

● General Description

The AGM035N10A combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

This device is ideal for load switch and battery protection applications.

● Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

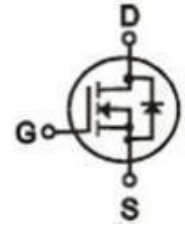
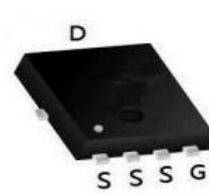
● Application

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

Product Summary

| BVDSS | RDS(ON) | ID |
|-------|---------|------|
| 100V | 3.3mΩ | 112A |

PDFN5*6 Pin Configuration



Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|------------|----------------|-----------|------------|----------|
| AGM035N10A | AGM035N10A | PDFN5*6 | ---- | ---- | 3000 |

Table 1. Absolute Maximum Ratings (TA=25°C)

| Symbol | Parameter | Value | Unit |
|-------------|--|------------|------|
| VDS | Drain-Source Voltage (VGS=0V) | 100 | V |
| VGS | Gate-Source Voltage (VDS=0V) | ±20 | V |
| ID | Drain Current-Continuous(Tc=25°C) (Note 1) | 112 | A |
| | Drain Current-Continuous(Tc=100°C) | 78 | A |
| IDM (pulse) | Drain Current-Continuous@ Current-Pulsed (Note 2) | 400 | A |
| PD | Maximum Power Dissipation(Tc=25°C) | 104 | w |
| | Maximum Power Dissipation(Tc=100°C) | 42 | w |
| EAS | Avalanche energy (Note 3) | 375 | mJ |
| TJ,TSTG | Operating Junction and Storage Temperature Range | -55 To 150 | °C |

Table 2. Thermal Characteristic

| Symbol | Parameter | Typ | Max | Unit |
|--------|---|-----|-----|------|
| RθJA | Thermal Resistance Junction-ambient (Steady State) ¹ | --- | 50 | °C/W |
| RθJC | Thermal Resistance Junction-Case ¹ | --- | 1.2 | °C/W |

