

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -40V | 14mΩ@-10V | -40A |
| | 20mΩ@-4.5V | |

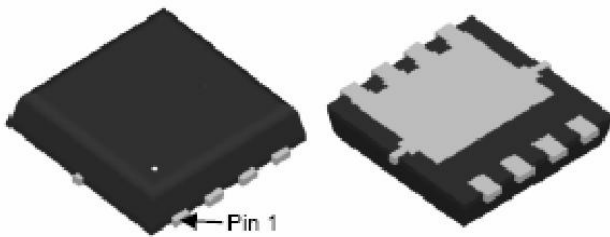
Feature

- High density cell design for ultra low Rdson
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

Application

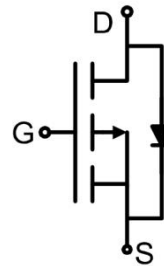
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

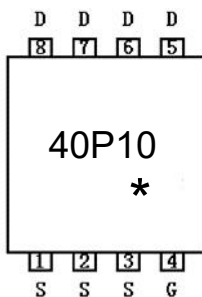


DFN3.3X3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|---------------|
| Drain-Source Voltage | V_{DS} | -40 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | -40 | A |
| Pulsed Drain Current | I_{DM} | -160 | A |
| Power Dissipation | P_D | 3.5 | W |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 35.7 | $^{\circ}C/W$ |
| Junction Temperature | T_J | 150 | $^{\circ}C$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | $^{\circ}C$ |

Electrical characteristics (Ta=25 °C, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---------------|--|------|------|-----------|------------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -40 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -40V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 20V, V_{DS} = 0V$ | | | ± 100 | nA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -1.0 | -1.6 | -2.5 | V |
| Drain-source on-resistance ¹⁾ | $R_{DS(on)}$ | $V_{GS} = -10V, I_D = -12A$ | | 10.5 | 14 | m Ω |
| | | $V_{GS} = -4.5V, I_D = -10A$ | | 14 | 20 | |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$ | | 3580 | | pF |
| Output Capacitance | C_{oss} | | | 323 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 220 | | |
| Total Gate Charge | Q_g | $V_{DS} = -20V, V_{GS} = -10V, I_D = -25A$ | | 41 | | nC |
| Gate-Source Charge | Q_{gs} | | | 11 | | |
| Gate-Drain Charge | Q_{gd} | | | 8 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD} = -20V, V_{GS} = -10V, I_D = -1A, R_G = 6\Omega$ | | 12 | | nS |
| Turn-on rise time | t_r | | | 25 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 30 | | |
| Turn-off fall time | t_f | | | 24 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward voltage | V_{SD} | $V_{GS} = 0V, I_S = -1A$ | | | -1.2 | V |

Notes:

- 1) Pulse Test: Pulse Width < 300 μs , Duty Cycle $\leq 2\%$.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

