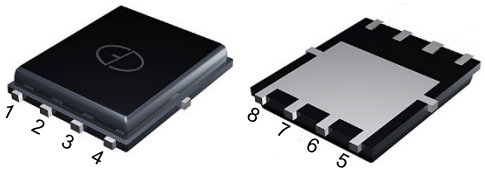
# N-Channel 100V (D-S) Power MOSFET

## Features

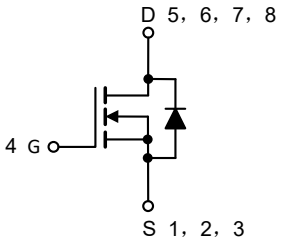
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- RoHS Compliant, Halogen Free, Pb-Free
- AEC-Q101 Qualified
- MSL 1




PDFN5060

## Applications

- Automotive systems
- Motors, lamps and solenoid control
- Ultra high performance power switching




## Absolute Maximum Ratings ($T_J$=25°C unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain Source Voltage | | $V_{DS}$ | 100 | V |
| Gate Source Voltage | | $V_{GS}$ | ±20 | V |
| Drain Current, Continuous $V_{GS}$=10V | $T_C$=25°C | $I_D$ | 87 | A |
| | $T_C$=100°C | | 62 | |
| Drain Current, Pulsed *(Note 1)* | | $I_{DM}$ | 348 | A |
| Single Avalanche Energy *(Note 2)* | | $E_{AS}$ | 89 | mJ |
| Power Dissipation | $T_C$=25°C | $P_D$ | 125 | W |
| | $T_C$=100°C | | 63 | |
| Operating Junction/ Storage Temperature Range | | $T_J$/ $T_{STG}$ | -55 to +175 | °C |

*Note 1: Single pulse; $t_p$ ≤ 1us.*
*Note 2: $V_{DD}$ = 30V, $V_{GS}$ = 10V, L = 0.5mH, $R_G$ = 25Ω, starting $T_J$ = 25 °C.*

## Thermal Characteristics

| Parameter | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance Junction to Case | $R_{thJC}$ | 1.2 | °C/W |
| Thermal Resistance Junction to Ambient *(Note 3)* | $R_{thJA}$ | 62.5 | °C/W |

*Note 3: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.*

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 100 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V, $V_{GS}$=0V | -- | -- | 1.0 | uA |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}$=$V_{GS}$, $I_{DS}$=250uA | 1.2 | 1.8 | 2.5 | V |
| Gate Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | -- | -- | ±100 | nA |
| Drain-Source On-state Resistance *(Note 4)* | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=20A | -- | 7 | 8 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=15A | -- | 9 | 10 | |
| Total Gate Charge | $Q_g$ | $V_{GS(off)}$=0V, $V_{GS(on)}$=10V, $V_{DD}$=50V, $I_D$=20A | -- | 23 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 4 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 6 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{GS}$=10V, $V_{DD}$=50V, $R_L$=1Ω, $R_G$=3Ω | -- | 11 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 64 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 25 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 7 | -- | |
| Gate Resistance | $R_g$ | $V_{GS}$=0V, f=1MHz, open drain | -- | 2.6 | -- | Ω |
| Input Capacitance | $C_{iss}$ | $V_{GS}$=0V, $V_{DS}$=100V, f=1MHz | -- | 1330 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 213 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 3.9 | -- | |

## Reverse Diode Characteristics ($T_J$ =25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Forward Current, Continuous | $I_{SD}$ | $T_C$=25°C | -- | -- | 87 | A |
| Diode Forward Voltage *(Note 4)* | $V_{SD}$ | $I_F$=20A, $V_{GS}$=0V | -- | -- | 1.2 | V |
| Reverse Recovery Time | $T_{rr}$ | $V_R$ =50V, $I_F$ =20A, di/dt = 100 A/μs | -- | 54 | -- | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | -- | 70 | -- | nC |

