

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -60V | 8.5mΩ@-10V | -80A |

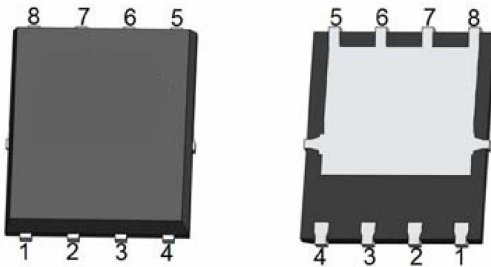
Feature

- Split gate trench MOSFET technology
- Low RDS(on) & FOM
- Excellent stability and uniformity

Application

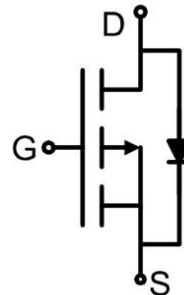
- Power management
- Portable equipment

Package

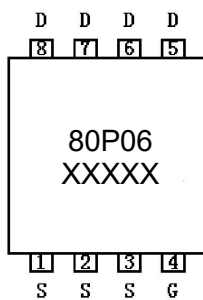


DFN5X6-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|--------------------------|------------|---------------------------|
| Drain-Source Voltage | V_{DS} | -60 | V |
| Gate-Source Voltage | V_{GS} | ± 18 | V |
| Continuous Drain Current($T_C = 25^\circ\text{C}$) | $I_D(25^\circ\text{C})$ | -80 | A |
| Continuous Drain Current($T_C = 100^\circ\text{C}$) | $I_D(100^\circ\text{C})$ | -50 | A |
| Pulsed Drain Current ¹⁾ | I_{DM} | -320 | A |
| Power Dissipation ²⁾ | P_D | 2.5 | W |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 1.04 | $^\circ\text{C}/\text{W}$ |
| Single pulse avalanche energy | E_{AS} | 400 | mJ |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---------------|---|------|------|-----------|---------------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu\text{A}$ | -60 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -60V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 18V, V_{DS} = 0V$ | | | ± 100 | nA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu\text{A}$ | -2 | | -4 | V |
| Drain-source on-resistance | $R_{DS(on)}$ | $V_{GS} = -10V, I_D = -20A$ | | 6.5 | 8.5 | m Ω |
| Dynamic characteristics³⁾ | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = -30V, V_{GS} = 0V$ $f = 1\text{MHz}$ | | 5450 | | pF |
| Output Capacitance | C_{oss} | | | 900 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 65 | | |
| Total Gate Charge | Q_g | $V_{DS} = -30V, V_{GS} = -10V$ $I_D = -20A$ | | 82 | | nC |
| Gate-Source Charge | Q_{gs} | | | 25 | | |
| Gate-Drain Charge | Q_{gd} | | | 17 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD} = -30V, V_{GS} = -10V$ $I_D = -20A, R_{GEN} = 1.6\Omega$ | | 15 | | nS |
| Turn-on rise time | t_r | | | 50 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 135 | | |
| Turn-off fall time | t_f | | | 160 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward Current | I_S | | | | -80 | A |
| Diode Forward voltage | V_{SD} | $V_{GS} = 0V, I_S = -20A$ | | | -1.3 | V |
| Reverse Recovery Time | t_{rr} | $I_F = -20A, di/dt = 500A/\mu\text{s}$ | | 150 | | nS |
| Reverse Recovery Charge | Q_{rr} | | | 45 | | nC |

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) P_D is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

