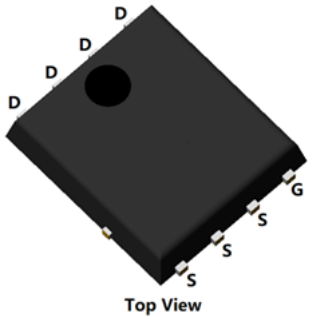
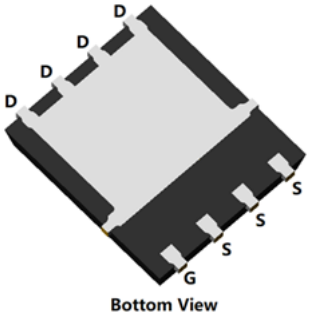
# N-Channel Enhancement Mode Field Effect Transistor

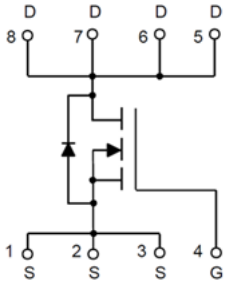



Top View




Bottom View

PDFN5060-8L




## Product Summary

- $V_{DS}$ 150V
- $I_D$ 72A
- $R_{DS(ON)}$( at $V_{GS}$=10V) ＜11.4mΩ
- $R_{DS(ON)}$( at $V_{GS}$=4.5V) ＜16mΩ
- 100% EAS Tested
- 100% ▽VDS Tested

## General Description

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

## Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor

## ■ Limiting Values

| Parameter | Conditions | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-source Voltage | | | $V_{DS}$ | - | 150 | V |
| Gate-source Voltage | | | $V_{GS}$ | -20 | 20 | |
| Continuous Drain Current (Note 1,2) | Steady-State | $T_A$=25℃,$V_{GS}$=10V | $I_D$ | - | 9.5 | A |
| | | $T_A$=100℃,$V_{GS}$=10V | | - | 6 | |
| Continuous Drain Current (Note 1,3) | Steady-State | $T_C$=25℃,$V_{GS}$=10V,Chip limitation | | - | 72 | |
| | | $T_C$=100℃,$V_{GS}$=10V | | - | 45 | |
| Pulsed Drain Current | $T_C$=25℃,$t_p$≤10μs | | $I_{DM}$ | - | 270 | |
| Maximum Body-Diode Continuous Current | $T_C$=25℃ | | $I_S$ | | 72 | |
| Avalanche Energy (non-repetitive ) | $T_J$=25℃,$V_G$=10V, $R_G$=25Ω, L=2mH, $I_{AS}$=20A | | EAS | - | 400 | mJ |
| Total Power Dissipation (Note 1,2) | Steady-State | $T_A$=25℃ | $P_D$ | - | 2.22 | W |
| | | $T_A$=100℃ | | - | 0.89 | |
| Total Power Dissipation (Note 1,3) | Steady-State | $T_C$=25℃ | | - | 128 | |
| | | $T_C$=100℃ | | - | 51 | |
| Junction and Storage Temperature Range | | | $T_J$ ,$T_{STG}$ | -55 | 150 | ℃ |

## ■Thermal Resistance

| Parameter | | Symbol | Typ | Max | Units |
|---|---|---|---|---|---|
| Thermal Resistance Junction-to-Ambient (Note 2) | Steady-State | $R_{\theta JA}$ | - | 56.1 | ℃/W |
| Thermal Resistance Junction-to-Case | Steady-State | $R_{\theta JC}$ | - | 0.97 | |

## ■ Ordering Information (Example)

| PREFERED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| G011G15A | F1 | G011G15A | 5000 | 10000 | 100000 | 13“ reel |