*Note 4: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.*

## Typical Characteristics Curves ($T_J$ = 25℃ unless otherwise noted)

Fig. 1 - Output Characteristics

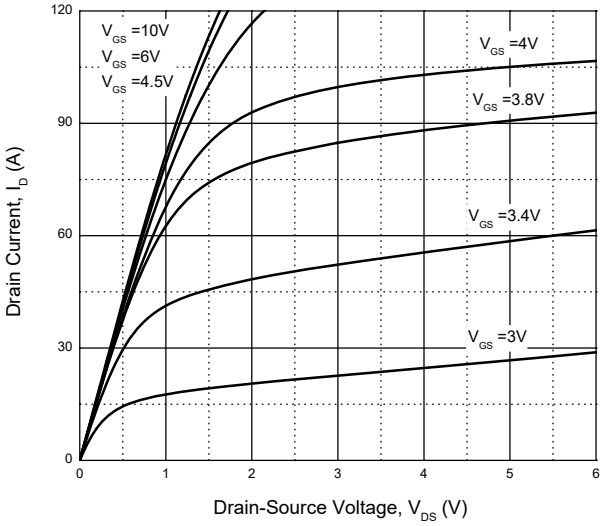



Fig. 2 - Transfer Characteristics

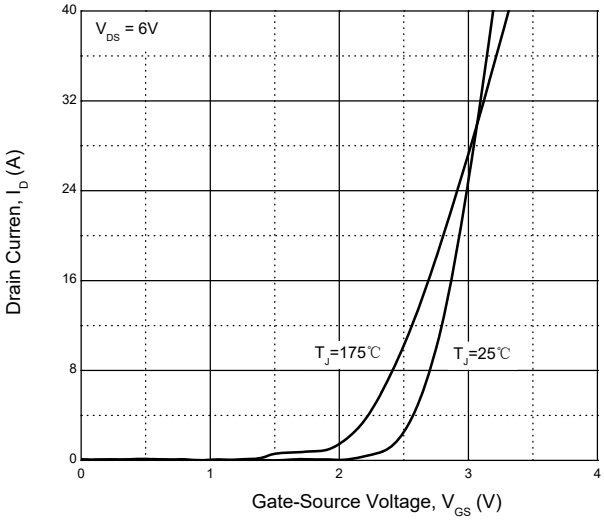



Fig. 3 - Drain-Source On-Resistance

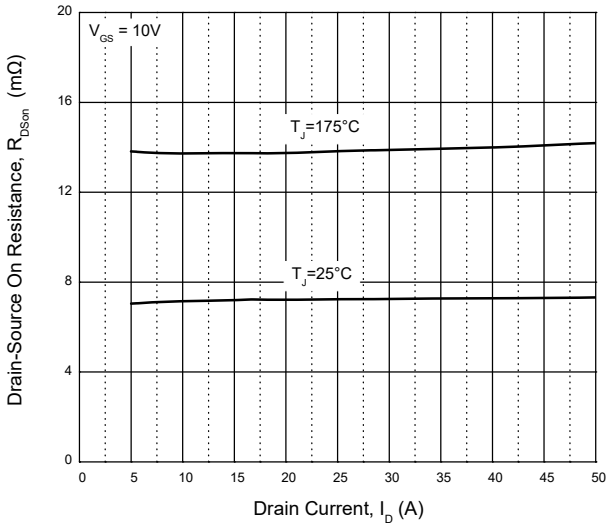



Fig. 4 - Normalized On-Resistance

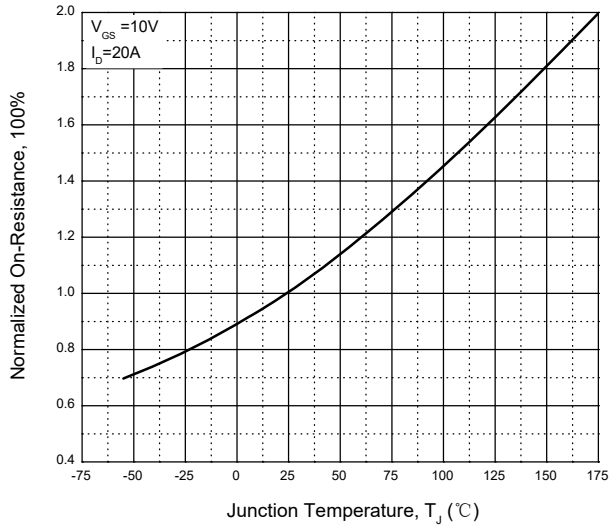



Fig. 5 - Drain-Source On-Resistance

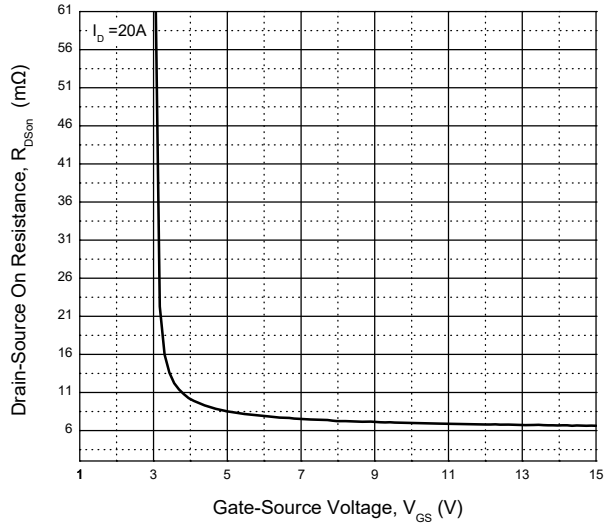
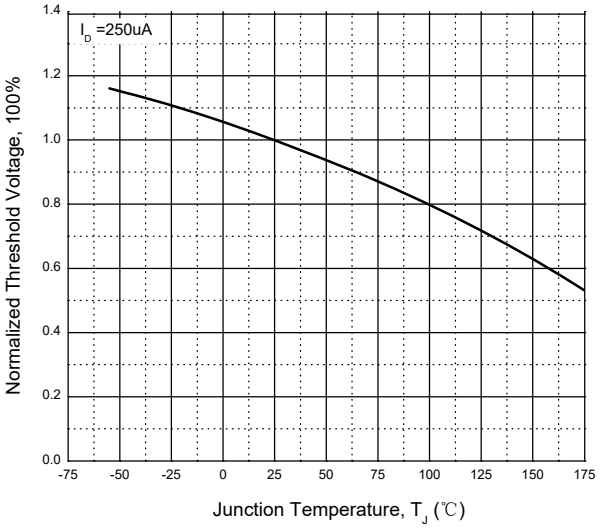



