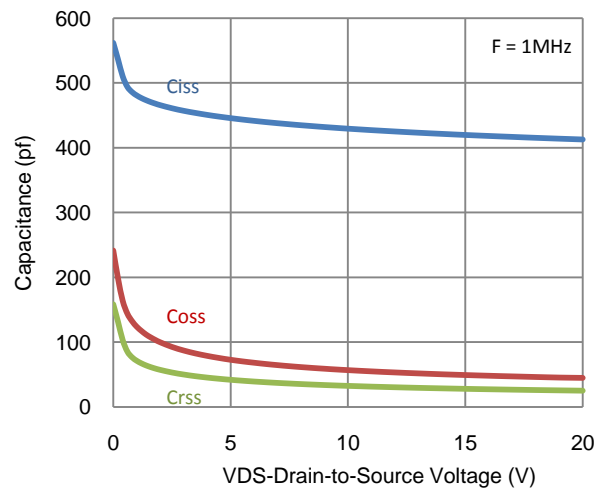
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

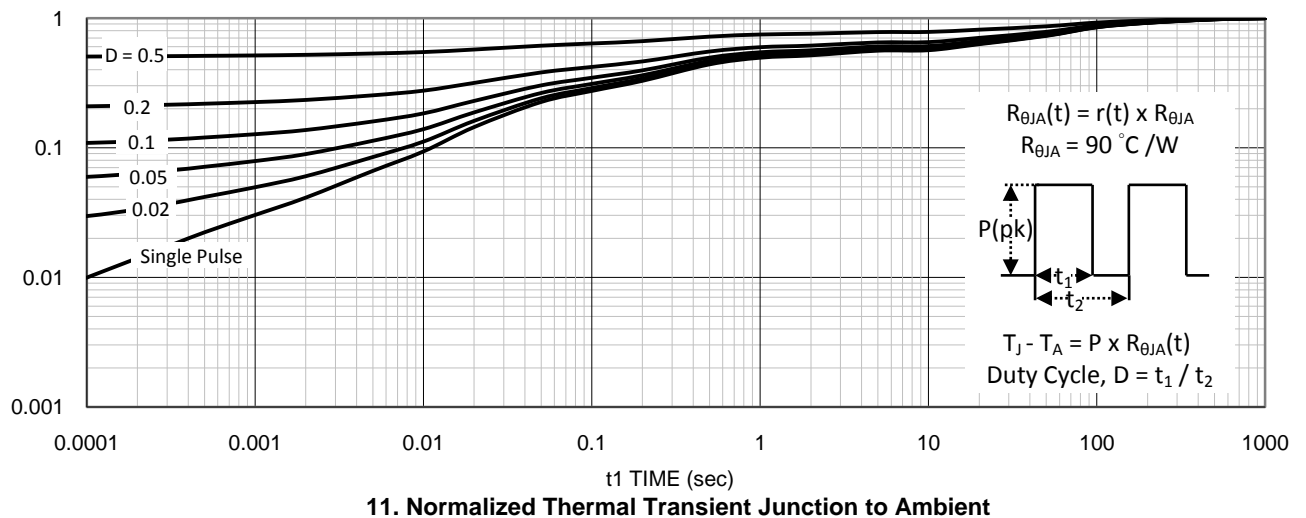