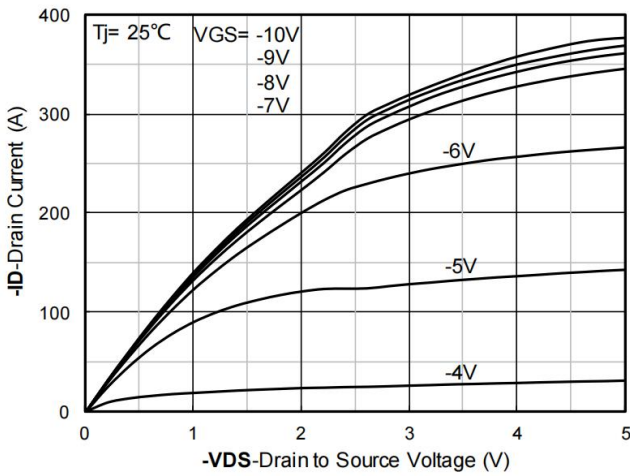


Figure 1. Output Characteristics

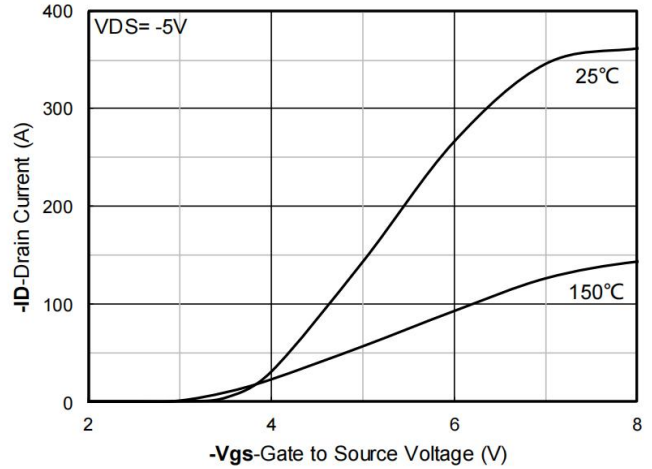


Figure 2. Transfer Characteristics

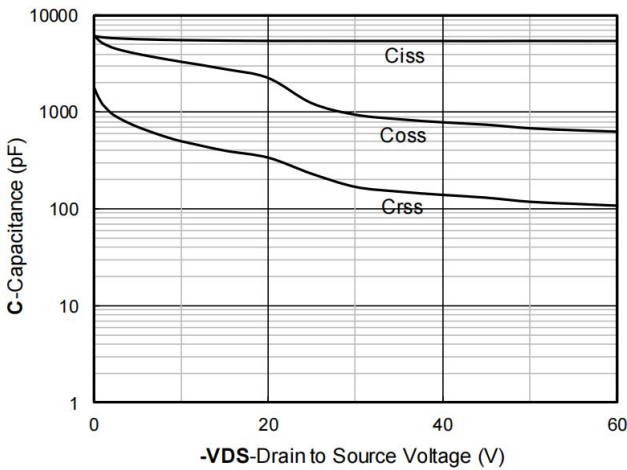


Figure 3. Capacitance Characteristics

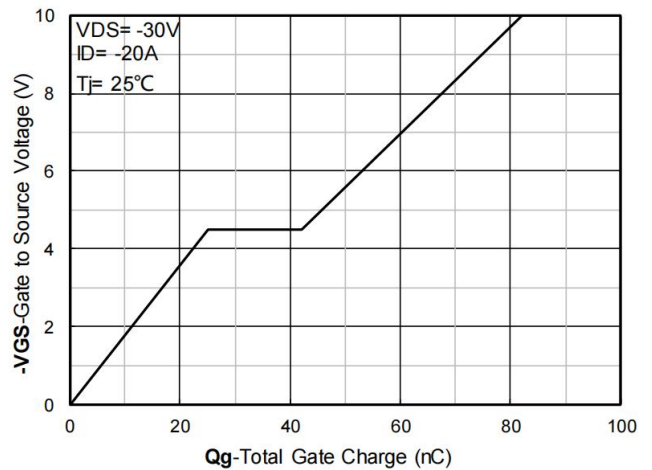


Figure 4. Gate Charge

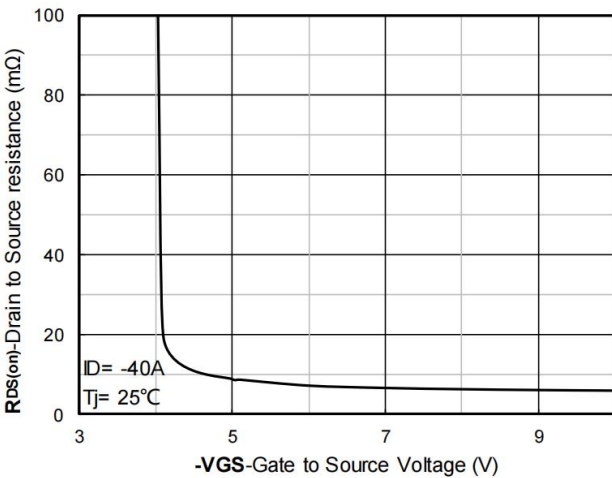


Figure 5. On-Resistance vs Gate to Source Voltage

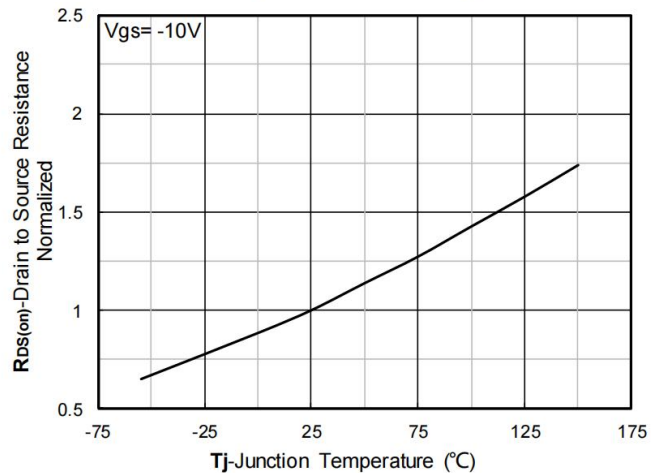