Fig. 6 - Normalized Threshold Voltage



## Typical Characteristics Curves ($T_J$ = 25℃ unless otherwise noted)

Fig. 7 - Capacitance

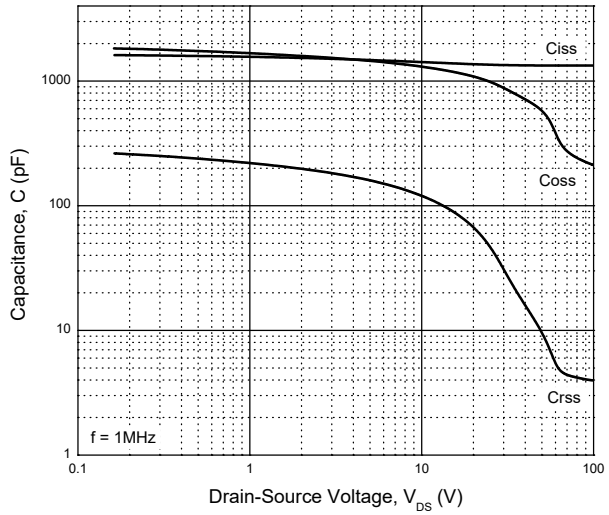



Fig. 8 - Gate Charge

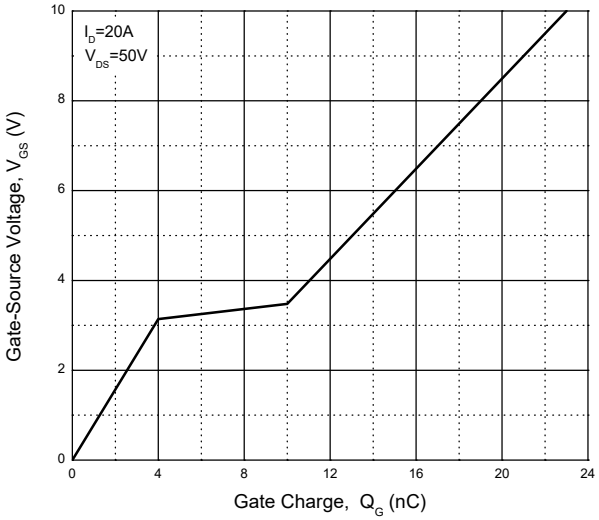



Fig. 9 - Forward Characteristic

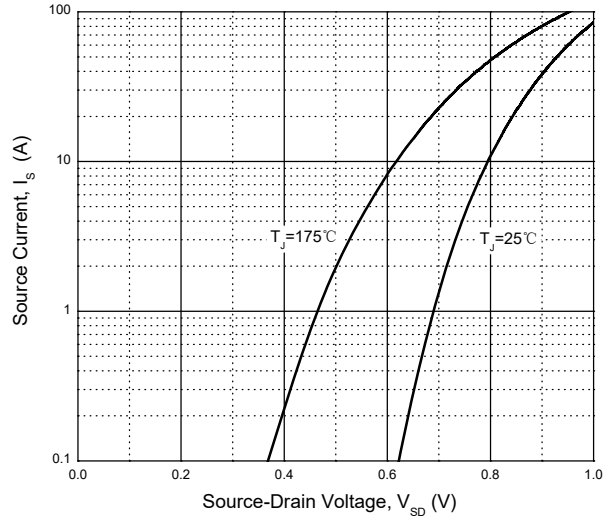



Fig. 10 - Safe Operating Area

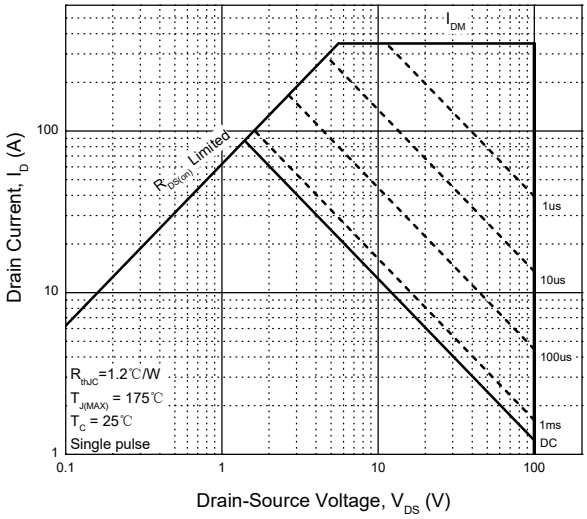
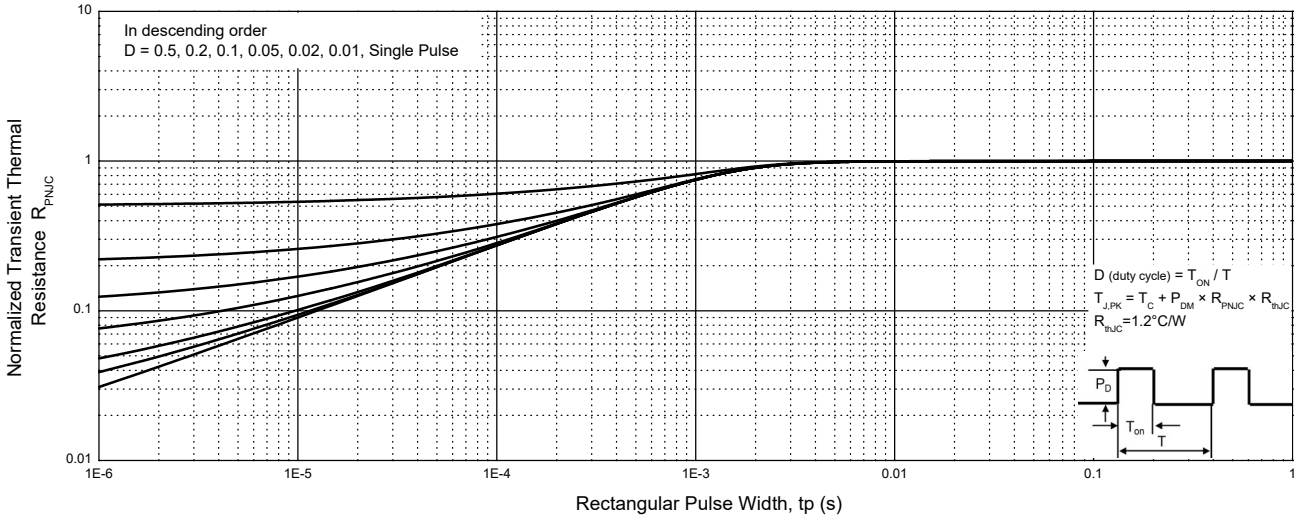