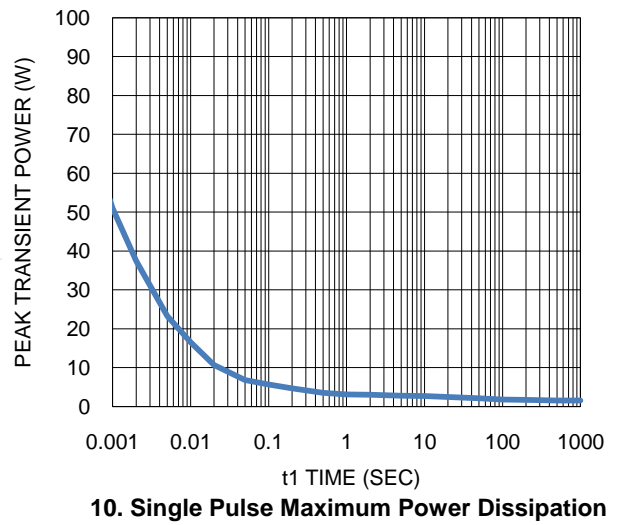
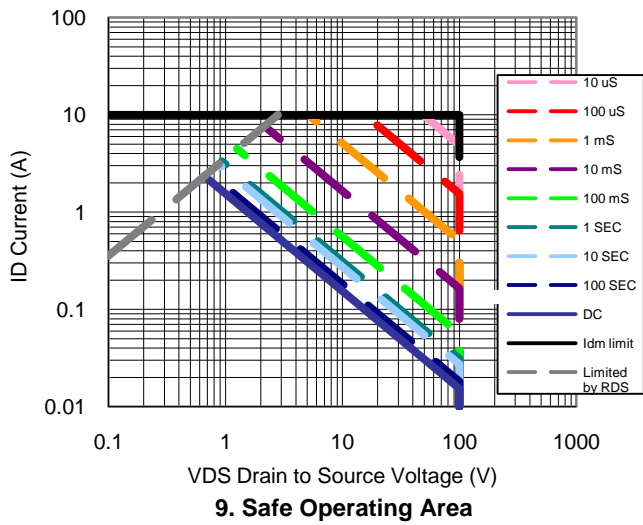
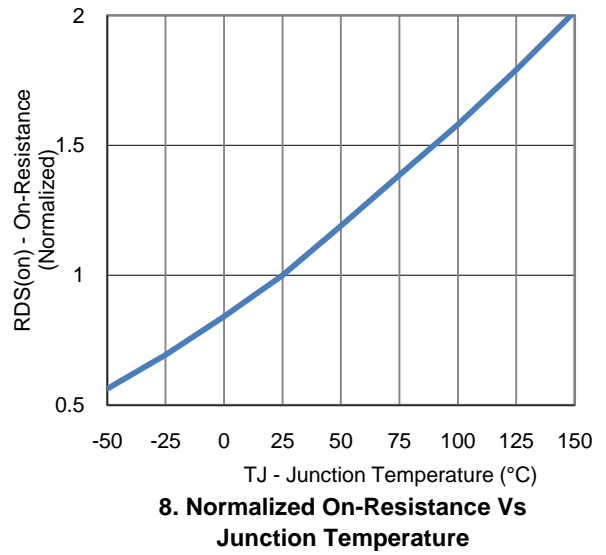
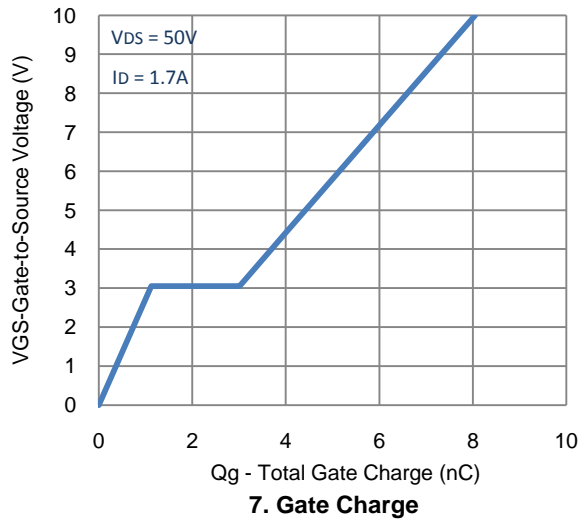


