

Features

- Advanced Shield Gate Trench technology
- Super Low Gate Charge
- High-Speed Switching
- 100% EAS Guaranteed
- Green Device Available

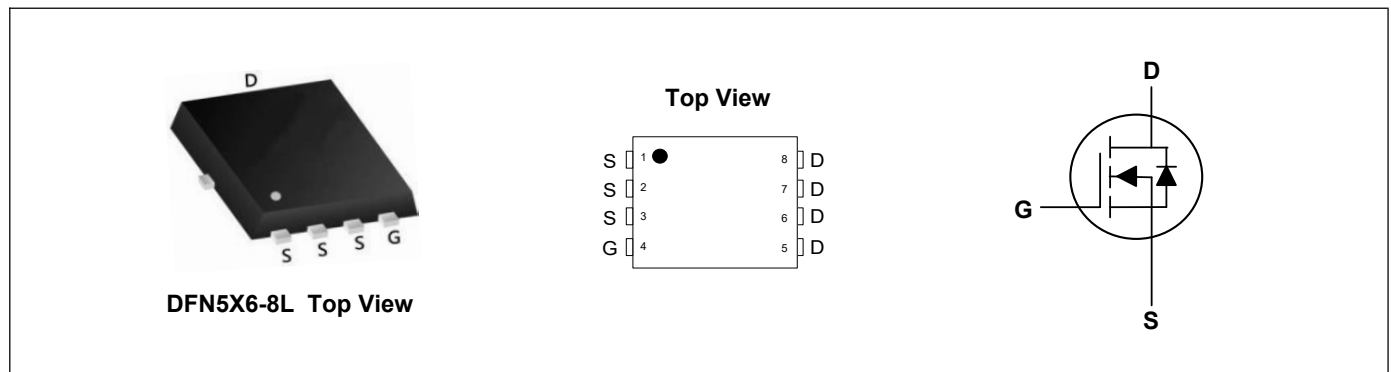
Product Summary



| | | |
|---------------------------------|-----|------------|
| V_{DS} | 85 | V |
| I_D | 180 | A |
| $R_{DS(ON)}$ (at $V_{GS}=10V$) | 2.8 | m Ω |

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



Absolute Maximum Ratings($T_C=25^\circ C$, unless otherwise noted)

| Parameter | Symbol | Rating | Units |
|--|-----------|------------|------------|
| Drain-Source Voltage | V_{DS} | 85 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ¹ | I_D | 180 | A |
| Continuous Drain Current ¹ | I_D | 95 | A |
| Pulsed Drain Current ² | I_{DM} | 320 | A |
| Single Pulse Avalanche Energy ³ | E_{AS} | 364 | mJ |
| Total Power Dissipation ⁴ | P_D | 156 | W |
| Storage Temperature Range | T_{STG} | -55 to 150 | $^\circ C$ |
| Operating Junction Temperature Range | T_J | -55 to 150 | $^\circ C$ |

Thermal Characteristics

| Parameter | Symbol | Typ | Max | Unit |
|--|-----------------|-----|-----|--------------|
| Thermal Resistance Junction-Ambient ¹ | $R_{\theta JA}$ | --- | 43 | $^\circ C/W$ |
| Thermal Resistance Junction-Case ¹ | $R_{\theta JC}$ | --- | 1.3 | $^\circ C/W$ |

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-----------------------------------|--------------|--|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 85 | --- | --- | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=20A$ | --- | 2.6 | 2.8 | m Ω |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ | 2.0 | --- | 4.0 | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=64V, V_{GS}=0V$ | --- | --- | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| Forward Transconductance | g_{fs} | $V_{DS}=5V, I_D=20A$ | --- | --- | --- | S |
| Total Gate Charge | Q_g | $V_{DS}=40V, V_{GS}=10V, I_D=20A$ | --- | 120 | --- | nC |
| Gate-Source Charge | Q_{gs} | | --- | 31 | --- | |
| Gate-Drain Charge | Q_{gd} | | --- | 39 | --- | |
| Turn-On Delay Time | $T_{d(on)}$ | $V_{DS}=40V, V_{GS}=10V, R_G=4.5\Omega, I_D=20A$ | --- | 41 | --- | ns |
| Rise Time | T_r | | --- | 68 | --- | |
| Turn-Off Delay Time | $T_{d(off)}$ | | --- | 76 | --- | |
| Fall Time | T_f | | --- | 45 | --- | |
| Input Capacitance | C_{iss} | $V_{DS}=40V, V_{GS}=0V, f=1\text{MHz}$ | --- | 6200 | --- | pF |
| Output Capacitance | C_{oss} | | --- | 1100 | --- | |
| Reverse Transfer Capacitance | C_{rss} | | --- | 96 | --- | |