Fig.11 - Normalized Thermal Impedance, Junction-Case



## Typical Characteristics Curves (TJ = 25°C unless otherwise noted)

Fig. 12 - Power Derating

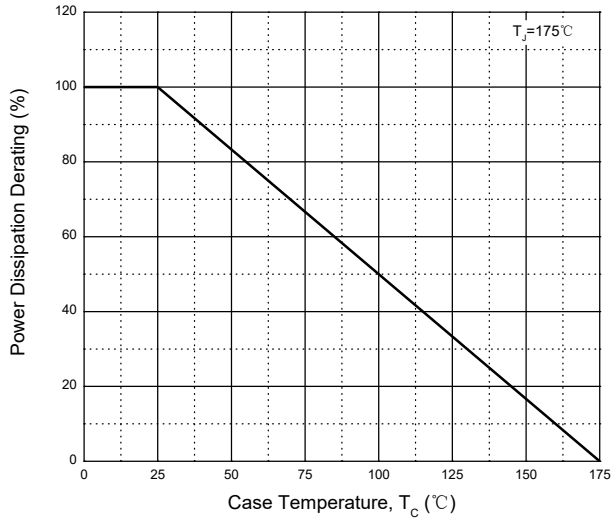
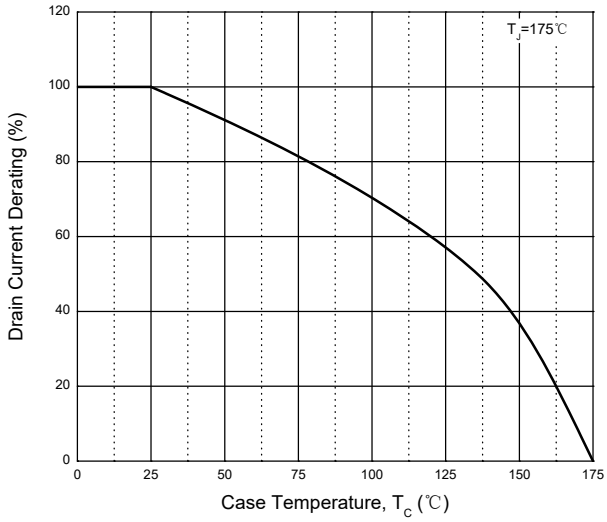
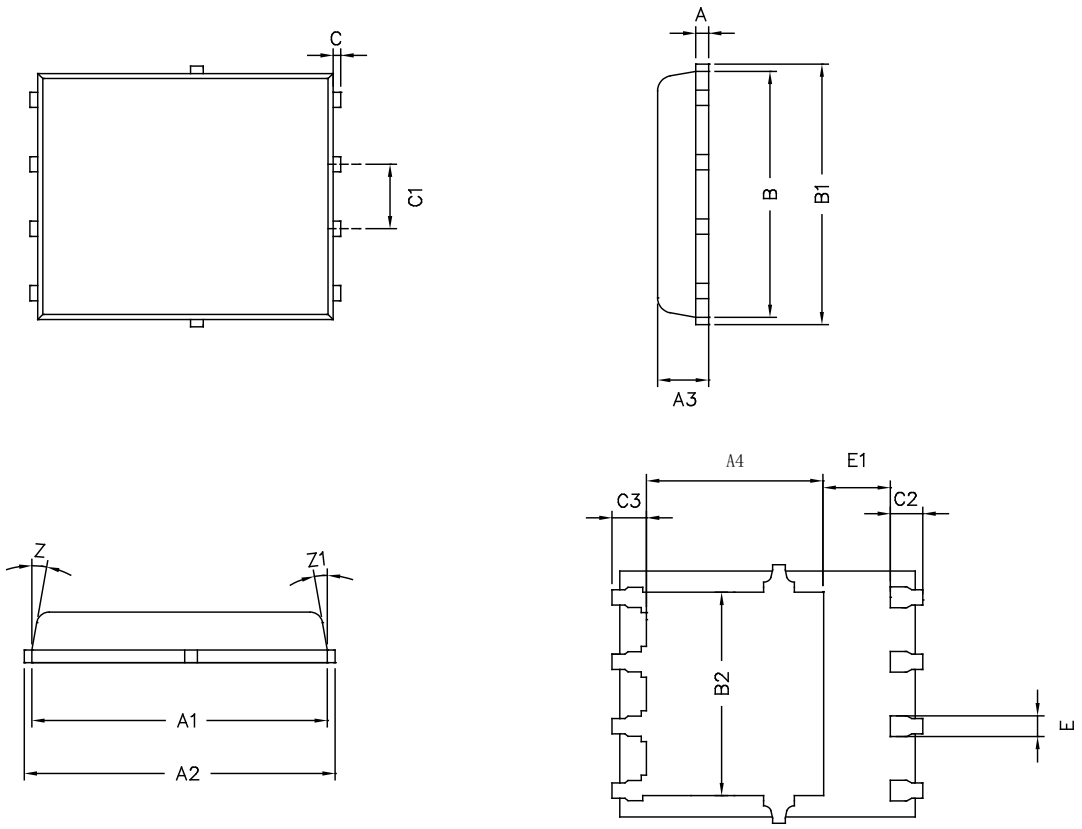