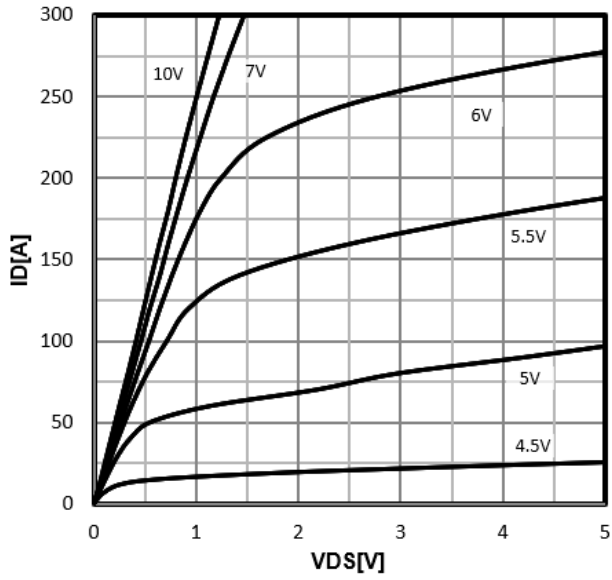
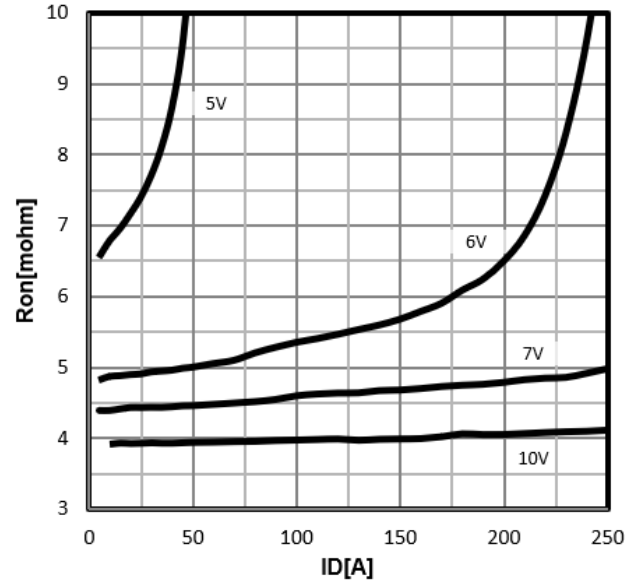
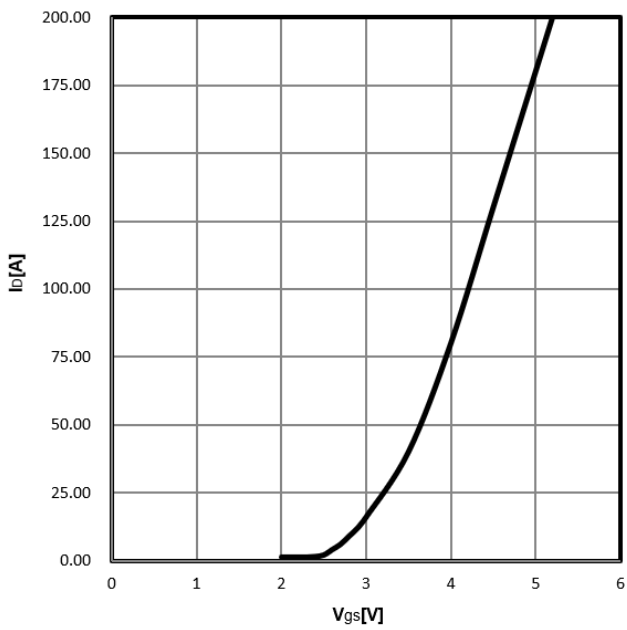
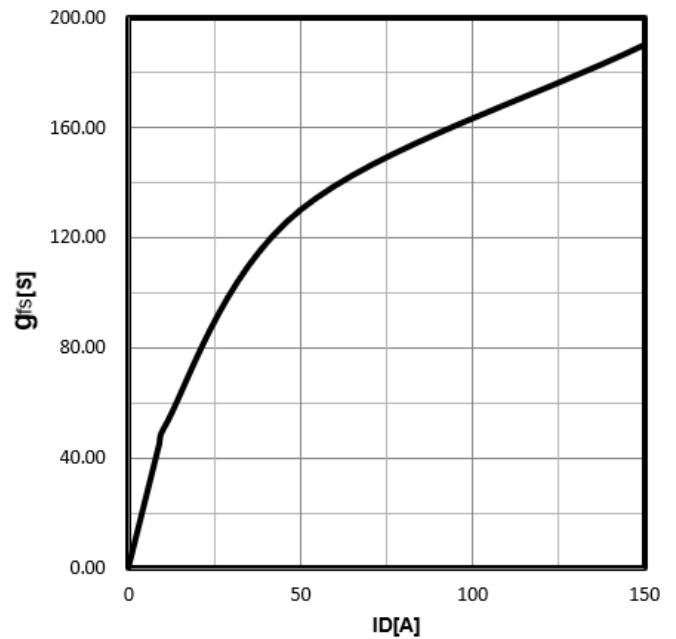
Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|----------------------------------|--------------------------------------|-----|------|------|------|
| On/Off States | | | | | | |
| BVDSS | Drain-Source Breakdown Voltage | VGS=0V ID=250μA | 100 | -- | -- | V |
| IDSS | Zero Gate Voltage Drain Current | VDS=100V, VGS=0V | -- | -- | 1 | μA |
| IGSS | Gate-Body Leakage Current | VGS=±20V, VDS=0V | -- | -- | ±100 | nA |
| VGS(th) | Gate Threshold Voltage | VDS=VGS, ID=250μA | 1.2 | 1.8 | 2.5 | V |
| gFS | Forward Transconductance | VDS=5V, ID=56A | -- | 130 | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=10V, ID=20A | -- | 3.3 | 4.0 | mΩ |
| | | VGS=4.5V, ID=15A | -- | 4.2 | 5.7 | mΩ |
| Dynamic Characteristics | | | | | | |
| Ciss | Input Capacitance | VDS=50V, VGS=0V, F=1MHZ | -- | 3500 | -- | pF |
| Coss | Output Capacitance | | -- | 100 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 27 | -- | pF |
| Rg | Gate resistance | VGS=0V, VDS=0V, f=1.0MHz | -- | 2.1 | -- | Ω |
| Switching Times | | | | | | |
| td(on) | Turn-on Delay Time | VGS=10V, VDS=56V, ID=56A, RGEN=5Ω | -- | 25 | -- | nS |
| tr | Turn-on Rise Time | | -- | 33 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 95 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 75 | -- | nS |
| Qg | Total Gate Charge | VGS=10V, VDS=50V, ID=56A | -- | 67.2 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 16.9 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 16.9 | -- | nC |
| Source-Drain Diode Characteristics | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | 112 | A |
| VSD | Forward on Voltage | VGS=0V, IS=56A | -- | -- | 1.2 | V |
| trr | Reverse Recovery Time | IF=20A , dI/dt=100A/μs , TJ=25°C | -- | 82 | -- | ns |
| Qrr | Reverse Recovery Charge | | -- | 180 | -- | nc |

