

● General Description

The AGM14N10A 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
- 100% Avalanche tested
- 100% DVDS tested

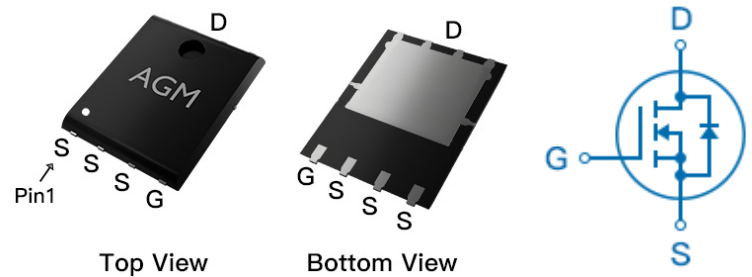
● Application

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

Product Summary

| BVDSS | RDSON | ID |
|-------|-------|-----|
| 100V | 12mΩ | 50A |

PDFN5*6 Pin Configuration



Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|-----------|----------------|-----------|------------|----------|
| AGM14N10A | AGM14N10A | PDFN5*6 | 330mm | 12mm | 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) | 50 | A |
| | Drain Current-Continuous(Tc=100°C) | 35 | A |
| IDM (pluse) | Drain Current-Pulsed (Note 2) | 200 | A |
| PD | Maximum Power Dissipation(Tc=25°C) | 68 | w |
| | Maximum Power Dissipation(Tc=100°C) | 27 | w |
| EAS | Avalanche energy (Note 3) | 132 | 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 | --- | 20 | °C/W |
| RθJC | Thermal Resistance Junction-Case ¹ | --- | 1.85 | °C/W |

Table 3. Electrical Characteristics (T_J=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 | 1.6 | 2.2 | V |
| gFS | Forward Transconductance | VDS=5V,ID=15A | -- | 18 | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=10V, ID=20A | -- | 12 | 17 | mΩ |
| | | VGS=4.5V, ID=15A | -- | 17 | 21 | mΩ |
| Dynamic Characteristics | | | | | | |
| Ciss | Input Capacitance | VDS=50V,VGS=0V, F=1MHZ | -- | 1090 | -- | pF |
| Coss | Output Capacitance | | -- | 470 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 60 | -- | pF |
| Rg | Gate resistance | VGS=0V, VDS=0V,f=1.0MHz | -- | 1.3 | -- | Ω |
| Switching Times | | | | | | |
| td(on) | Turn-on Delay Time | VGS=10V,VDS=50V,ID =10A,RGEN=6Ω | -- | 45 | -- | nS |
| tr | Turn-on Rise Time | | -- | 54.5 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 249 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 60 | -- | nS |
| Qg | Total Gate Charge | VGS=10V, VDS=50V, ID=8.5A | -- | 30.5 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 6.1 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 8.3 | -- | nC |
| Source-Drain Diode Characteristics | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | 50 | A |
| VSD | Forward on Voltage | VGS=0V,IS=20A | -- | 0.7 | 1.2 | V |
| trr | Reverse Recovery Time | Isd=20A , | -- | 43 | -- | ns |
| Qrr | Reverse Recovery Charge | dI/dt=100A/μs , T _J =25°C | -- | 90 | -- | 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: T_J=25°C,VDD=50V,Vgs=10V , ID=23A,L=0.5mH,RG=25ohm