Fig. 13 - Drain Current Derating



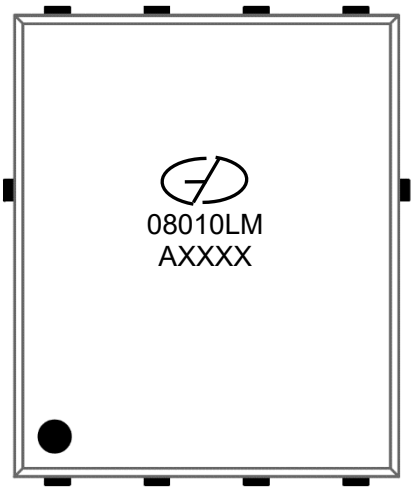
## Package Outline Dimensions (Unit: millimeters)

### PDFN5060




| PDFN5060 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Min. | Nom. | Max. | | Min. | Nom. | Max. |
| A | 0.15 | 0.25 | 0.35 | C | 0.05 | 0.15 | 0.25 |
| A1 | 5.6 | 5.8 | 6.0 | C1 | 1.17 | 1.27 | 1.37 |
| A2 | 5.9 | 6.1 | 6.3 | C2 | 0.53 | 0.63 | 0.73 |
| A3 | 0.9 | 1.0 | 1.1 | C3 | 0.53 | 0.63 | 0.73 |
| A4 | - | 3.5 | - | E | 0.31 | 0.41 | 0.51 |
| B | 4.7 | 4.9 | 5.1 | E1 | 1.2 | 1.3 | 1.4 |
| B1 | 5.0 | 5.2 | 5.4 | Z | 8° | 10° | 12° |
| B2 | - | 4.01 | - | Z1 | 8° | 10° | 12° |

## Marking Outline




Part Name: AGMN08010LM

1. Logo Mark:
2. P/N Mark: 08010LM
3. Date Code: AXXXX
4. Pin 1#: ●

## Revision History

| Version | Date | Major Changes |
|---|---|---|
| Rev.A | 2026.05.18 | Official Release |
| | | |
| | | |

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