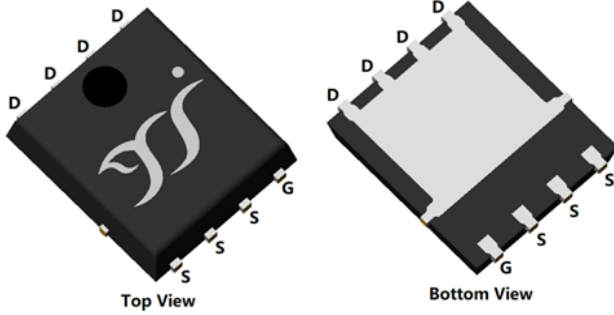
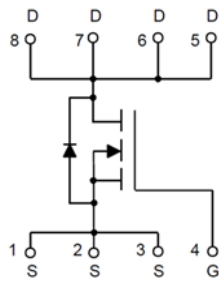


N-Channel Enhancement Mode Field Effect Transistor



PDFN5060-8L



Product Summary

- V_{DS} 30 V
- I_D 150 A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <2.0 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <3.3 mohm
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Trench Power MV MOSFET technology
- 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

- DC-DC Converters
- Power management functions
- Backlighting

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|-----------------|-------------------|--------------|
| Drain-source Voltage | V_{DS} | 30 | V |
| Gate-source Voltage | V_{GS} | ± 20 | V |
| Drain Current | I_D | $T_A=25^\circ C$ | 30 |
| | | $T_A=100^\circ C$ | 19 |
| | | $T_C=25^\circ C$ | 150 |
| | | $T_C=100^\circ C$ | 95 |
| Pulsed Drain Current ^A | I_{DM} | 400 | A |
| Total Power Dissipation ^B | P_D | $T_A=25^\circ C$ | 2.7 |
| | | $T_A=100^\circ C$ | 1 |
| | | $T_C=25^\circ C$ | 69 |
| | | $T_C=100^\circ C$ | 27.6 |
| Single Pulse Avalanche Energy ^D | E_{AS} | 400 | mJ |
| Thermal Resistance Junction-to-Case | $R_{\theta JC}$ | 1.8 | $^\circ C/W$ |
| Thermal Resistance Junction-to-Ambient ^C | $R_{\theta JA}$ | 46.5 | $^\circ C/W$ |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^\circ C$ |

■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|------------|----------------------|-------------------------|----------------------------|---------------|
| YJG150N03A | F1 | YJG150N03A | 5000 | 10000 | 100000 | 13" reel |



YJG150N03A

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---------------------------------------|-----------------------|---|-----|------|------|-------|
| Static Parameter | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D =250μA | 30 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, V _{GS} =0V | | | 1 | μA |
| Gate-Body Leakage Current | I _{GSS} | V _{GS} = ±20V, V _{DS} =0V | | | ±100 | nA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D =250μA | 1.0 | 1.5 | 2.5 | V |
| Static Drain-Source On-Resistance | R _{DS(ON)} | V _{GS} = 10V, I _D =20A | | 1.58 | 2.0 | mΩ |
| | | V _{GS} = 4.5V, I _D =20A | | 2.6 | 3.3 | |
| Diode Forward Voltage | V _{SD} | I _S =20A, V _{GS} =0V | | 0.75 | 1.2 | V |
| Maximum Body-Diode Continuous Current | I _S | | | | 150 | A |
| Gate resistance | R _g | f=1 MHz | | 2.9 | | Ω |
| Dynamic Parameters | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =15V, V _{GS} =0V, f=1MHz | | 4498 | | pF |
| Output Capacitance | C _{oss} | | | 800 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 643 | | |
| Switching Parameters | | | | | | |
| Total Gate Charge | Q _g (10V) | V _{GS} =10V, V _{DS} =15V, I _D =20A | | 92.7 | | nC |
| Total Gate Charge | Q _g (4.5V) | | | 46 | | |
| Gate-Source Charge | Q _{gs} | | | 13.5 | | |
| Gate-Drain Charge | Q _{gd} | | | 22.8 | | |
| Reverse Recovery Charge | Q _{rr} | I _F =20A, di/dt=500A/us | | 3.0 | | |
| Reverse Recovery Time | t _{rr} | | | 15 | | |
| Turn-on Delay Time | t _{D(on)} | V _{GS} =10V, V _{DD} =20V, I _D =4A, R _L =0.75Ω R _{GEN} =3Ω | | 11 | | ns |
| Turn-on Rise Time | t _r | | | 80 | | |
| Turn-off Delay Time | t _{D(off)} | | | 39 | | |
| Turn-off fall Time | t _f | | | 92 | | |