Typical Performance Characteristics

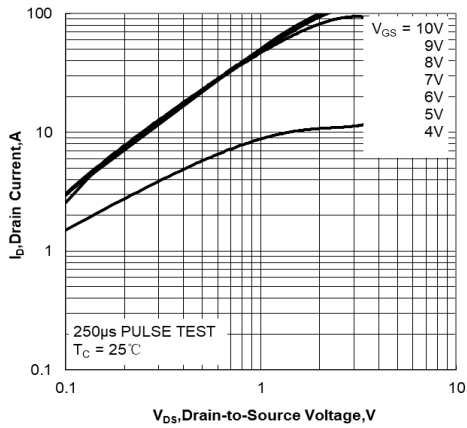


Figure 1. Output Characteristics

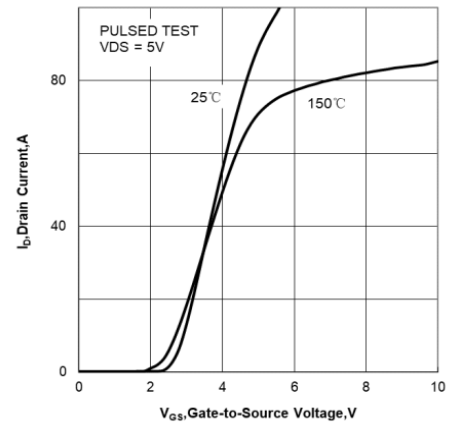


Figure 2. Transfer Characteristics

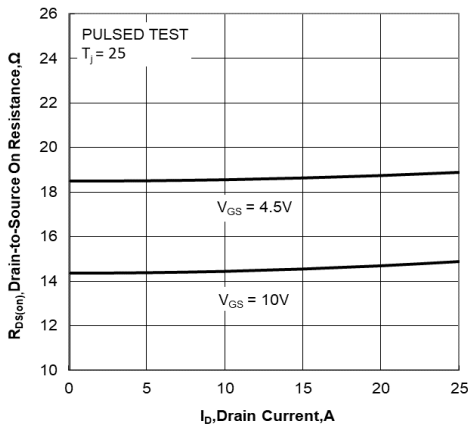


Figure 3. Drain-to-Source On Resistance vs Drain Current

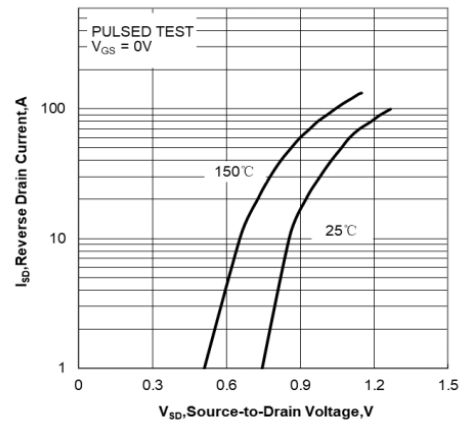


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

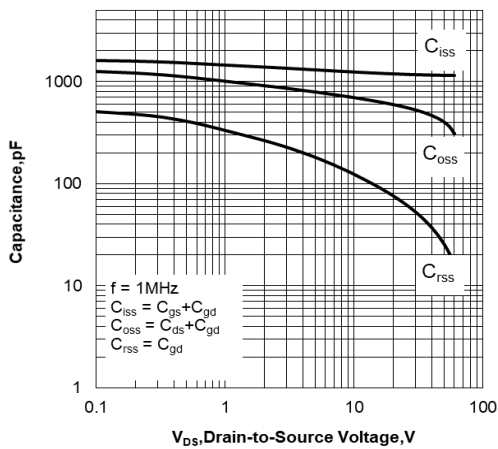


Figure 5. Capacitance Characteristics

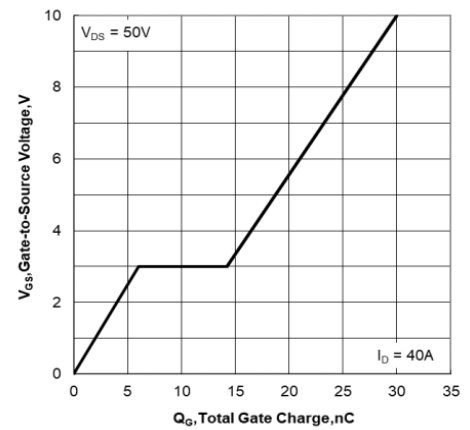