Notes 1.The maximum current rating is package limited.

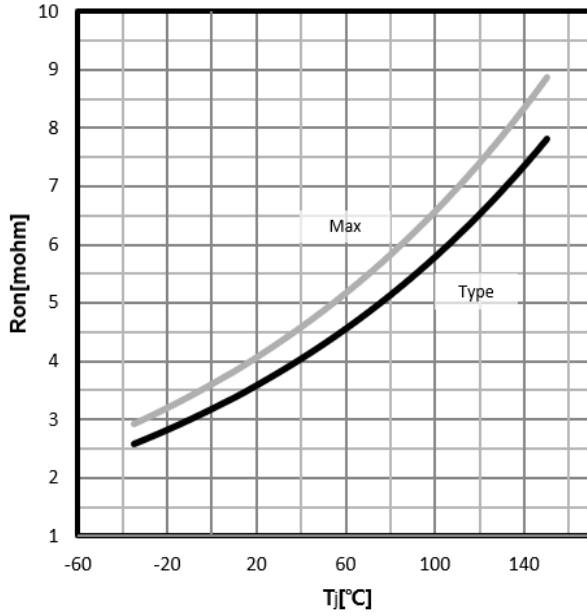
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25°C

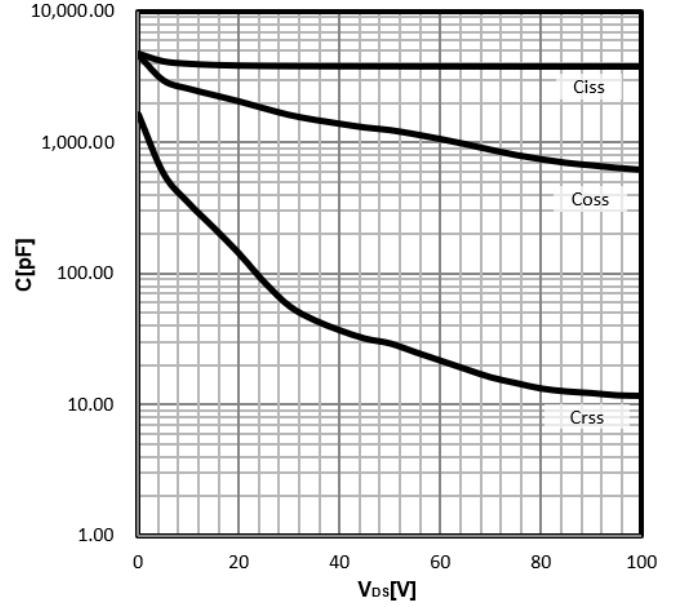
Characteristics Curve:
Typ. output characteristics
 $I_D = f(V_{DS})$