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

D. T_J=25°C, V_{DD}=30V, V_G=10V, L=2.0mH, I_{AS}=20A



Typical Performance Characteristics

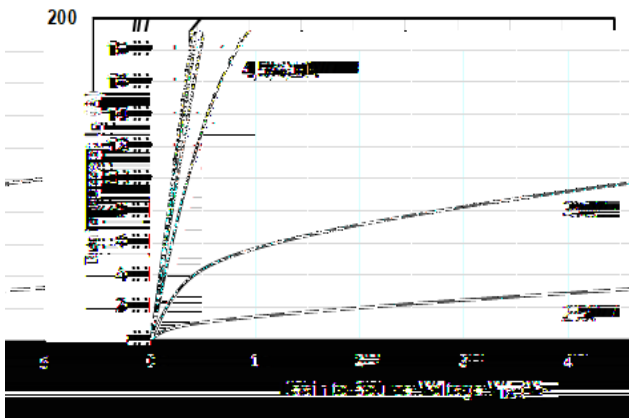


Figure1. Output Characteristics

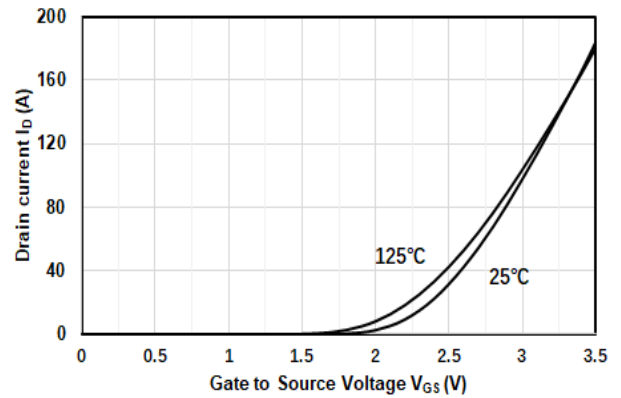


Figure2. Transfer Characteristics

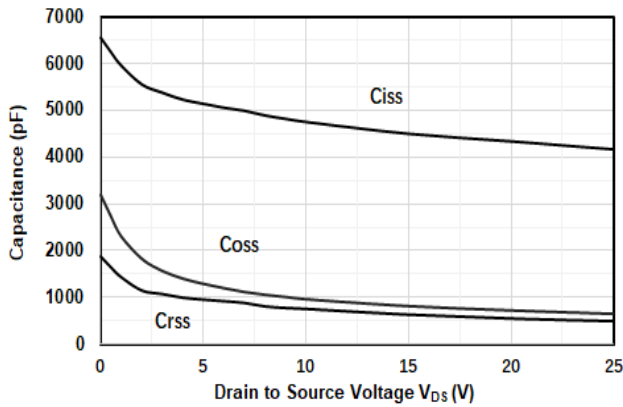