Figure 6. Gate Charge Characteristics

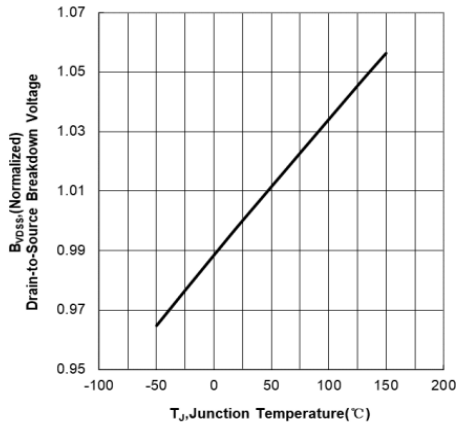


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

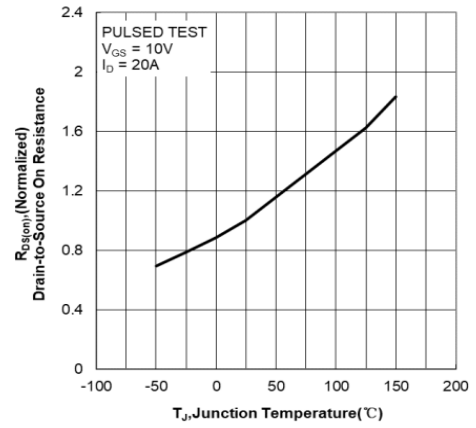


Figure 8. Normalized On Resistance vs Junction Temperature

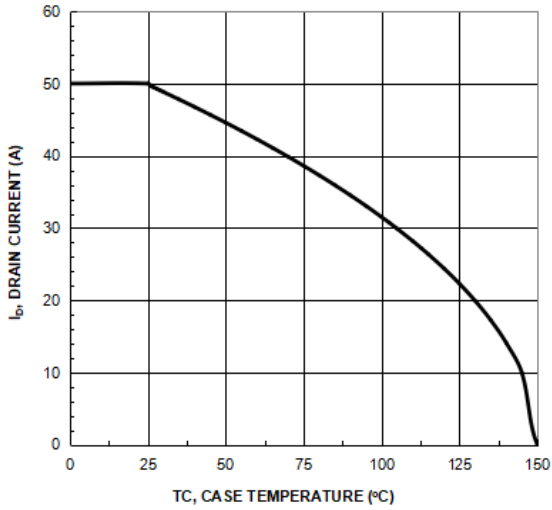


Figure 9. Maximum Continuous Drain Current vs Case Temperature

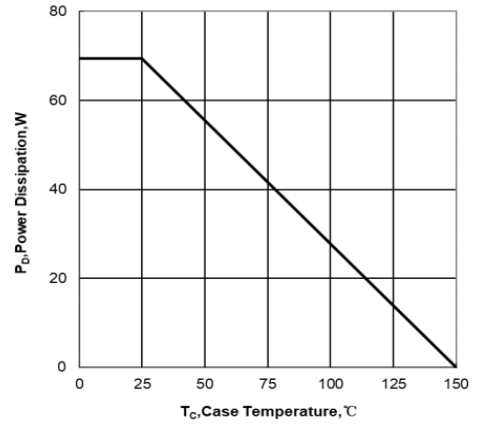


Figure 10. Maximum Power Dissipation vs Case Temperature

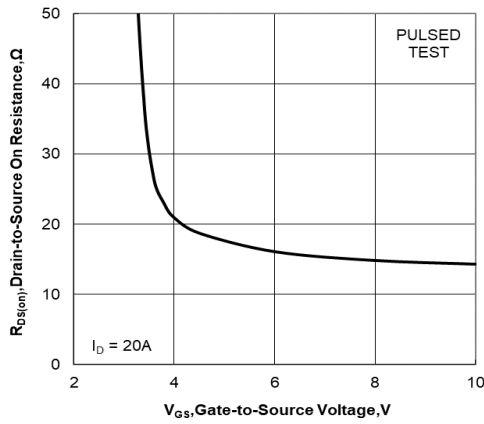