Typ. drain-source on resistance
 $R_{DS(on)} = f(I_D)$

Typ. transfer characteristics
 $I_D = f(V_{GS})$

Typ. forward transconductance
 $g_{fs} = f(I_D)$


Drain-source on-state resistance

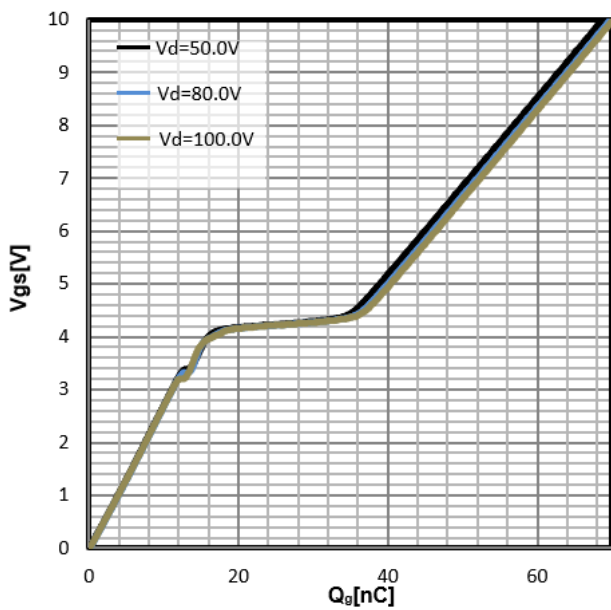
$$R_{DS(on)} = f(T_j); I_D = 56A; V_{GS} = 10V$$


Typ. capacitances

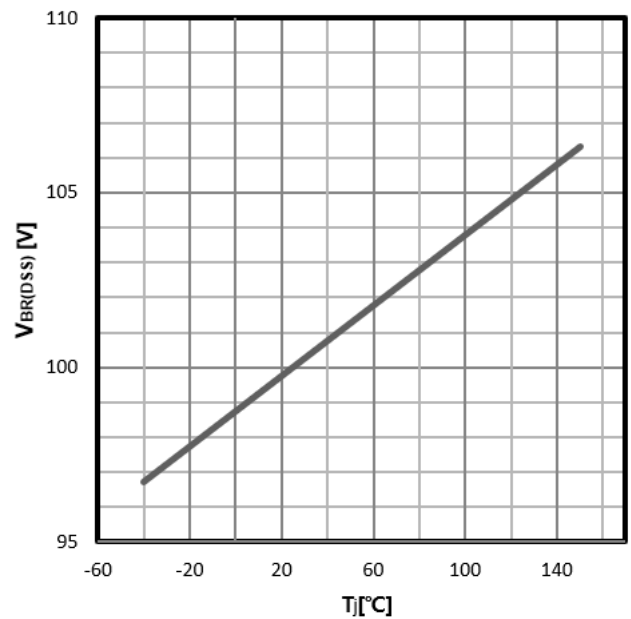
$$C = f(V_{DS}); V_{GS} = 0V; f = 1MHz$$

