

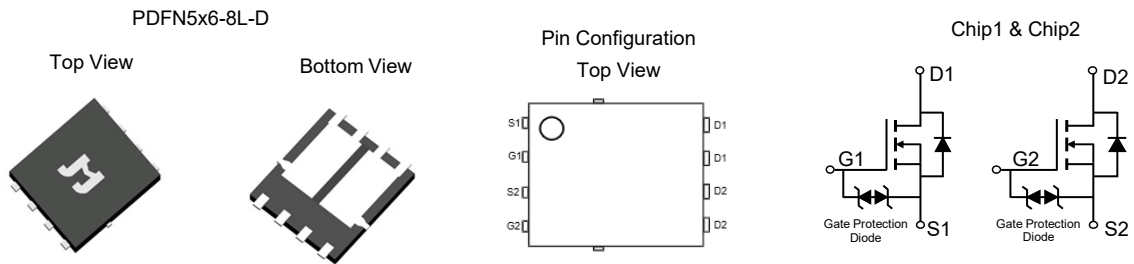
60V 18mΩ Dual N-Ch Power MOSFET

Features

- Low ON Resistance, $R_{DS(ON)}$
- Low Gate Charge, Q_g
- 100% UIS and R_g Tested
- ESD-enhanced Gate Pin @ HBM Class-2 of 1.1kV Typical
- Pb-free Lead Plating, Halogen-free, RoHS-compliant
- AEC-Q101 Qualified for Automotive Applications

Product Summary

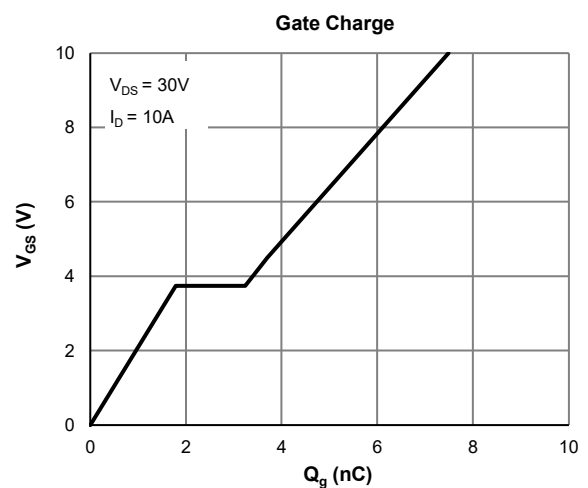
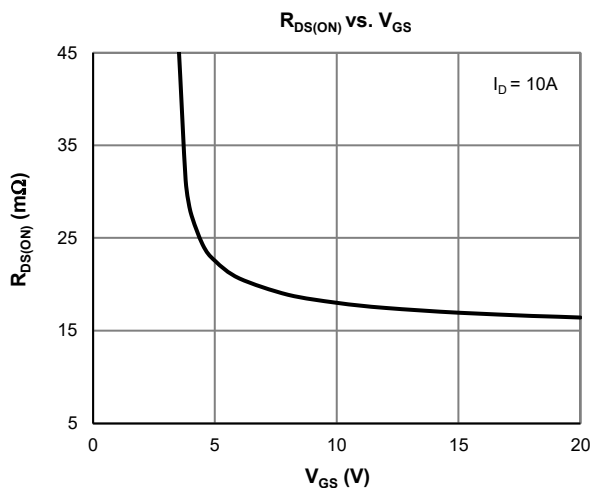
| Parameter | Value | Unit |
|--|-------|------|
| V_{DS} | 60 | V |
| $V_{GS(th),Typ}$ | 1.8 | V |
| I_D (@ $V_{GS} = 10V$) ⁽¹⁾ | 23 | A |
| $R_{DS(ON),Typ}$ (@ $V_{GS} = 10V$) | 18.0 | mΩ |
| $R_{DS(ON),Typ}$ (@ $V_{GS} = 4.5V$) | 25 | mΩ |