Figure 6. Normalized On-Resistance

Typical Characteristics

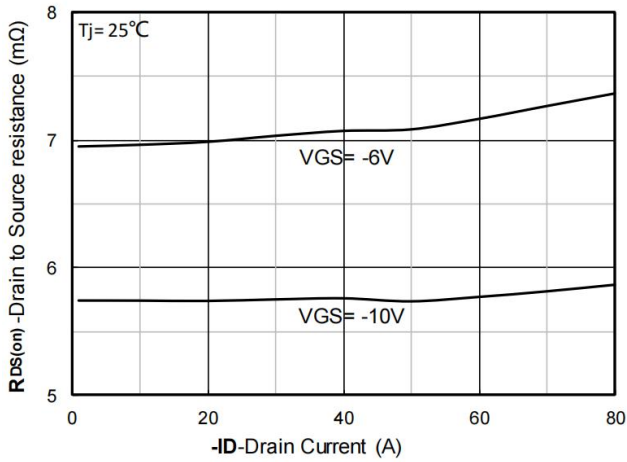


Figure 7. RDS(on) VS Drain Current

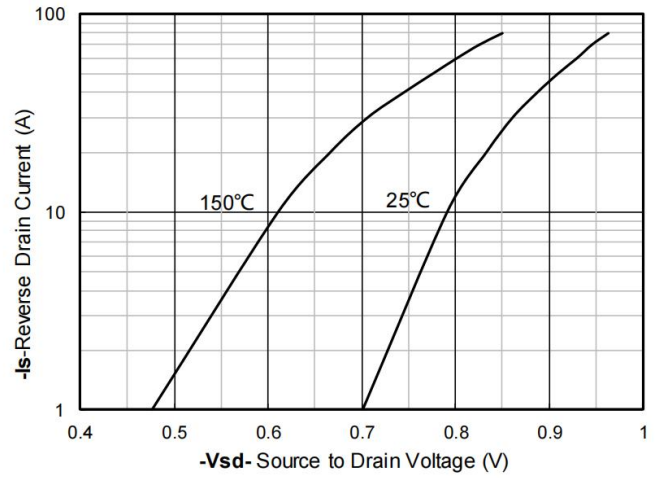


Figure 8. Forward characteristics of reverse diode

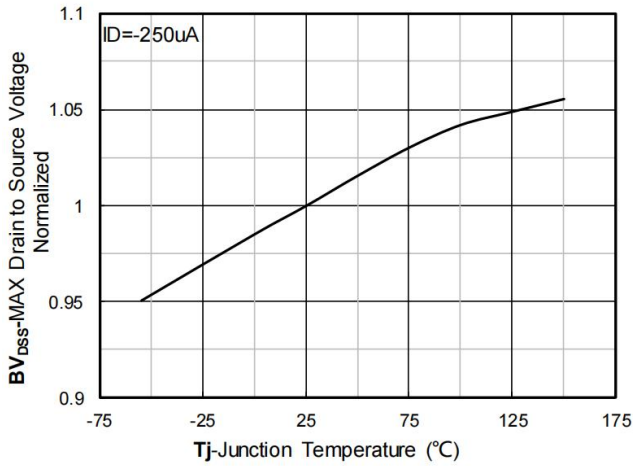


Figure 9. Normalized breakdown voltage

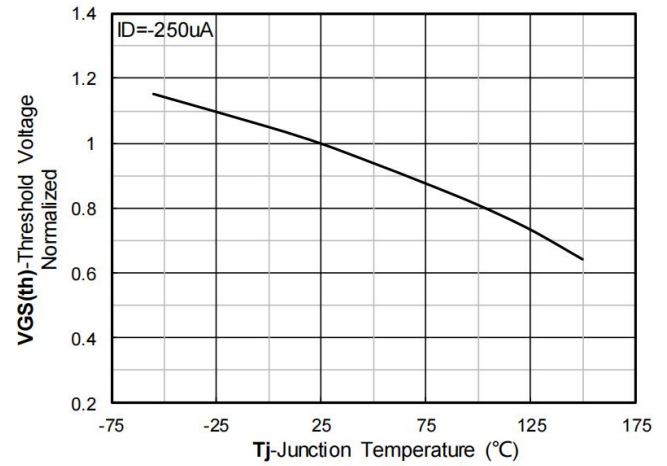


Figure 10. Normalized Threshold voltage

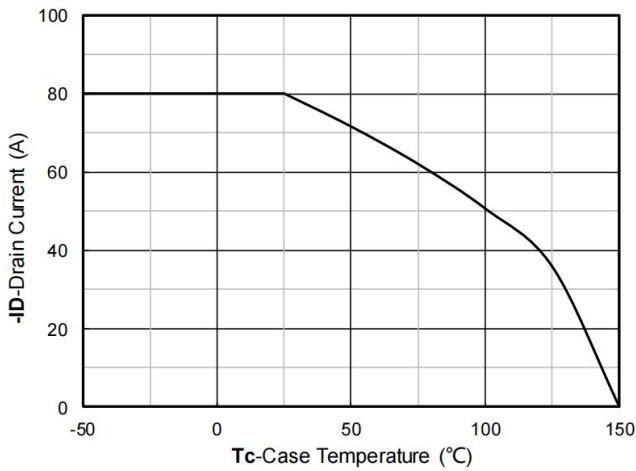