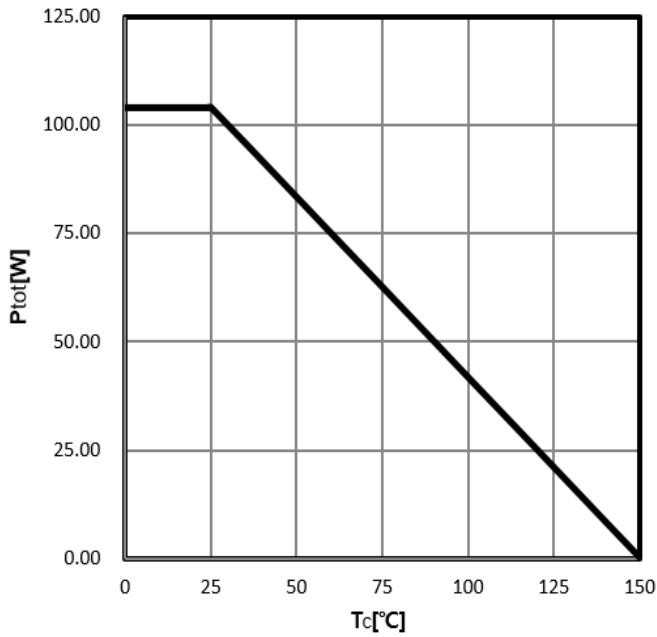
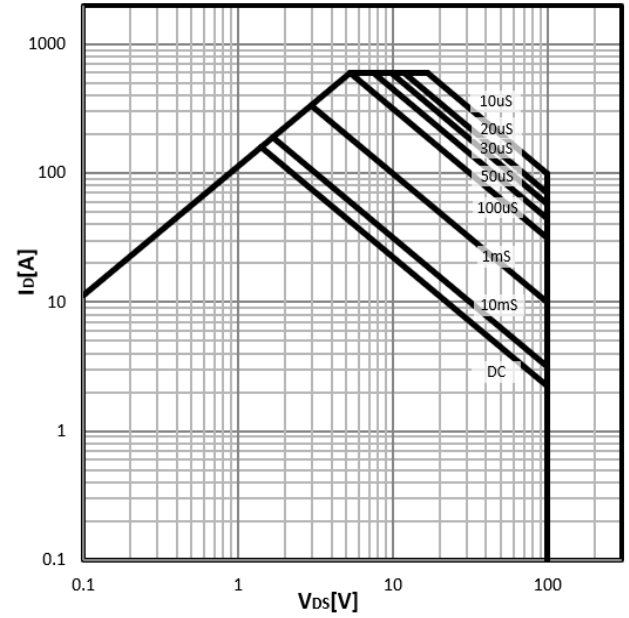

Typ. gate charge

$$V_{GS} = f(Q_{gate}); I_D = 20A$$


Drain-source breakdown voltage

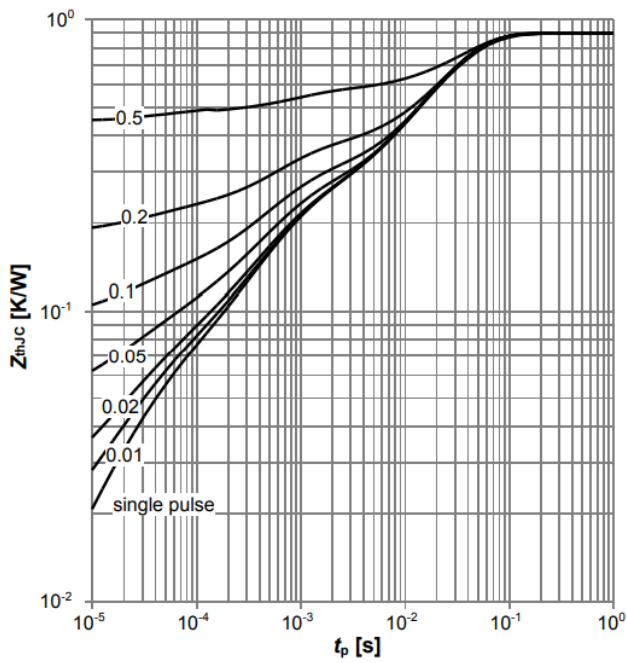
$$V_{BR(DSS)} = f(T_j); I_D = 250\mu A$$