Ordering Information

| Device | Package | # of Pins | Marking | MSL | T_J (°C) | Media | Quantity (pcs) |
|------------------|--------------|-----------|----------|-----|------------|--------------|----------------|
| JMSL0620AGDEQ-13 | PDFN5x6-8L-D | 8 | L0620ADQ | 1 | -55 to 175 | 13-inch Reel | 5000 |

Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---------------------------|------------|------|
| Drain-to-Source Voltage | V_{DS} | 60 | V |
| Gate-to-Source Voltage | V_{GS} | ± 20 | V |
| Human Body Model (per JESD22-A114) | $V_{ESD,GS}$ | 1.1 | kV |
| Continuous Drain Current ⁽¹⁾ | $T_C = 25^\circ\text{C}$ | 23 | A |
| | $T_C = 100^\circ\text{C}$ | 16.6 | |
| Pulsed Drain Current ⁽²⁾ | I_{DM} | 52 | A |
| Avalanche Energy ⁽³⁾ | E_{AS} | 26 | mJ |
| Power Dissipation ⁽⁴⁾ | $T_C = 25^\circ\text{C}$ | 26 | W |
| | $T_C = 100^\circ\text{C}$ | 12.9 | |
| Junction & Storage Temperature Range | T_J, T_{STG} | -55 to 175 | °C |