Figure3. Capacitance Characteristics

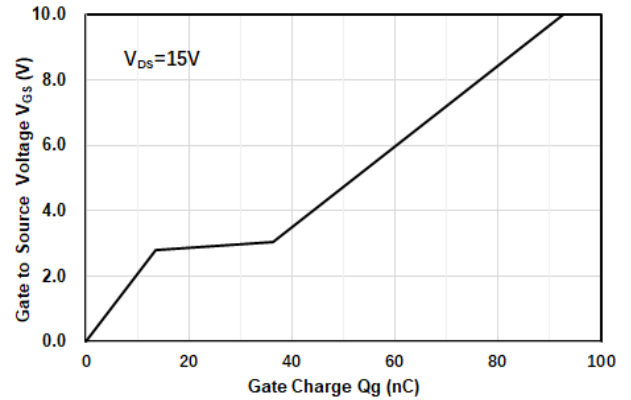


Figure4. Gate Charge

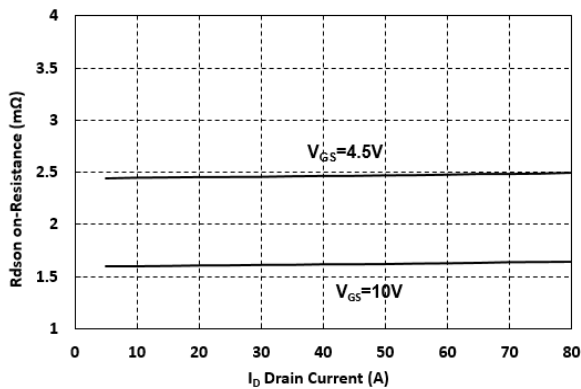


Figure5. Drain-Source on Resistance

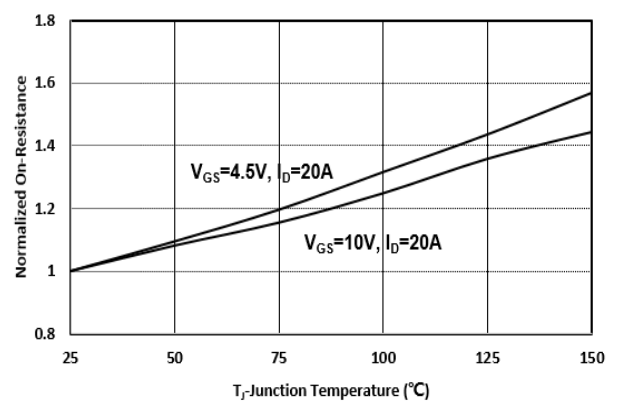


Figure6. Drain-Source on Resistance



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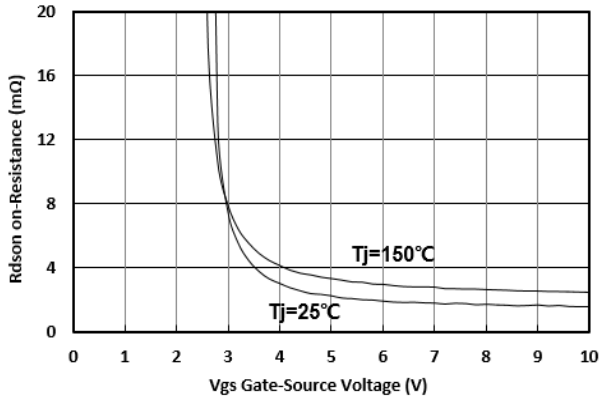