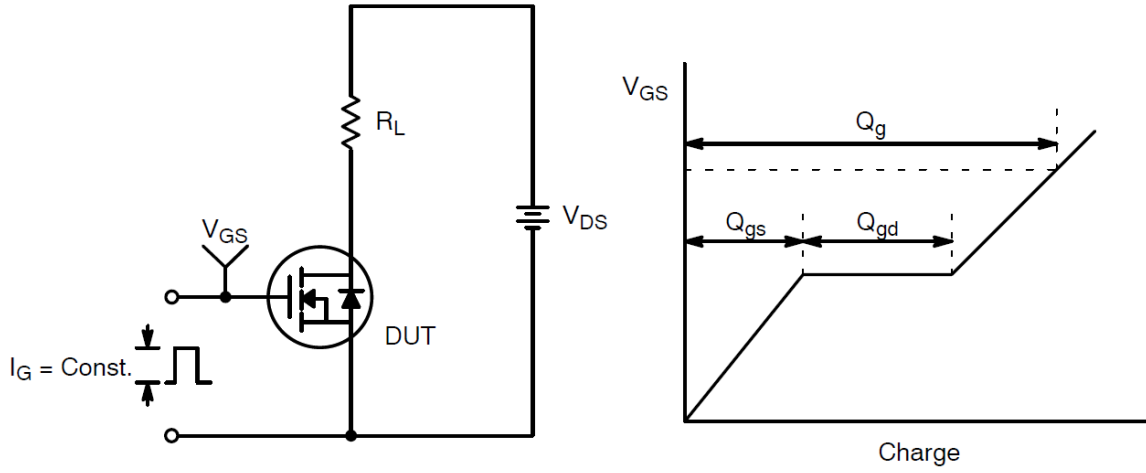
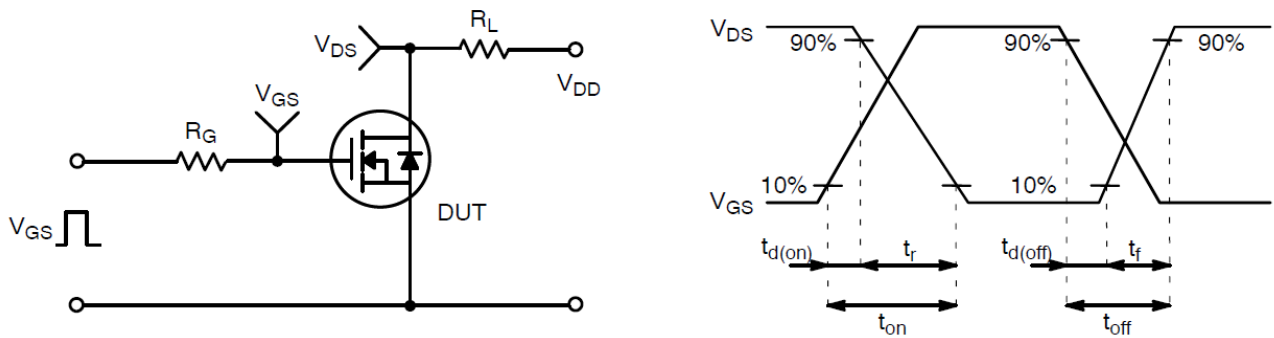
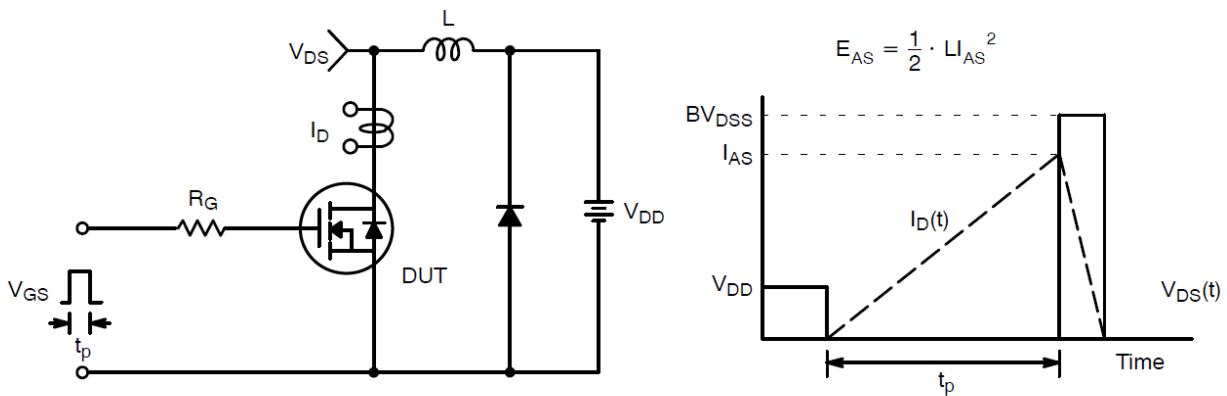