## ■ Electrical Characteristics

| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Static Parameter** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V,$I_D$=1mA,Tj=25℃ | 150 | - | - | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=150V,$V_{GS}$=0V,Tj=25℃ | - | - | 1 | μA |
| | | $V_{DS}$=150V,$V_{GS}$=0V,Tj=125℃ | - | - | 100 | |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V,$V_{DS}$=0V,Tj=25℃ | - | - | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA,Tj=25℃ | 1.5 | 1.95 | 2.5 | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V,$I_D$=50A,Tj=25℃ | - | 9.4 | 11.4 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=20A,Tj=25℃ | - | 10.5 | 16 | |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=50A,$V_{GS}$=0V,Tj=25℃ | - | 0.89 | 1.2 | V |
| Gate Resistance | $R_G$ | f=1MHz,Tj=25℃ | - | 0.84 | - | Ω |
| **Dynamic Parameters** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=75V,$V_{GS}$=0V,f=1MHz,Tj=25℃ | - | 3410 | - | pF |
| Output Capacitance | $C_{oss}$ | | - | 273 | - | |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 9.1 | - | |
| **Switching Parameters** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=10V,$V_{DS}$=75V,$I_D$=50A,Tj=25℃ | - | 49.2 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 11.3 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 7.1 | - | |
| Reverse Recovery Charge | $Q_{rr}$ | $I_F$=50A,di/dt=100A/μs,$V_{GS}$=0V,$V_R$=75V,Tj=25℃ | - | 141.3 | - | nC |
| Reverse Recovery Time | $t_{rr}$ | | - | 81.2 | - | ns |
| Turn-on Delay Time | $t_{D(on)}$ | $V_{GS}$=10V,$V_{DS}$=75V,$I_D$=50A,$R_{GEN}$=3Ω, Tj=25℃ | - | 14.3 | - | ns |
| Turn-on Rise Time | $t_r$ | | - | 12.4 | - | |
| Turn-off Delay Time | $t_{D(off)}$ | | - | 37.3 | - | |
| Turn-off Fall Time | $t_f$ | | - | 11.2 | - | |

Note：

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 $in^2$ pad of 2oz. Copper, in the still air environment with $T_A$=25℃.The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.
3. Thermal resistance from junction to soldering point (on the exposed drain pad).