Figure 11. Drain-to-Source On Resistance vs Gate

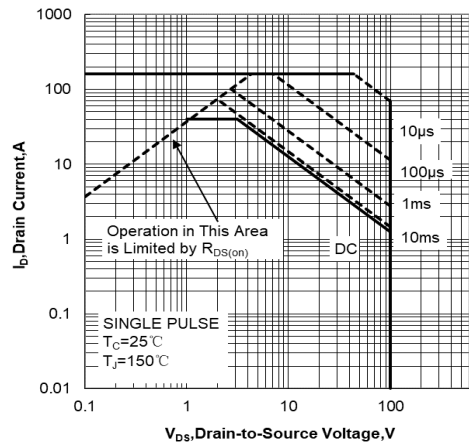
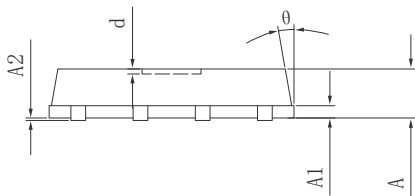
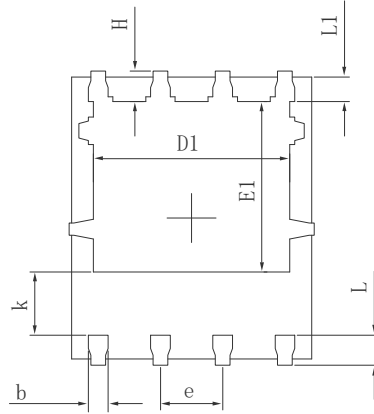
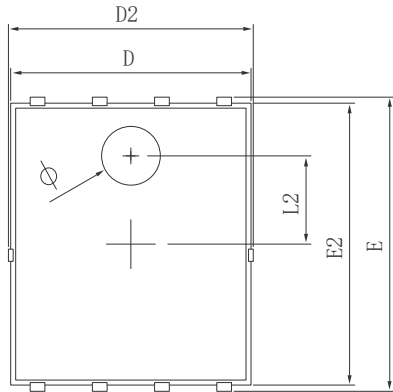
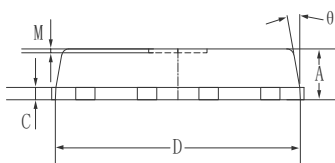
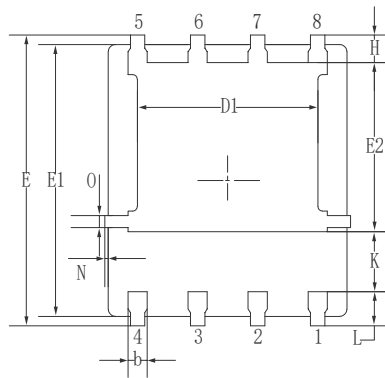
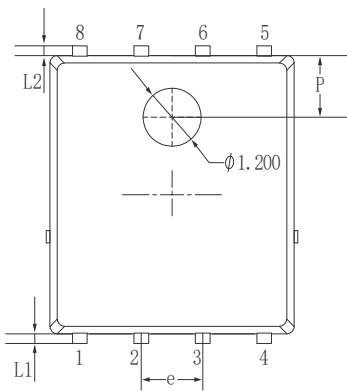


Figure 12. Maximum Safe Operating Area

•Dimensions (PDFN5*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° |
| Φ | 1.100 | 1.200 | 1.300 |
| d | | | 0.100 |