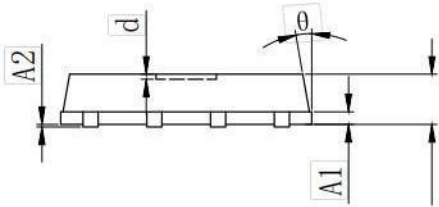
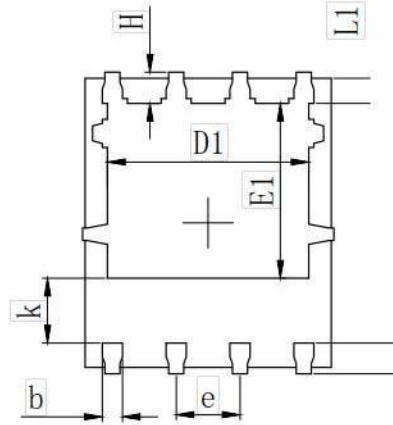
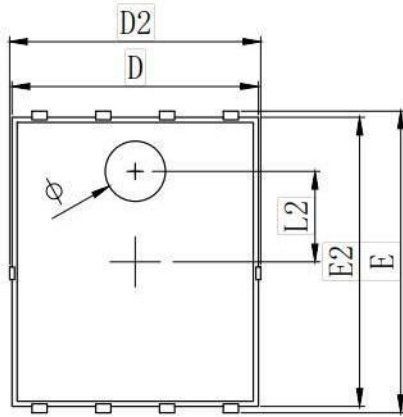
$P_{tot}=f(T_c)$

 $I_D=f(V_{DS})$


Max. transient thermal impedance

$Z_{thJC}=f(t_p)$



Test Circuit and Waveform:

Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms

•Dimensions (DFN5×6)


| SYMBOL | MILLIMETER | | |
|--------|------------|-------|-------|
| | MIN | Typ. | MAX |
| A | 0.900 | 1.000 | 1.100 |
| A1 | 0.254 REF. | | |
| A2 | 0~0.05 | | |
| D | 4.824 | 4.900 | 4.976 |
| D1 | 3.910 | 4.010 | 4.110 |
| D2 | 4.924 | 5.000 | 5.076 |
| E | 5.924 | 6.000 | 6.076 |
| E1 | 3.375 | 3.475 | 3.575 |
| E2 | 5.674 | 5.750 | 5.826 |
| b | 0.350 | 0.400 | 0.450 |
| e | 1.270 TYP. | | |
| L | 0.534 | 0.610 | 0.686 |
| L1 | 0.424 | 0.500 | 0.576 |
| L2 | 1.800 REF. | | |
| k | 1.190 | 1.290 | 1.390 |
| H | 0.549 | 0.625 | 0.701 |
| θ | 8° | 10° | 12° |
| Ø | 1.100 | 1.200 | 1.300 |
| d | | | 0.100 |


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