**Electrical Characteristics** (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

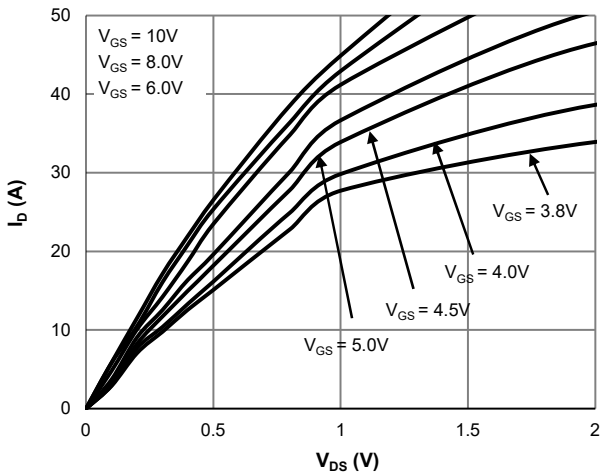
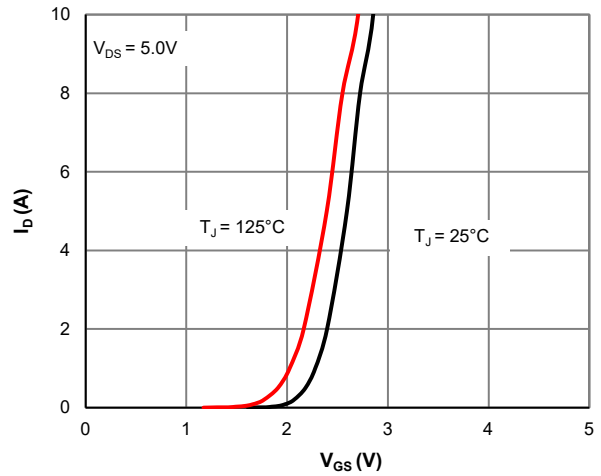
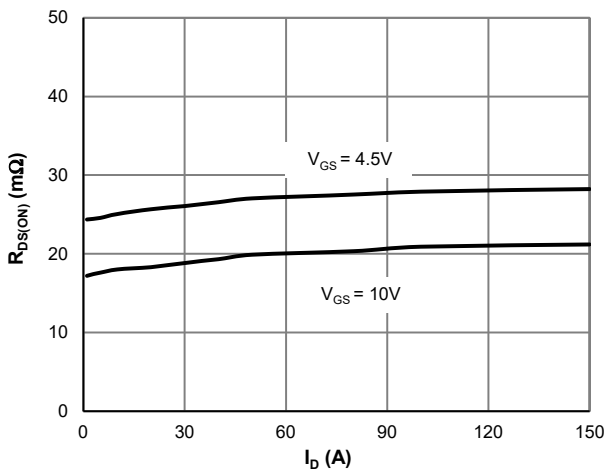
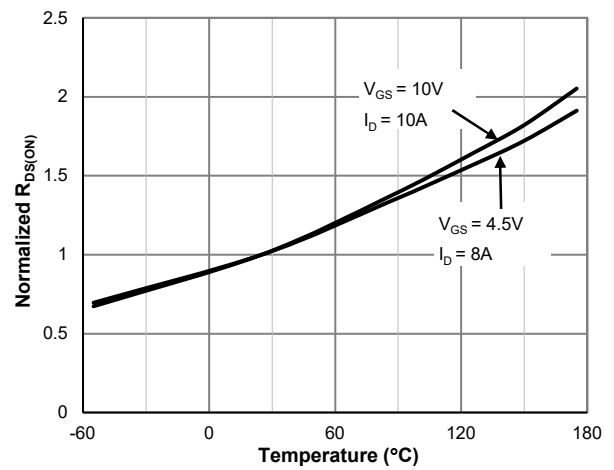
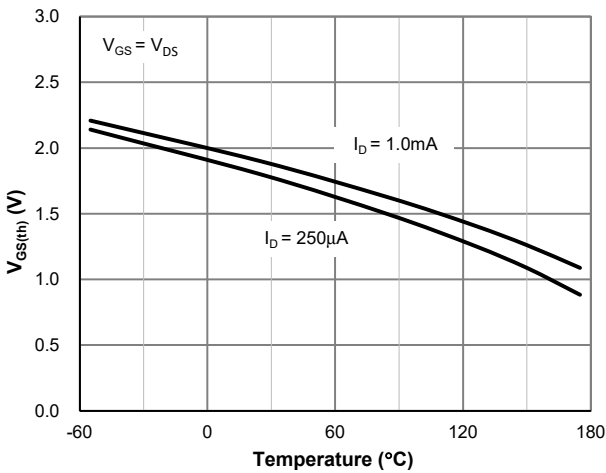
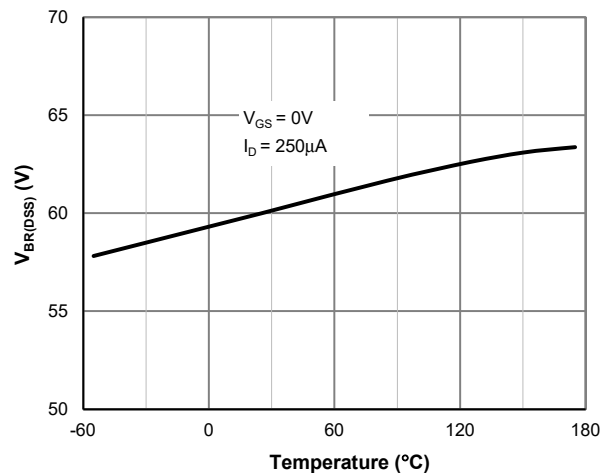
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---------------|--|---|------|------------|------------------|
| STATIC PARAMETERS | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$ | 60 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 48\text{V}, V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$ | | | 1.0 5.0 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$ | | | ± 10 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ | 1.2 | 1.8 | 2.5 | V |
| Static Drain-Source ON-Resistance | $R_{DS(on)}$ | $V_{GS} = 10\text{V}, I_D = 10\text{A}$ | | 18.0 | 23 | $\text{m}\Omega$ |
| | | $V_{GS} = 4.5\text{V}, I_D = 8\text{A}$ | | 25 | 33 | $\text{m}\Omega$ |
| Forward Transconductance | g_{FS} | $V_{DS} = 5\text{V}, I_D = 10\text{A}$ | | 15.5 | | S |
| Diode Forward Voltage | V_{SD} | $I_S = 1\text{A}, V_{GS} = 0\text{V}$ | | 0.73 | 1.0 | V |
| Diode Continuous Current | I_S | $T_C = 25^\circ\text{C}$ | | | 26 | A |