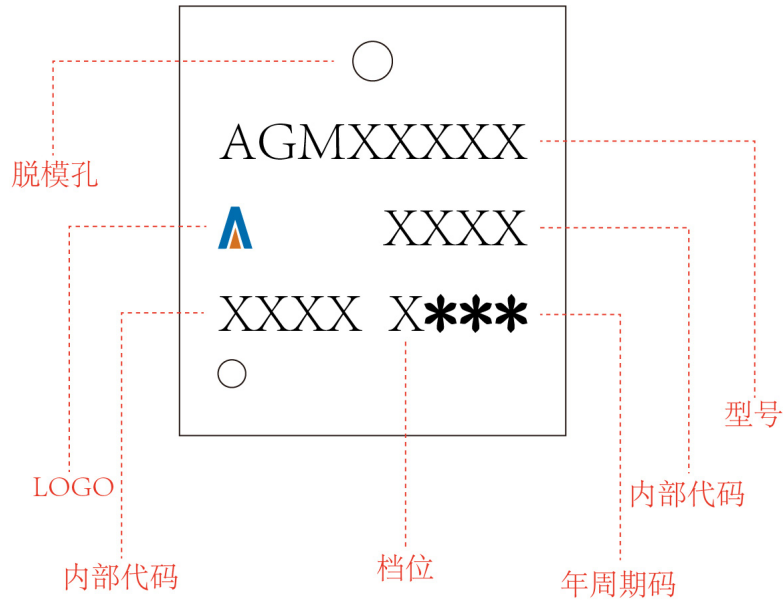


| SYMBOL | MILLIMETER | | |
|--------|------------|------|------|
| | MIN. | NOM. | MAX. |
| A | 0.90 | 1.05 | 1.20 |
| b | 0.35 | 0.40 | 0.50 |
| C | 0.20 | 0.25 | 0.35 |
| D | 4.90 | 5.05 | 5.20 |
| D1 | 3.72 | 3.82 | 3.92 |
| E | 6.00 | 6.15 | 6.30 |
| E1 | 5.60 | 5.75 | 5.90 |
| E2 | 3.47 | 3.57 | 3.67 |
| e | 1.27 BSC. | | |
| H | 0.48 | 0.58 | 0.68 |
| K | 1.17 | 1.27 | 1.37 |
| L | 0.64 | 0.74 | 0.84 |
| L1/L2 | 0.20 REF. | | |
| θ | 8° | 10° | 12° |
| M | 0.08 REF. | | |
| N | 0 | - | 0.15 |
| O | 0.25 REF. | | |
| P | 1.28 REF. | | |

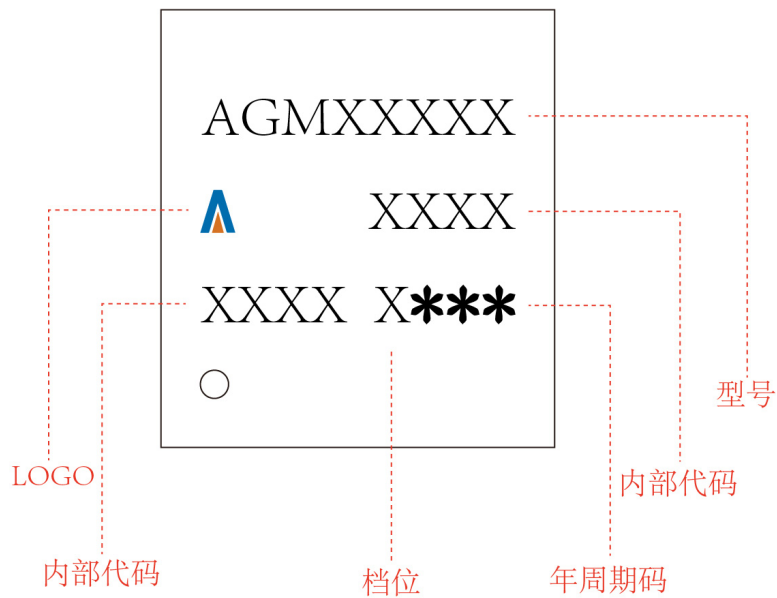
PDFN5*6

Marking Instructions:

Model1:



Model2:




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