## ■Typical Electrical and Thermal Characteristics Diagrams

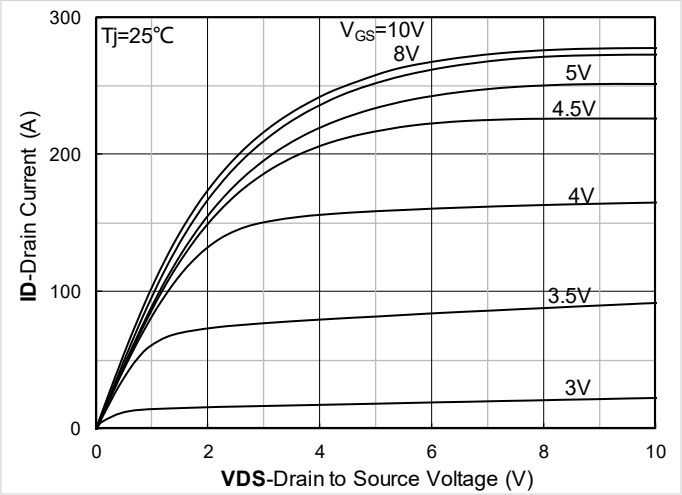



Figure 1. Output Characteristics; typical values

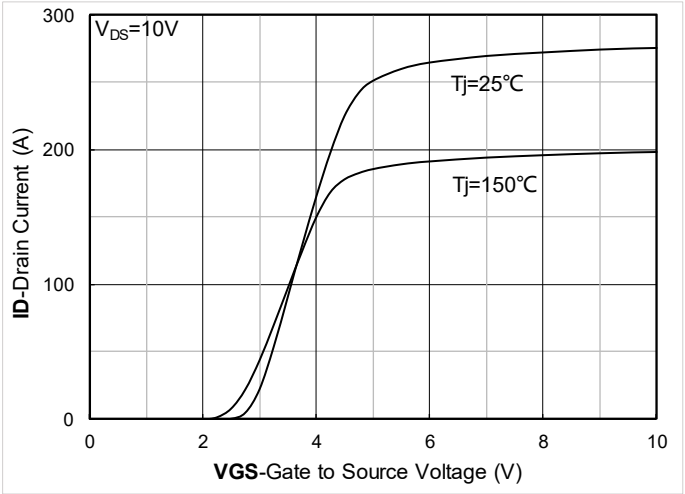



Figure 2. Transfer Characteristics; typical values

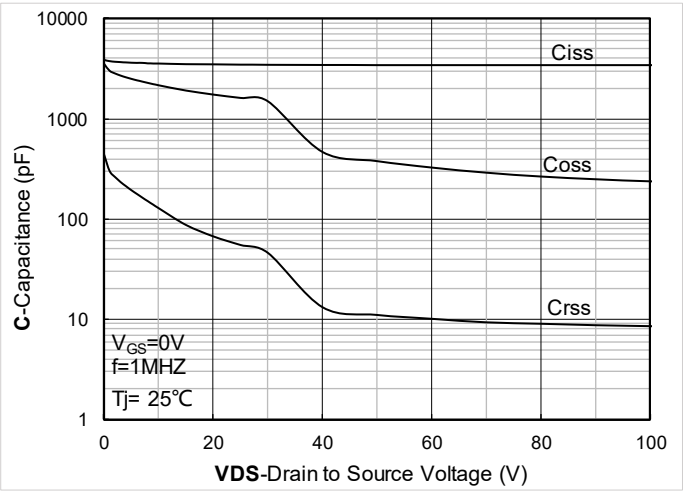



Figure 3. Capacitance Characteristics; typical values

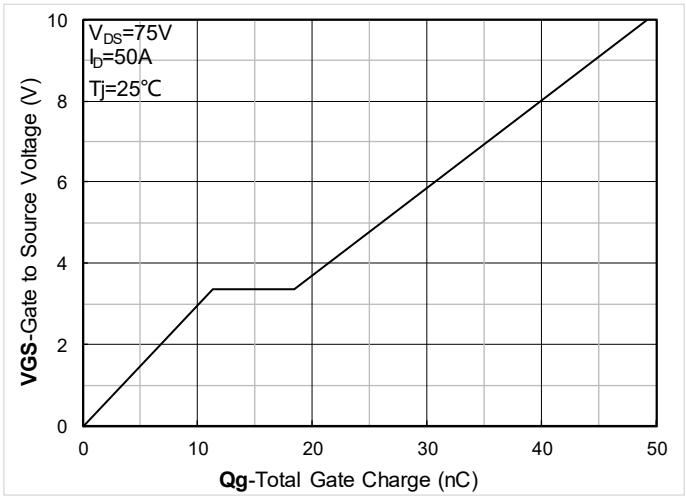



Figure 4. Gate Charge; typical values

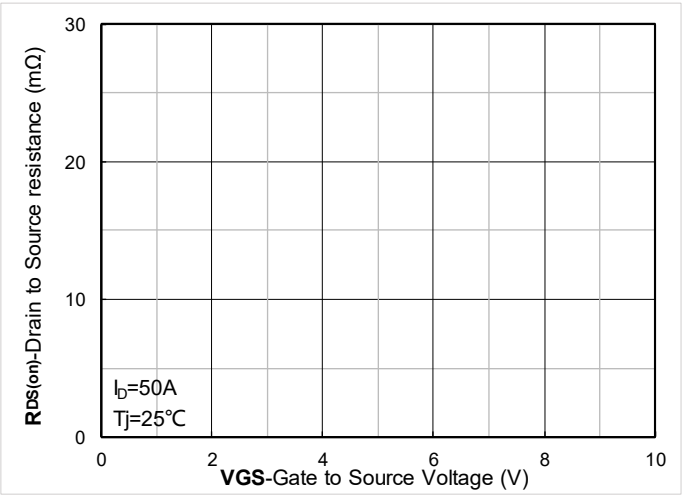



Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

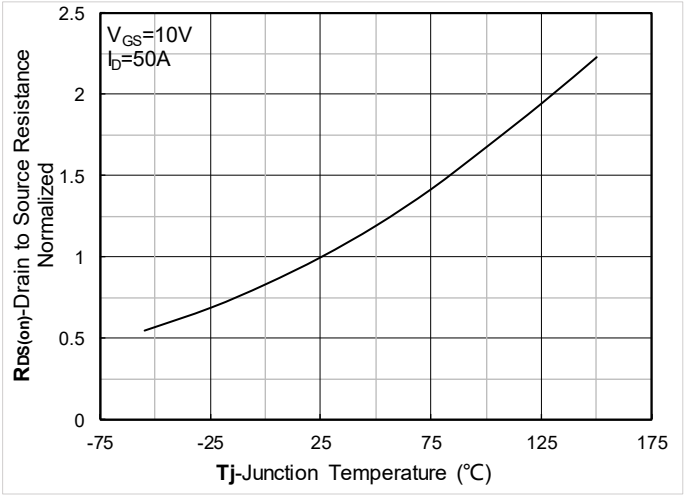