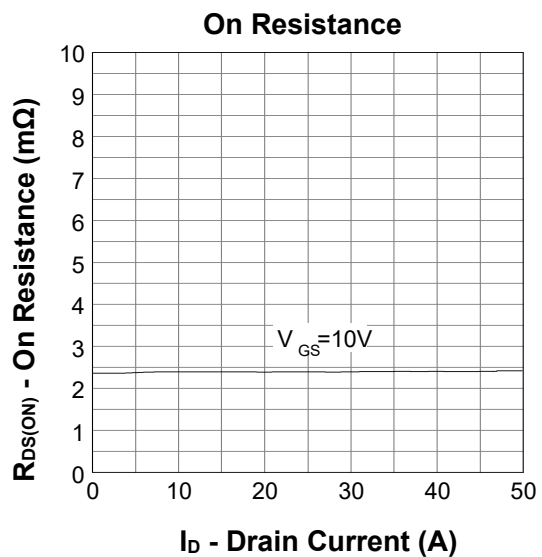
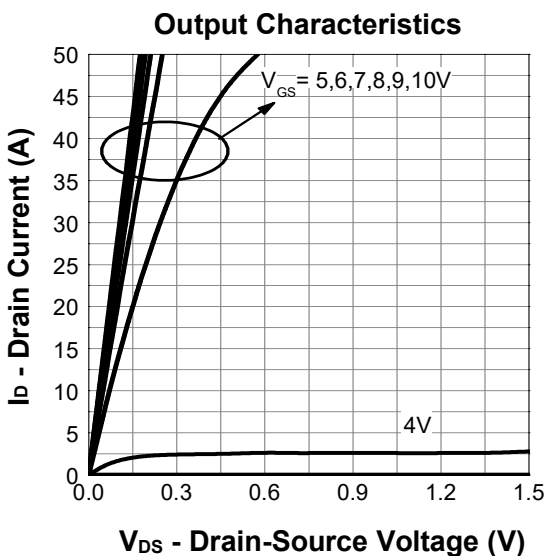
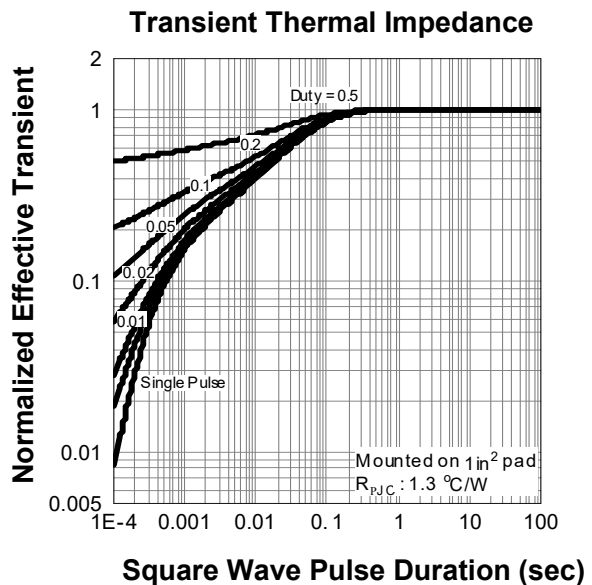
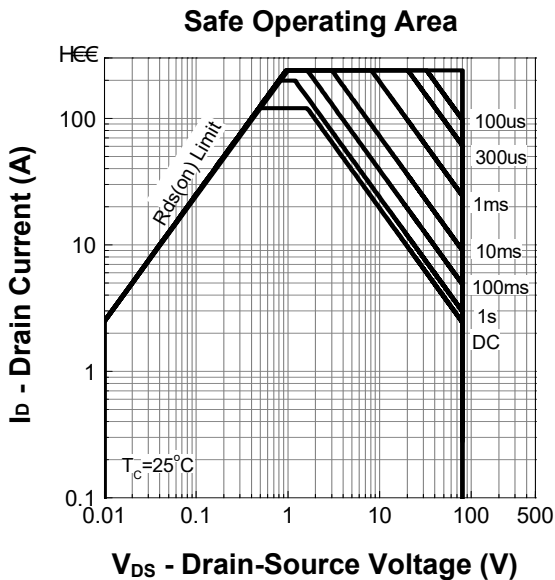
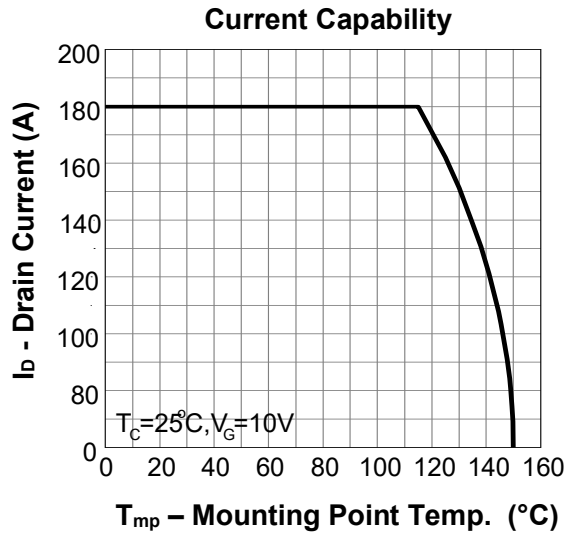
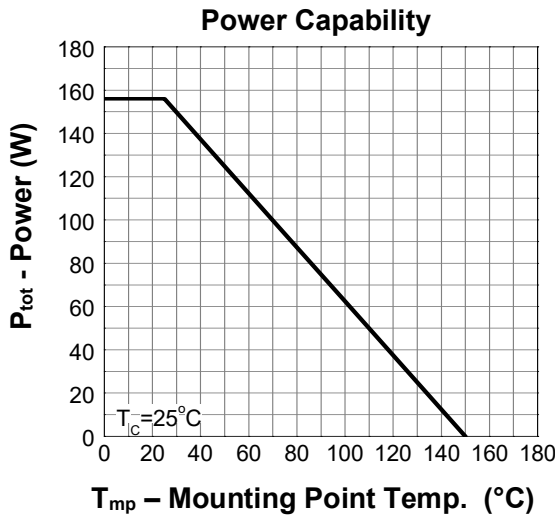
Drain-Source Diode Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|------------------------------------|----------|--|-----|-----|-----|------|
| Diode Forward Voltage ² | V_{SD} | $V_{GS}=0V, I_S=20A, T_J=25^{\circ}\text{C}$ | --- | --- | 1.3 | V |
| Reverse Recovery Time | t_{rr} | $I_D=20A$ | --- | 76 | --- | nS |
| Reverse Recovery Charge | Q_{rr} | $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$ | --- | 125 | --- | nC |