Figure 7. On-Resistance vs V_{GS}

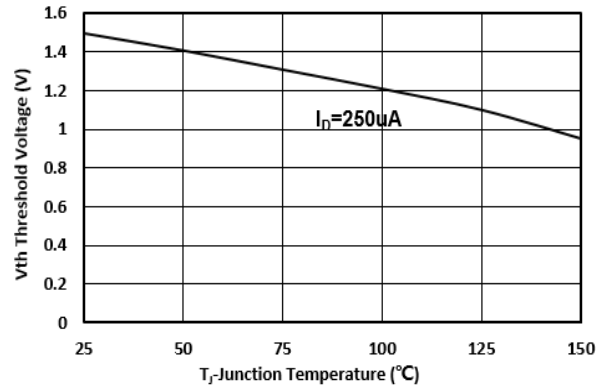


Figure 8. V_{th} vs Temperature

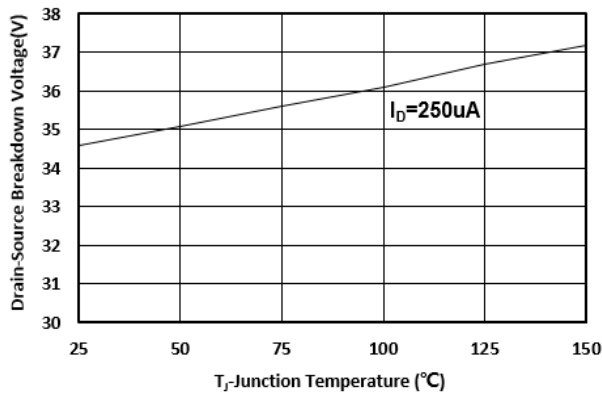


Figure 9. Breakdown Voltage vs Temperature

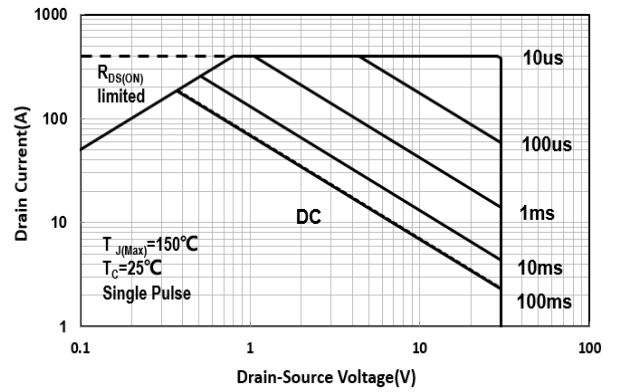


Figure 10. Safe Operation Area

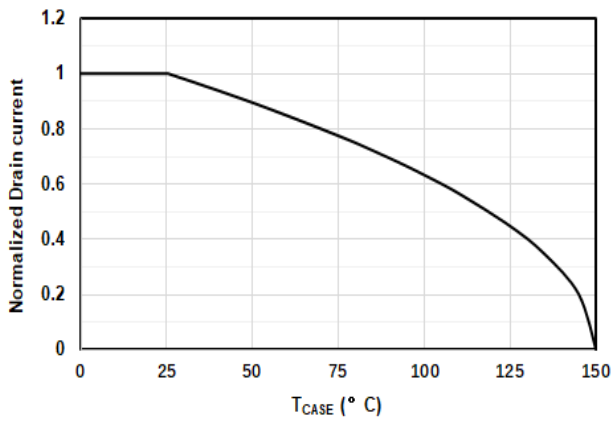


Figure 11. Drain current vs. Case Temperature



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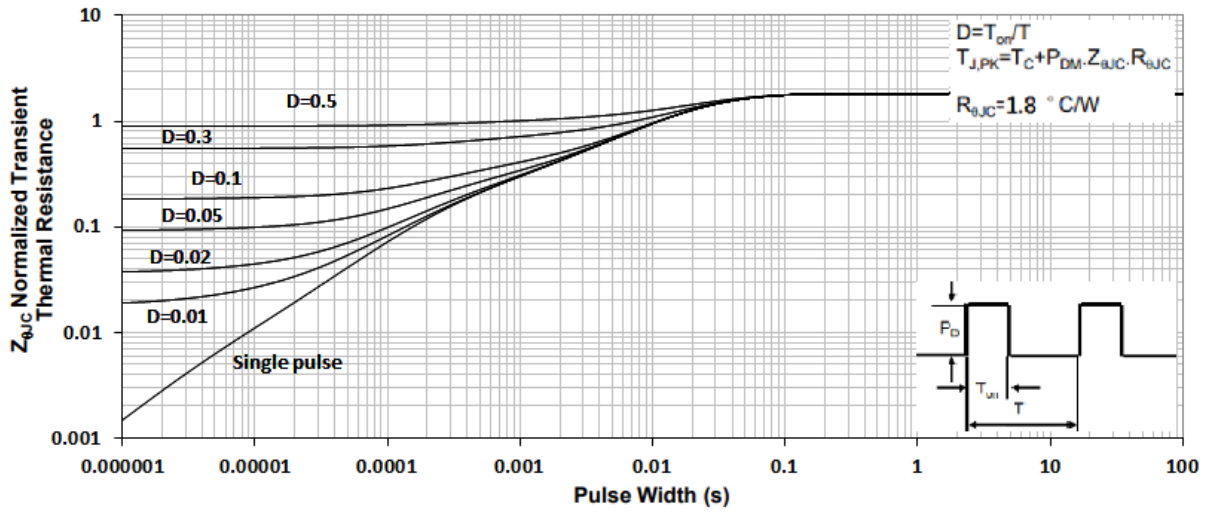
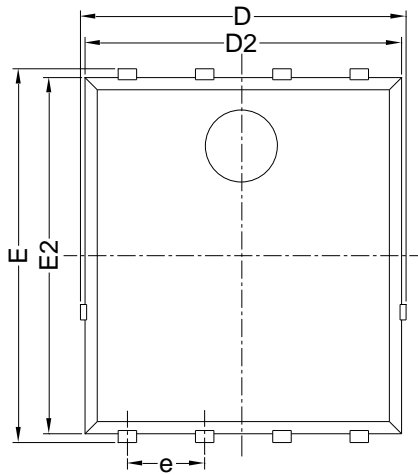