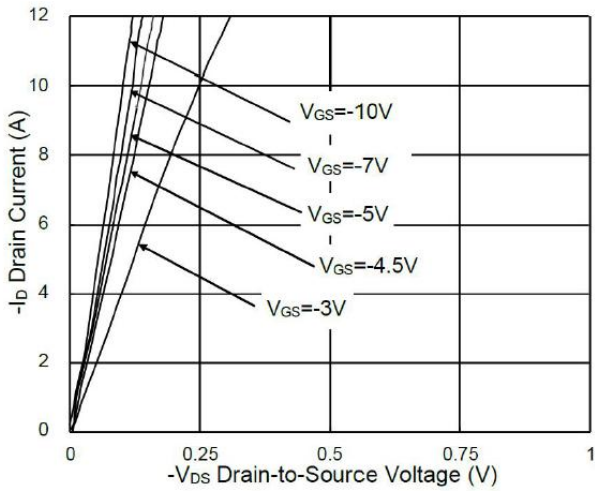


Fig.1 Typical Output Characteristics

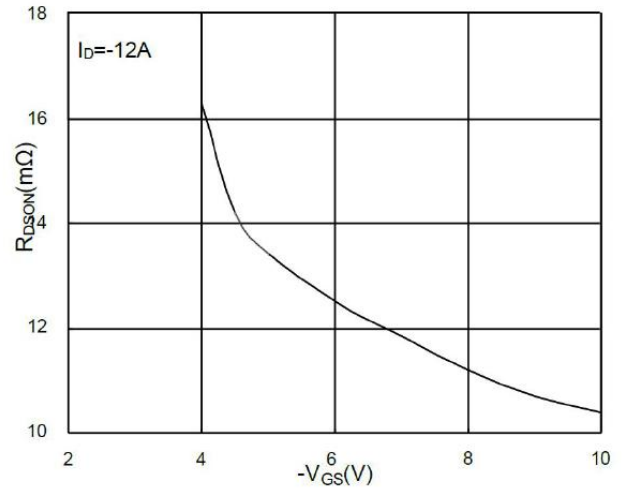


Fig.2 On-Resistance v.s Gate-Source

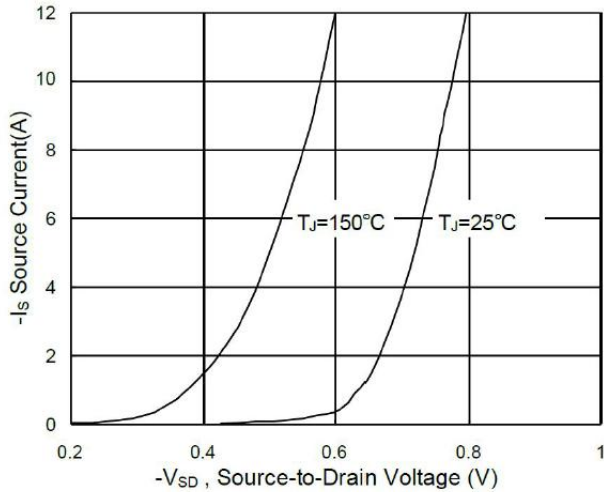


Fig.3 Forward Characteristics Of Reverse

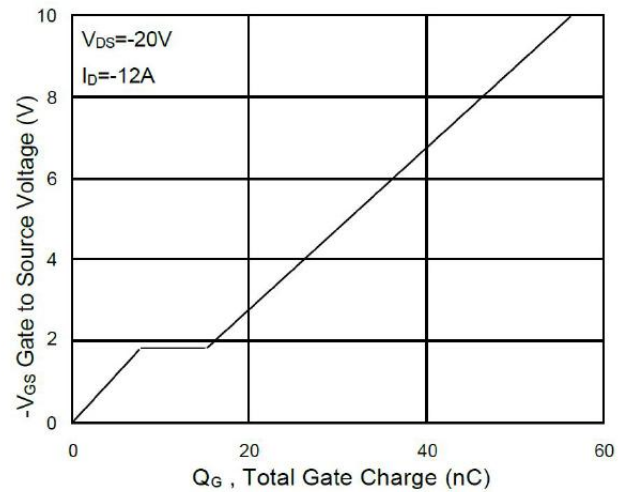


Fig.4 Gate-Charge Characteristics

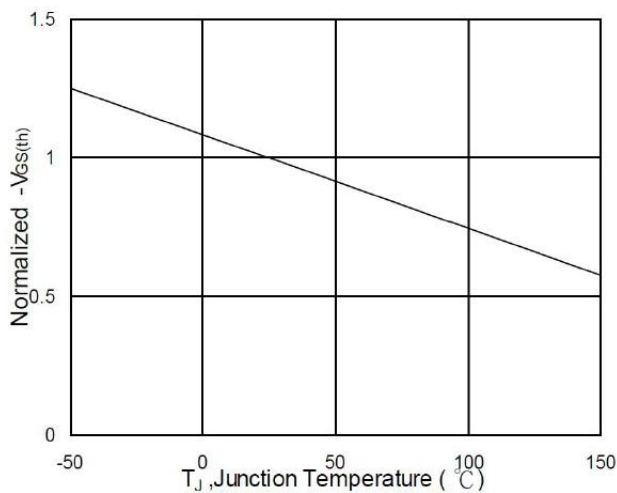


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

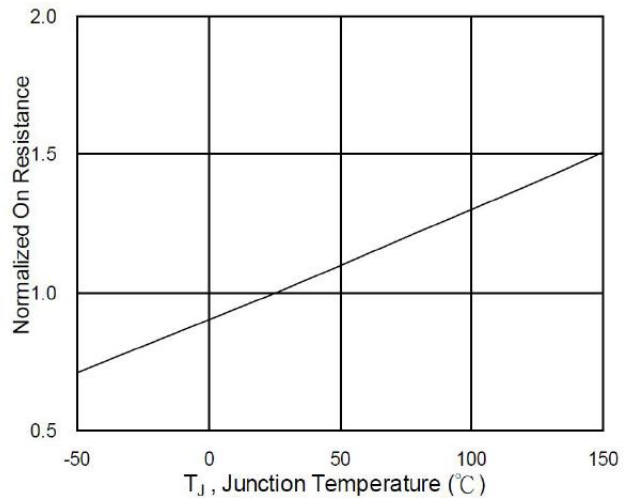


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

Typical Characteristics