| DYNAMIC PARAMETERS ⁽⁵⁾ | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0\text{V}, V_{DS} = 30\text{V}, f = 1\text{MHz}$ | | 409 | | pF |
| Output Capacitance | C_{oss} | | | 143 | | pF |
| Reverse Transfer Capacitance | C_{rss} | | | 24 | | pF |
| Gate Resistance | R_g | $V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$ | | 3.5 | | Ω |
| SWITCHING PARAMETERS ⁽⁵⁾ | | | | | | |
| Total Gate Charge (@ $V_{GS} = 10\text{V}$) | Q_g | $V_{GS} = 0 \text{ to } 10\text{V}$ $V_{DS} = 30\text{V}, I_D = 10\text{A}$ | | 7.5 | | nC |
| Total Gate Charge (@ $V_{GS} = 4.5\text{V}$) | Q_g | | | 3.7 | | nC |
| Gate Source Charge | Q_{gs} | | | 1.8 | | nC |
| Gate Drain Charge | Q_{gd} | | | 1.5 | | nC |
| Turn-On Delay Time | $t_{D(on)}$ | $V_{GS} = 10\text{V}, V_{DS} = 30\text{V}$ $R_L = 3\Omega, R_{GEN} = 6\Omega$ | | 4.4 | | ns |
| Turn-On Rise Time | t_r | | | 23 | | ns |
| Turn-Off Delay Time | $t_{D(off)}$ | | | 11.5 | | ns |
| Turn-Off Fall Time | t_f | | | 3.2 | | ns |
| Body Diode Reverse Recovery Time | t_{rr} | | $I_F = 10\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$ | | 15.2 | |
| Body Diode Reverse Recovery Charge | Q_{rr} | $I_F = 10\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$ | | 5.4 | | nC |