Figure12. Normalized Maximum Transient Thermal Impedance

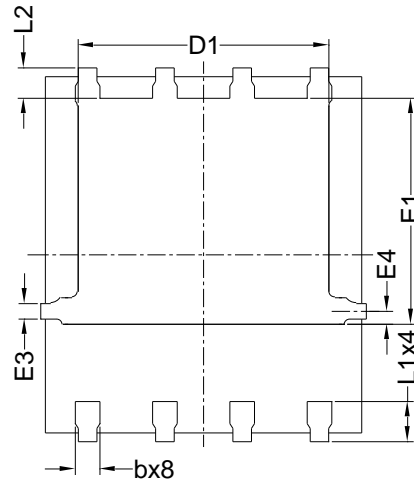


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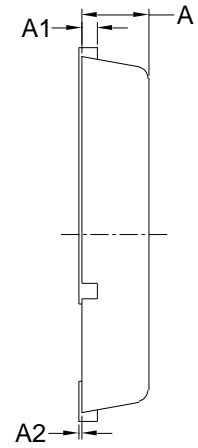
■ PDFN5060-8L-B-1.1MM Package Information



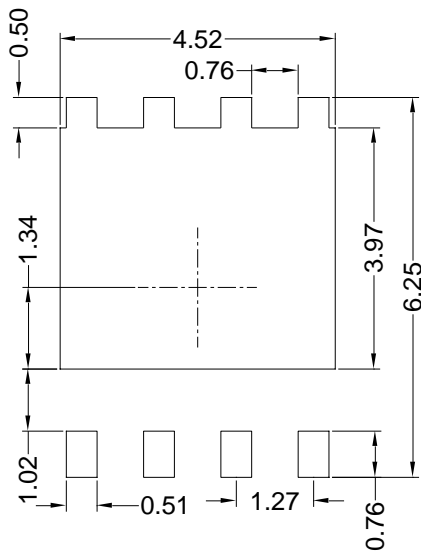
Top View
正面视图



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: ± 0.10 mm.
3. The pad layout is for reference purposes only.



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