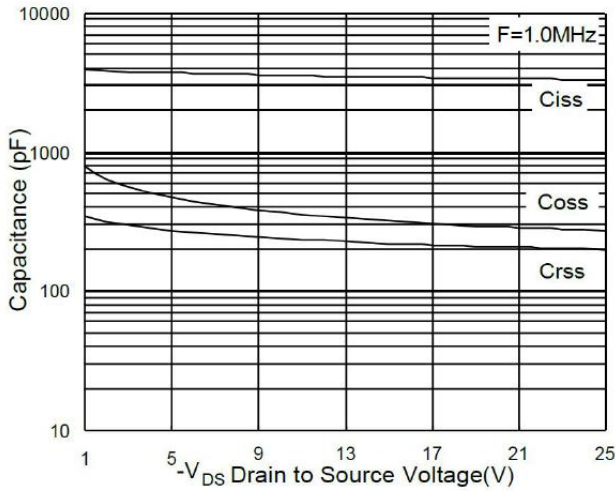


Fig.7 Capacitance

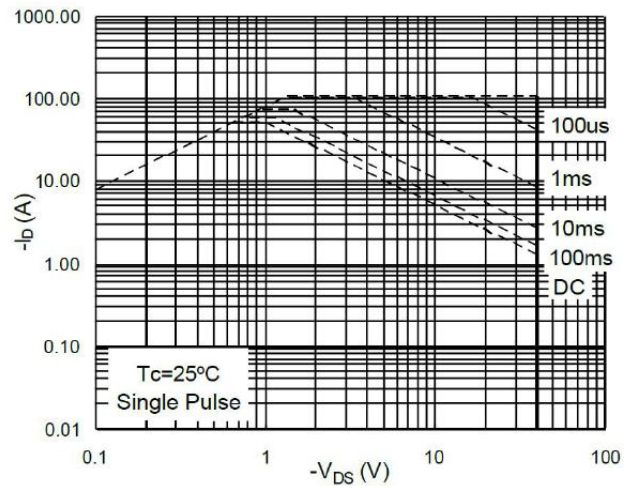


Fig.8 Safe Operating Area

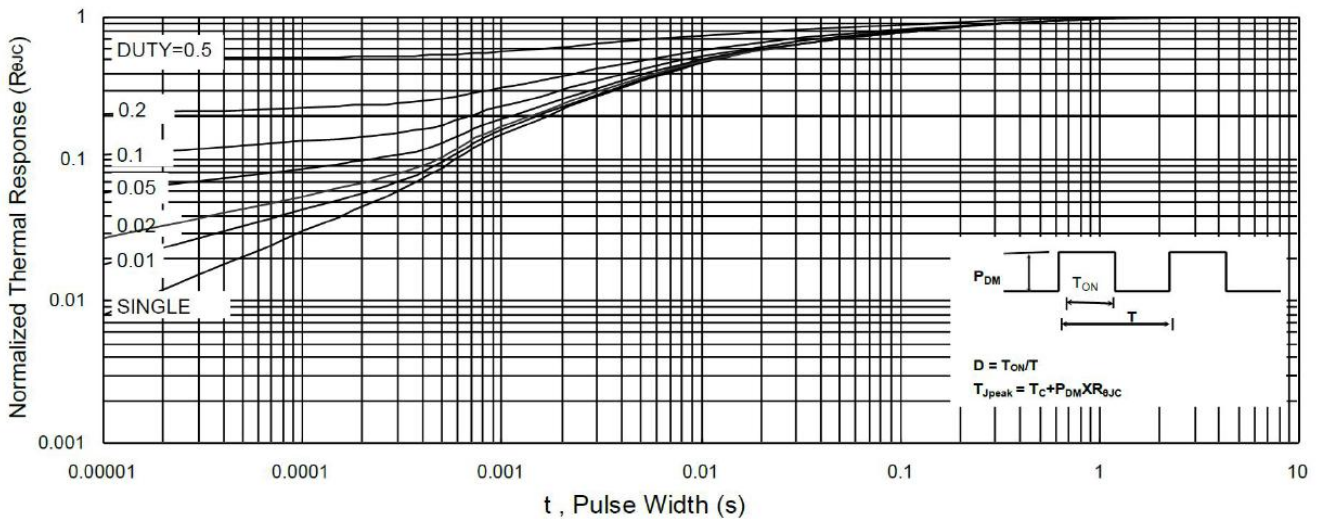


Fig.9 Normalized Maximum Transient Thermal Impedance

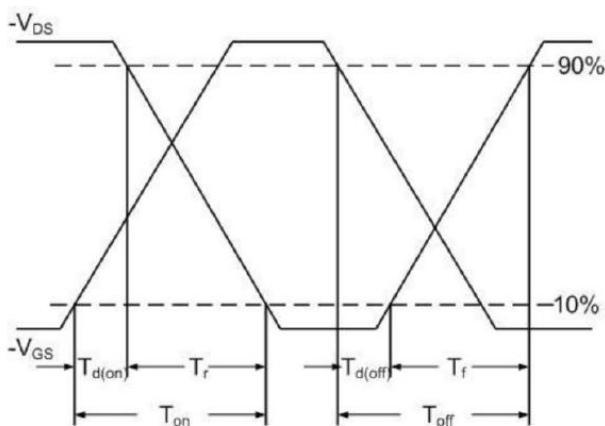


Fig.10 Switching Time Waveform

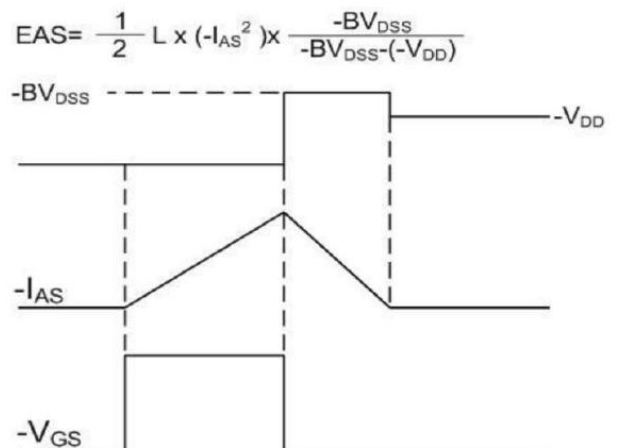
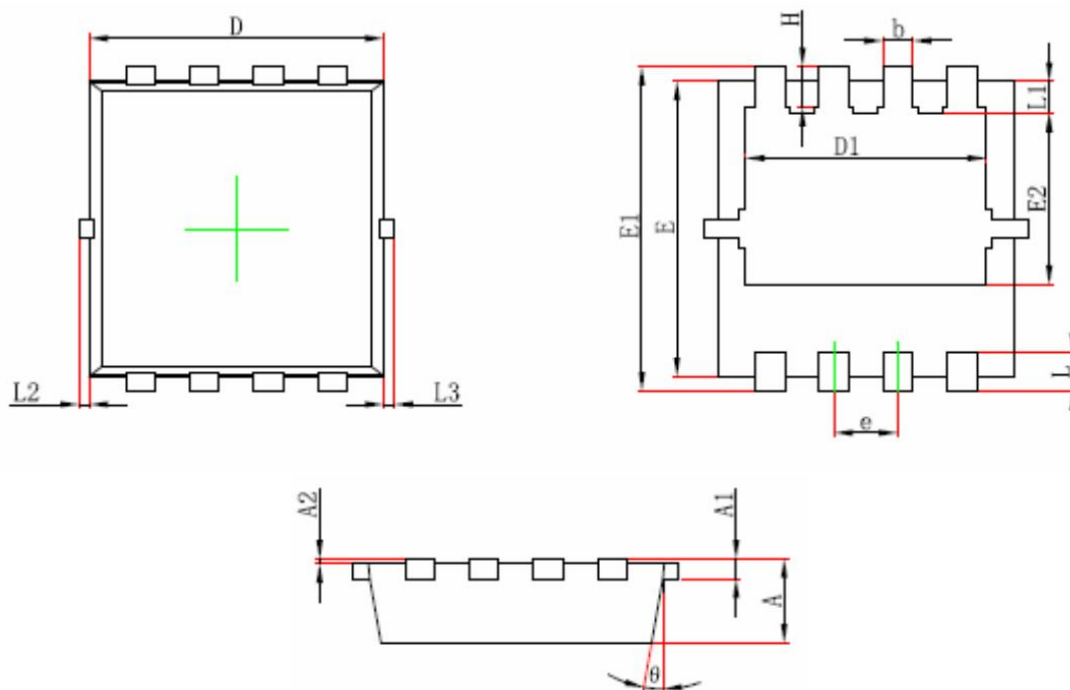


Fig.11 Unclamped Inductive Waveform

DFN3.3X3.3-8L Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.650 | 0.850 | 0.026 | 0.033 |
| A1 | 0.152 REF | | 0.006 REF | |
| A2 | 0.000 | 0.050 | 0.000 | 0.002 |
| D | 2.900 | 3.100 | 0.114 | 0.122 |
| D1 | 2.300 | 2.600 | 0.091 | 0.102 |
| E | 2.900 | 3.100 | 0.114 | 0.122 |
| E1 | 3.150 | 3.450 | 0.124 | 0.136 |
| E2 | 1.535 | 1.935 | 0.060 | 0.076 |
| b | 0.200 | 0.400 | 0.008 | 0.016 |
| e | 0.550 | 0.750 | 0.022 | 0.030 |
| L | 0.300 | 0.500 | 0.012 | 0.020 |
| L1 | 0.180 | 0.480 | 0.007 | 0.019 |
| L2 | 0.000 | 0.100 | 0.000 | 0.004 |
| L3 | 0.000 | 0.100 | 0.000 | 0.004 |
| H | 0.315 | 0.515 | 0.012 | 0.020 |
| θ | 9 ° | 13 ° | 9 ° | 13 ° |