Thermal Performance

| Parameter | Symbol | Typ. | Max. | Unit |
|---|-----------------|------|------|---------------------------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 75 | 87 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 5.8 | 6.7 | $^\circ\text{C}/\text{W}$ |

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under $T_{J_Max} = 175^\circ\text{C}$.
3. E_{AS} of 26 mJ is based on starting $T_J = 25^\circ\text{C}$, $L = 3.0\text{mH}$, $I_{AS} = 4.2\text{A}$, $V_{GS} = 10\text{V}$, $V_{DD} = 30\text{V}$; 100% test at $L = 0.3\text{mH}$, $I_{AS} = 10\text{A}$.
4. The power dissipation P_D is based on $T_{J_Max} = 175^\circ\text{C}$.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical & Thermal Characteristics

Figure 1: Saturation Characteristics

Figure 2: Transfer Characteristics

Figure 3: $R_{DS(ON)}$ vs. Drain Current

Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

Figure 5: $V_{GS(th)}$ vs. Junction Temperature

Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Typical Electrical & Thermal Characteristics

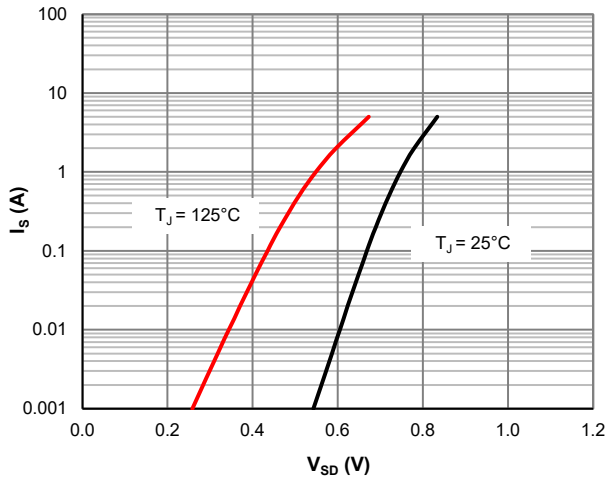


Figure 7: Body-Diode Characteristics

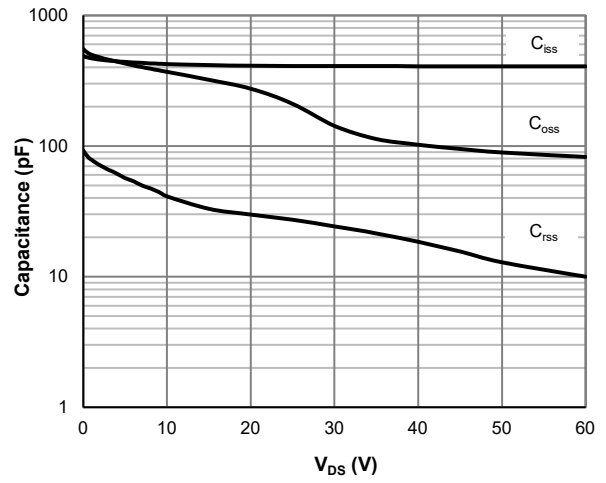


Figure 8: Capacitance Characteristics

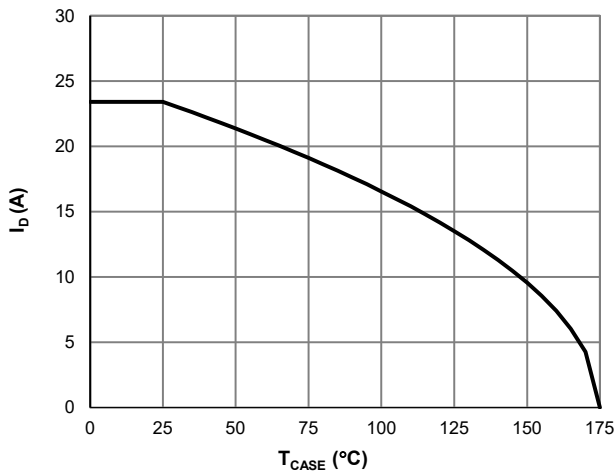


Figure 9: Current De-rating

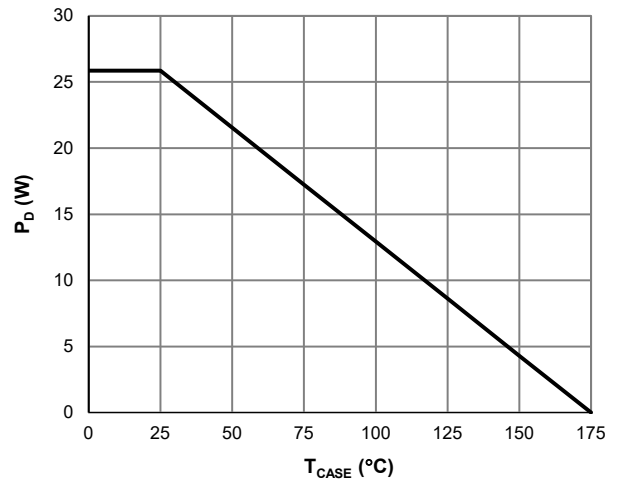


Figure 10: Power De-rating

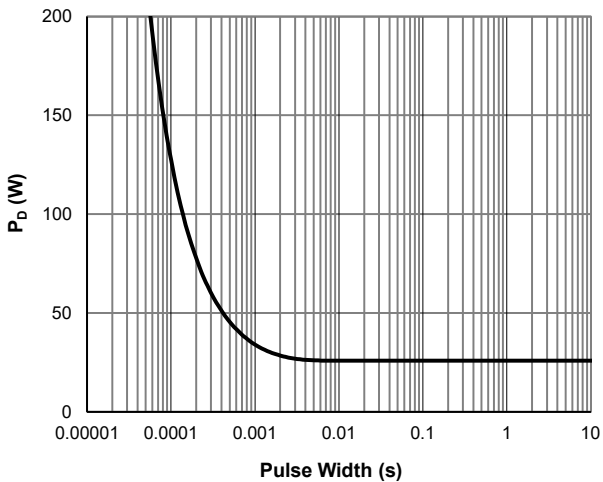


Figure 11: Single Pulse Power Rating, Junction-to-Case

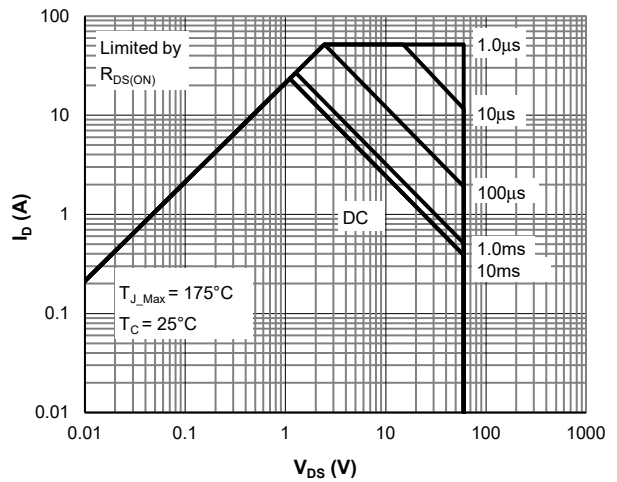


Figure 12: Maximum Safe Operating Area



Typical Electrical & Thermal Characteristics

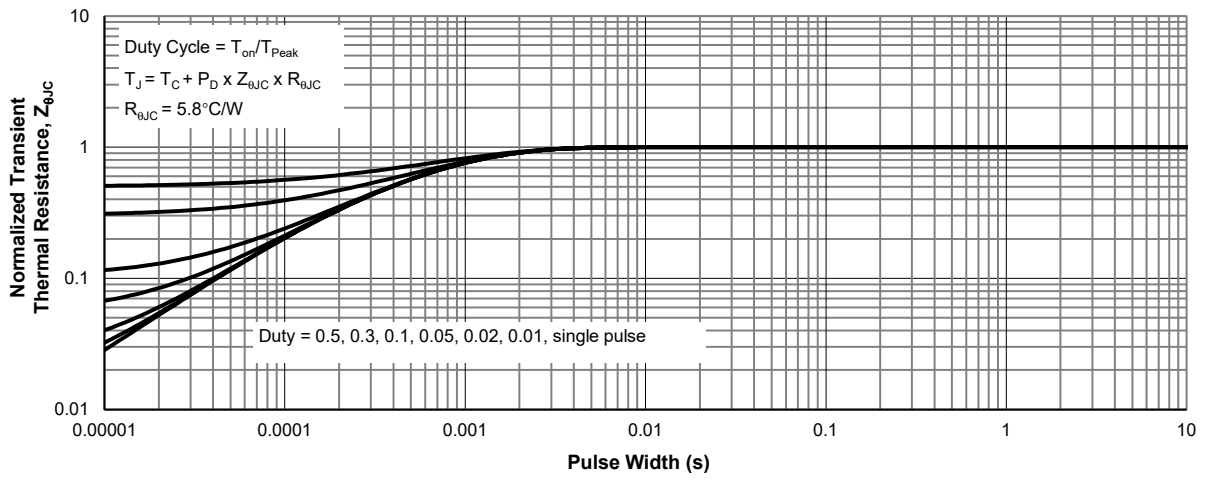
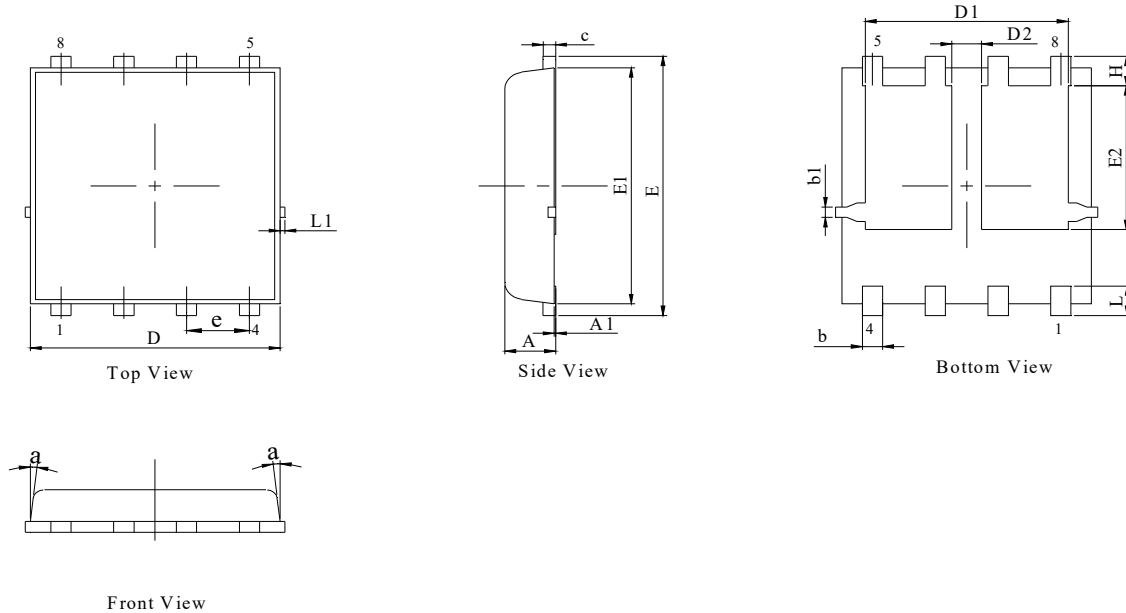
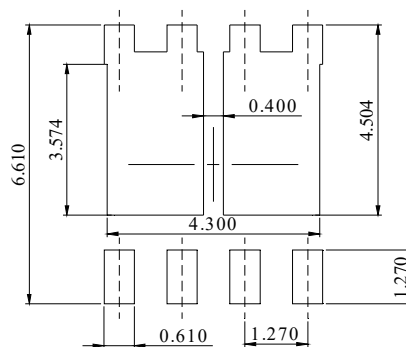