Figure 6. Normalized On-Resistance

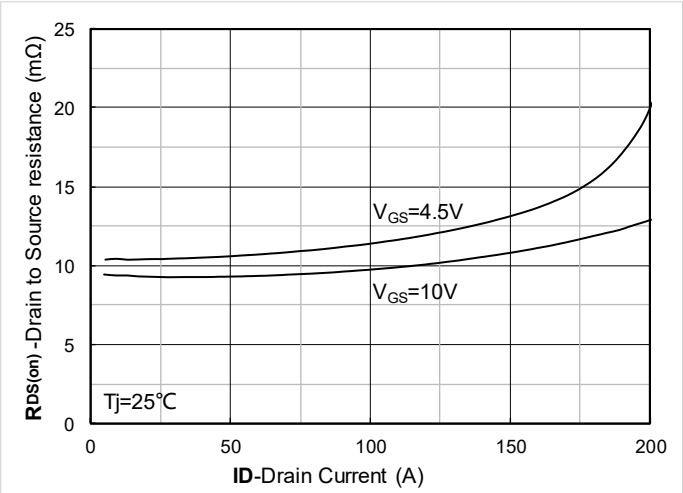



Figure 7. $R_{DS(on)}$ vs. Drain Current; typical values

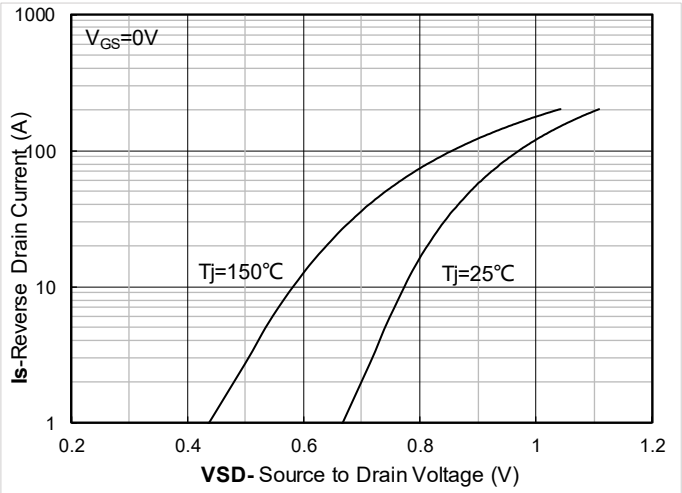



Figure 8. Forward characteristics of reverse diode; typical values

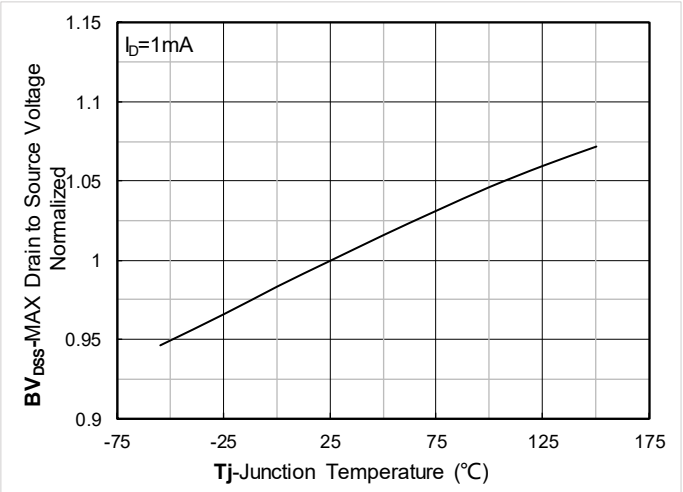



Figure 9. Normalized breakdown voltage

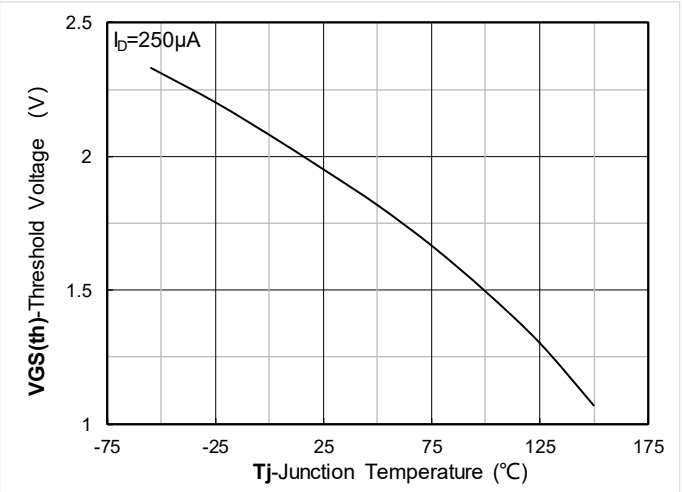



Figure 10. Gate threshold voltage; typical values

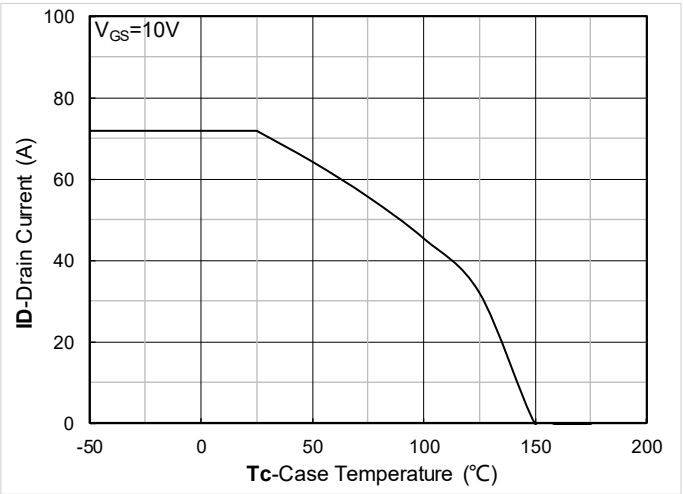



Figure 11. Current dissipation

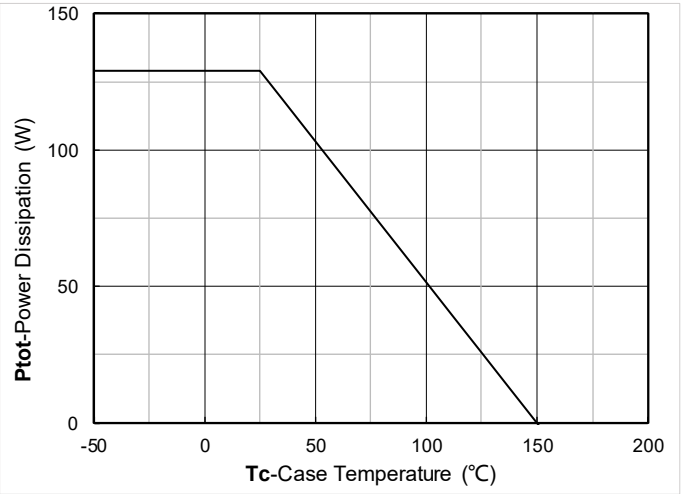