Figure 11. Current dissipation

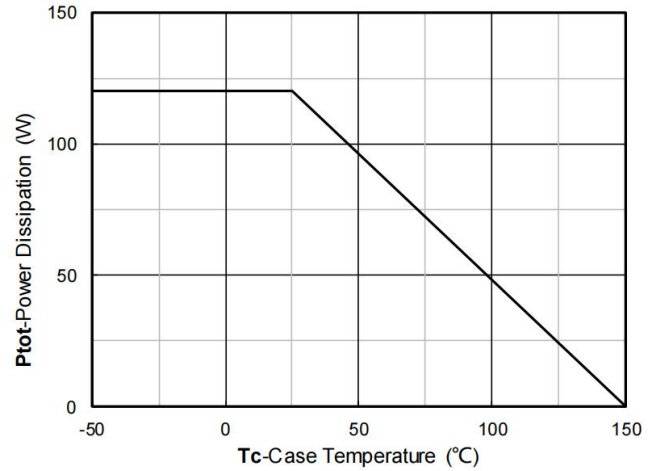


Figure 12. Power dissipation

Typical Characteristics

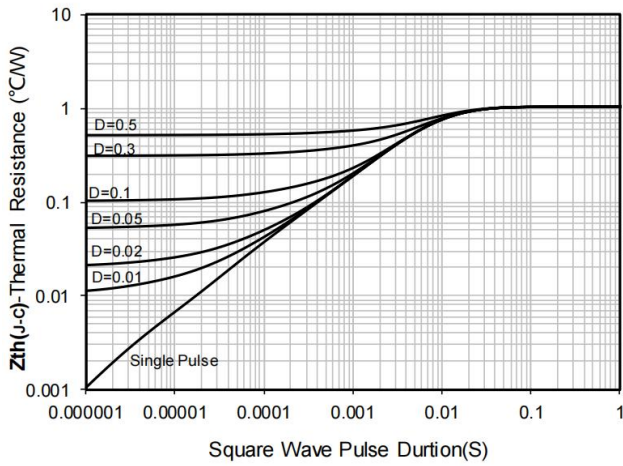


Figure 13. Maximum Transient Thermal Impedance

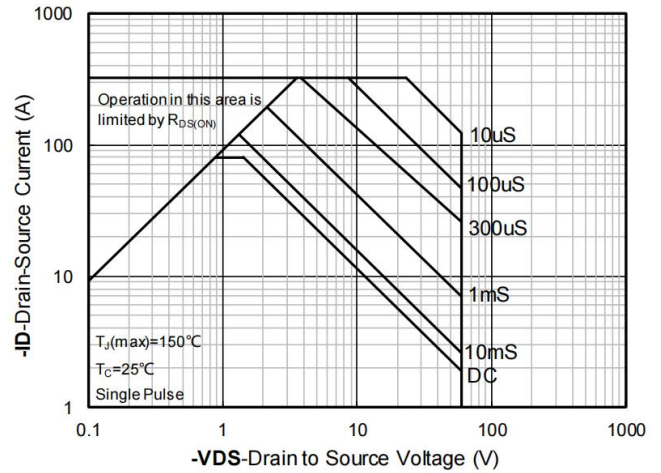
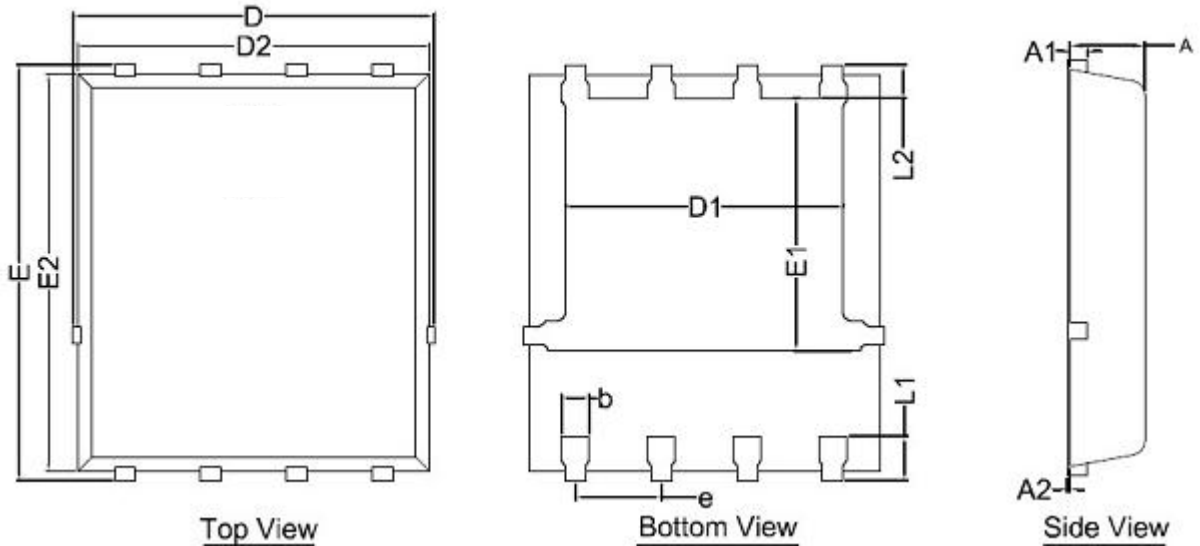


Figure 14. Safe Operation Area

DFN5X6-8L Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.200 | 0.035 | 0.047 |
| A1 | 0.254BSC. | | 0.010BSC. | |
| A2 | 0.000 | 0.100 | | 0.004 |
| D | 5.150 | 5.550 | 0.202 | 0.219 |
| E | 5.950 | 6.350 | 0.240 | 0.250 |
| D1 | 3.920 | 4.320 | 0.154 | 0.170 |
| E1 | 3.520 | 3.920 | 0.139 | 0.154 |
| D2 | 4.900 | 5.400 | 0.193 | 0.212 |
| E2 | 5.660 | 6.060 | 0.223 | 0.239 |
| b | 0.310 | 0.510 | 0.012 | 0.020 |
| e | 1.270BSC. | | 0.050BSC | |
| L1 | 0.560 | 0.760 | 0.022 | 0.030 |
| L2 | 0.500BSC. | | 0.020BSC | |