Figure 13: Normalized Maximum Transient Thermal Impedance

PDFN5x6-8L-D Package Information
Package Outline

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMENSIONS IN MILLIMETER (ANGLE IN DEGREE).
3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

| DIM. | MILLIMETER | | |
|------|------------|------|-------|
| | MIN. | NOM. | MAX. |
| A | 0.90 | 1.00 | 1.10 |
| A1 | 0.00 | - | 0.10 |
| b | 0.31 | 0.41 | 0.51 |
| b1 | 0.15 | 0.25 | 0.35 |
| c | 0.23 | - | 0.33 |
| D | 4.95 | 5.05 | 5.15 |
| D1 | 4.00 | 4.10 | 4.20 |
| D2 | 0.50 | 0.60 | 0.70 |
| E | 6.05 | 6.15 | 6.25 |
| E1 | 5.50 | 5.60 | 5.70 |
| E2 | 3.31 | 3.41 | 3.51 |
| e | 1.27BSC | | |
| H | 0.60 | 0.70 | 0.80 |
| L | 0.50 | 0.70 | 0.80 |
| L1 | - | - | 0.125 |
| a | - | - | 12° |

Recommended Soldering Footprint


DIMENSIONS: MILLIMETERS

单击下面可查看定价，库存，交付和生命周期等信息

[>>JW\(捷捷微\)](#)