Figure 12. Power dissipation

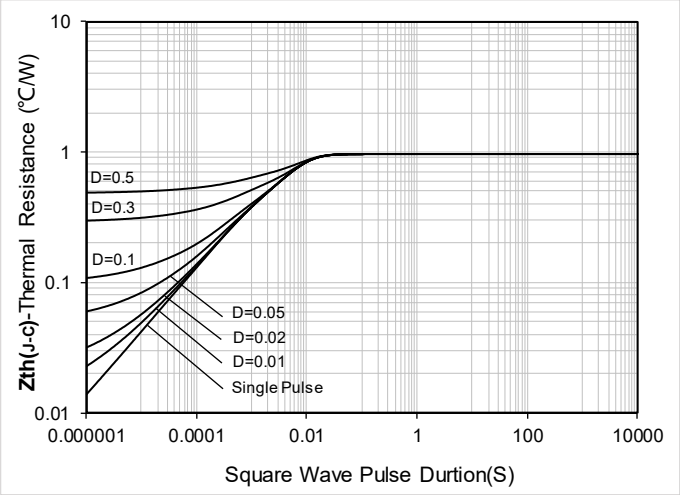



Figure 13. Maximum Transient Thermal Impedance

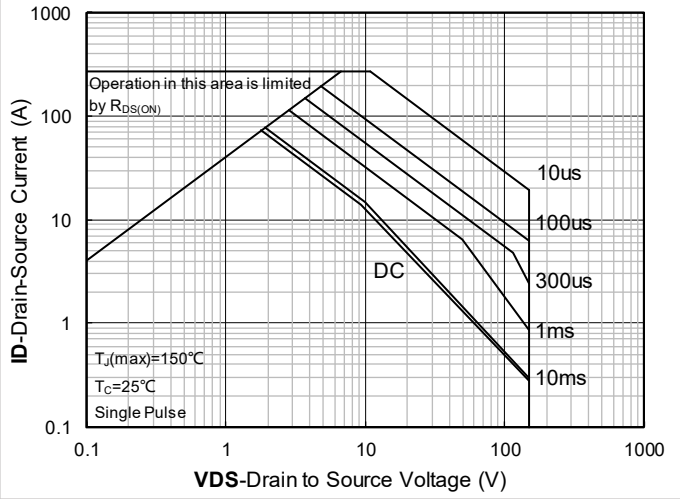
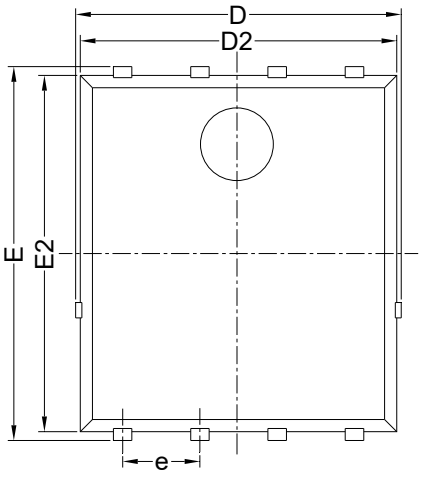
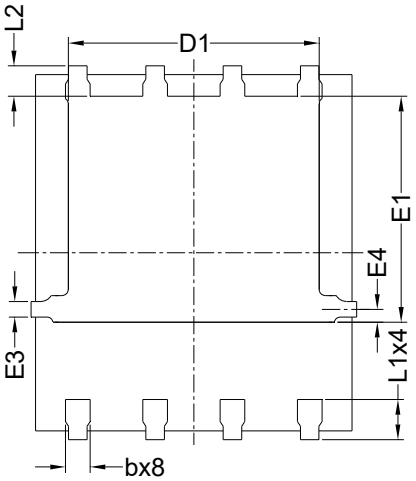



Figure 14. Safe Operation Area

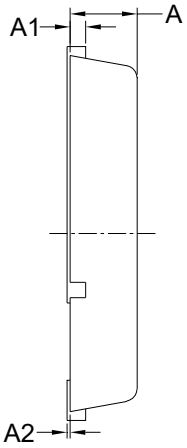
## ■ PDFN5060-8L-B-1.1MM Package information



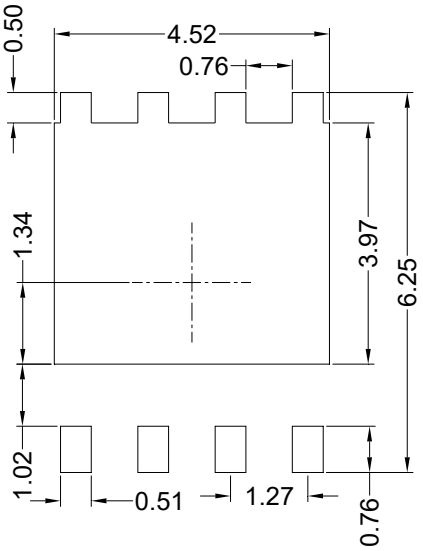

Top View
正面视图




Bottom View
背面视图




Side View
侧面视图




Suggested Solder Pad Layout
Top View

| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| D | 5.15 | 5.35 | 5.55 |
| E | 5.95 | 6.15 | 6.35 |
| A | 1.00 | 1.10 | 1.20 |
| A1 | | 0.254 BSC | |
| A2 | | | 0.10 |
| D1 | 3.92 | 4.12 | 4.32 |
| E1 | 3.52 | 3.72 | 3.92 |
| D2 | 5.00 | 5.20 | 5.40 |
| E2 | 5.66 | 5.86 | 6.06 |
| E3 | | 0.254 REF | |
| E4 | | 0.21 REF | |
| L1 | 0.56 | 0.66 | 0.76 |
| L2 | | 0.50 BSC | |
| b | 0.31 | 0.41 | 0.51 |
| e | | 1.27 BSC | |

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.10mm.
3.The pad layout is for reference purposes only.

# Notice

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