5. Output Characteristics

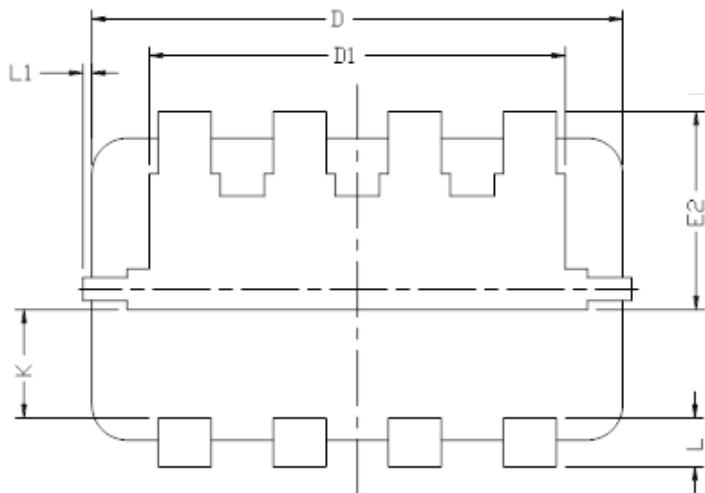
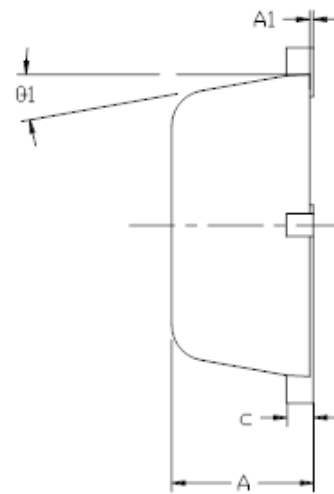
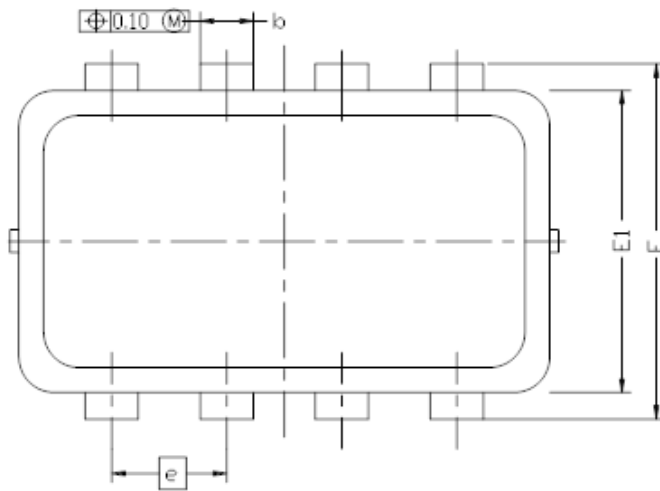


6. Capacitance

Typical Electrical Characteristics



Package Information



| DIM. | MILLIMETERS | | | INCHES | | |
|------|-------------|-------|-------|-----------|--------|--------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.700 | 0.80 | 0.900 | 0.0276 | 0.0315 | 0.0354 |
| A1 | 0.00 | --- | 0.05 | 0.000 | --- | 0.002 |
| b | 0.24 | 0.30 | 0.35 | 0.009 | 0.012 | 0.014 |
| c | 0.08 | 0.152 | 0.25 | 0.003 | 0.006 | 0.010 |
| D | 3.00 BSC | | | 0.118 BSC | | |
| D1 | 2.30 | 2.35 | 2.40 | 0.091 | 0.093 | 0.095 |
| E | 2.00 BSC | | | 0.079 BSC | | |
| E1 | 1.70 BSC | | | 0.067 BSC | | |
| E2 | 1.065 | 1.115 | 1.165 | 0.042 | 0.044 | 0.046 |
| e | 0.65 BSC | | | 0.026 BSC | | |
| L | 0.20 | 0.275 | 0.400 | 0.008 | 0.011 | 0.0157 |
| K | 0.56 | 0.61 | 0.66 | 0.022 | 0.024 | 0.026 |
| L1 | 0 | --- | 0.100 | 0 | --- | 0.004 |
| Ø1 | 0 | 10 | 12 | 0 | 10 | 12 |

Note:

1. Package Body Sizes Exclude Mold Flash, Protrusion Or Gate Burrs. Mold Flash, Protrusion Or Gate Burrs Shall Not Exceed 0.10 mm Per Side.
2. Package Body Sizes Determined At The Outermost Extremes Of The Plastic Body Exclusive Of Mold Flash, Tie Bar Burrs, Gate Burrs And Interlead Flash, But Including Any Mismatch Between The Top And Bottom Of The Plastic Body.