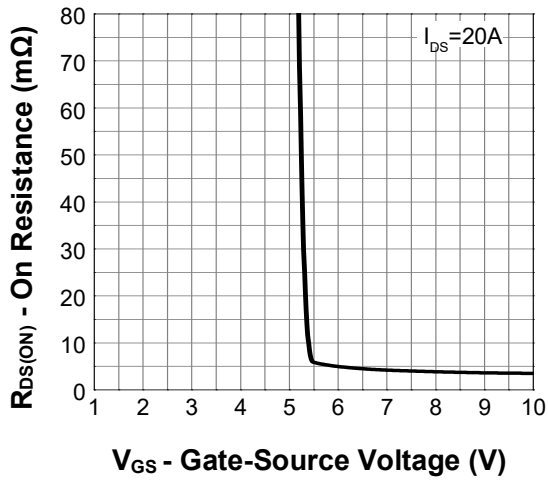
Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=100V, R_G=25\Omega, L=0.1\text{mH}$

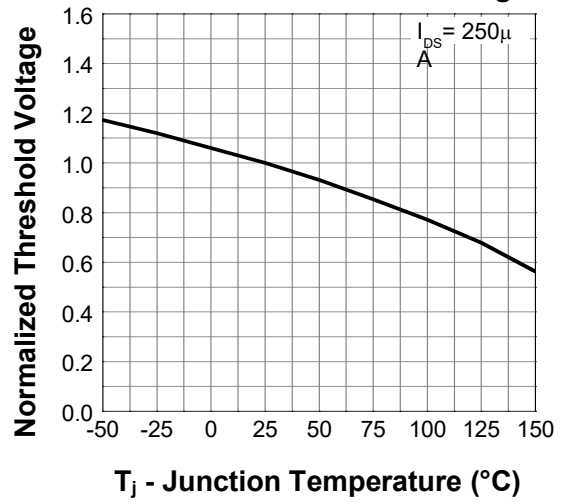
Typical Characteristics



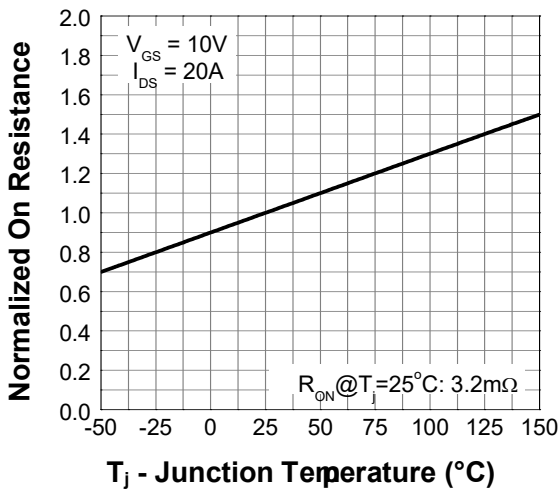
Transfer Characteristics



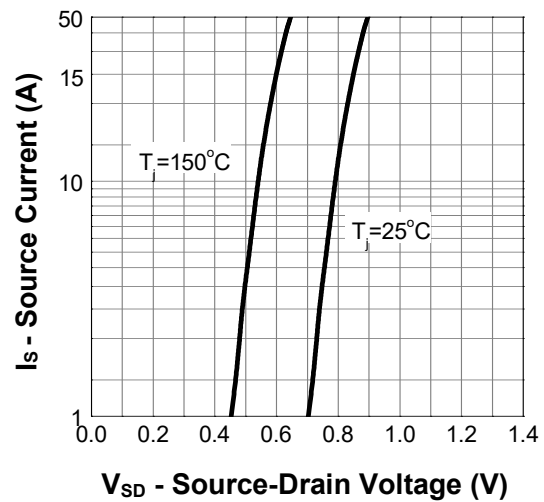
Normalized Threshold Voltage



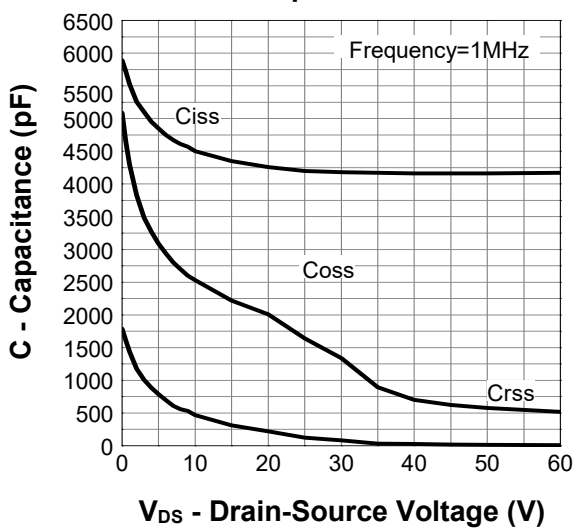
Normalized ON Resistance



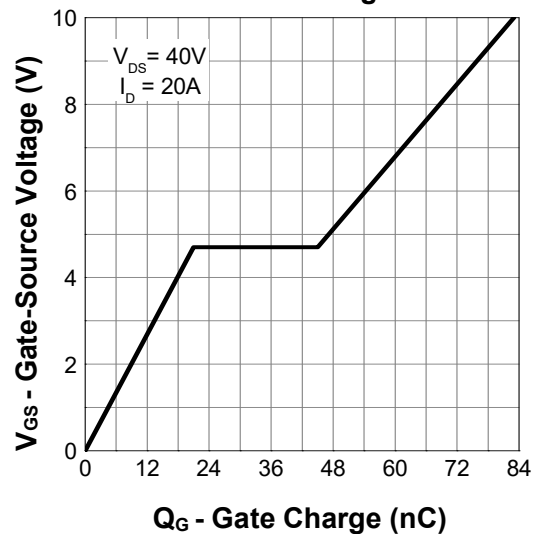
Diode Forward Current



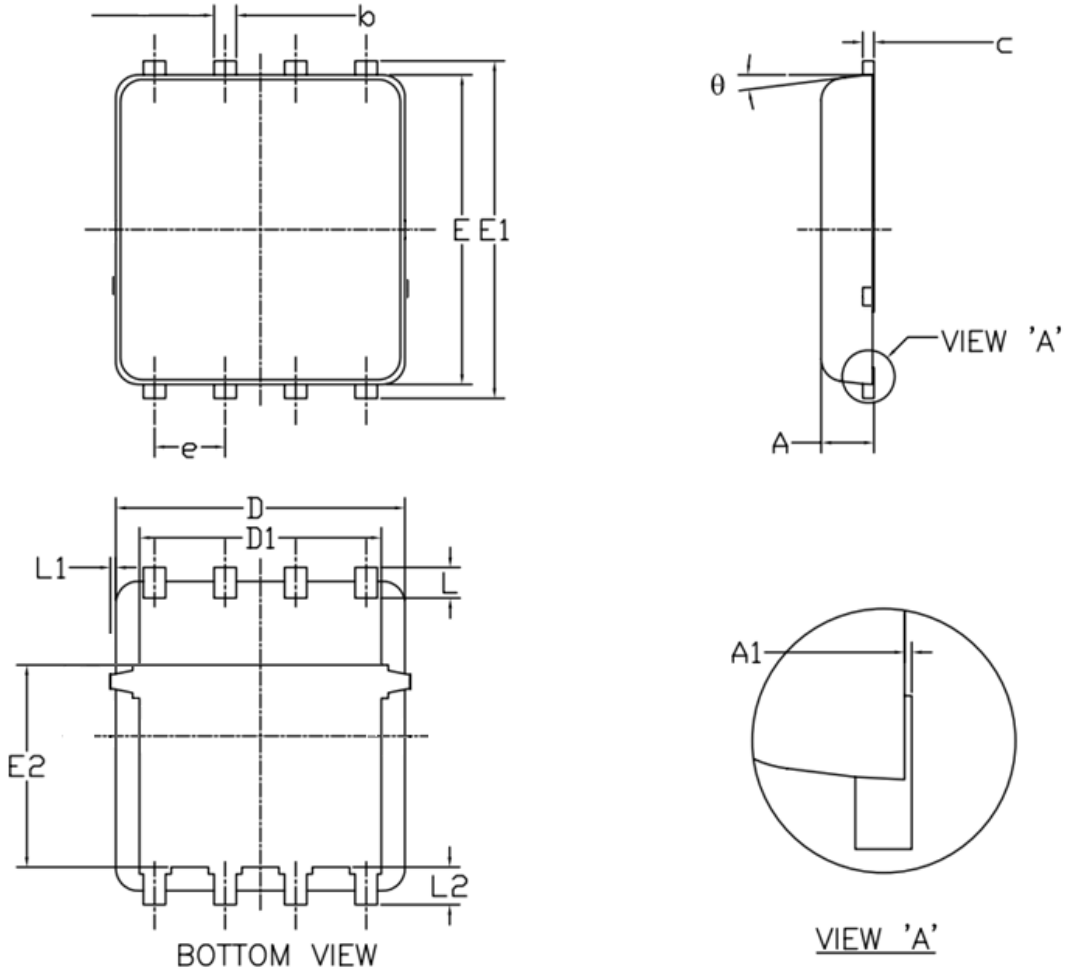
Capacitance



Gate Charge



DFN5X6-8L Package Outline Dimensions



| Symbol | Dimensions (unit:mm) | | | Symbol | Dimensions (unit:mm) | | |
|-----------|----------------------|------|------|--------------|----------------------|------|------|
| | Min | Typ | Max | | Min | Typ | Max |
| A | 0.90 | 1.00 | 1.20 | E1 | 5.90 | 6.10 | 6.35 |
| A1 | 0.00 | -- | 0.05 | E2 | 3.38 | 3.58 | 3.92 |
| b | 0.30 | 0.40 | 0.51 | e | 1.27 BSC | | |
| c | 0.20 | 0.25 | 0.33 | L | 0.51 | 0.61 | 0.71 |
| D | 4.80 | 4.90 | 5.40 | L1 | -- | -- | 0.15 |
| D1 | 3.61 | 4.00 | 4.25 | L2 | 0.41 | 0.51 | 0.61 |
| E | 5.65 | 5.80 | 6.06 | theta | 0° | -- | 12° |