

● General Description

The AGM612MN 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

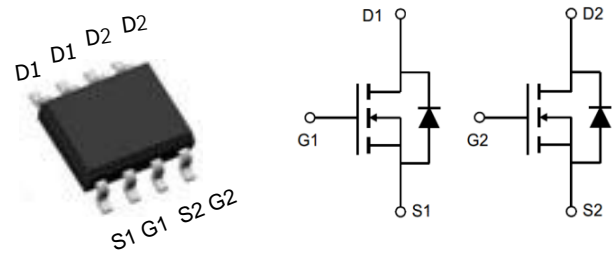
● Application

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

Product Summary

| BVDSS | RDSON | ID |
|-------|-------|-----|
| 60V | 13mΩ | 11A |

SOP8 Pin Configuration



Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|----------|----------------|-----------|------------|----------|
| AGM612MN | AGM612MN | SOP8 | ---- | ---- | 3000 |

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

| Symbol | Parameter | Value | Unit |
|-------------|--|------------|------|
| VDS | Drain-Source Voltage (VGS=0V) | 60 | V |
| VGS | Gate-Source Voltage (VDS=0V) | ±20 | V |
| ID | Drain Current-Continuous(Tc=25°C) (Note 1) | 11 | A |
| | Drain Current-Continuous(Tc=100°C) | 6 | A |
| IDM (pluse) | Drain Current-Continuous@ Current-Pulsed (Note 2) | 36 | A |
| PD | Maximum Power Dissipation(Tc=25°C) | 83 | w |
| | Maximum Power Dissipation(Tc=100°C) | 33 | w |
| EAS | Avalanche energy (Note 3) | 28 | 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 | -- | 30 | °C/W |
| RθJC | Thermal Resistance Junction-Case ¹ | --- | 1.5 | °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 | 60 | -- | -- | V |
| IDSS | Zero Gate Voltage Drain Current | VDS=50V, 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 | 2.5 | V |
| gFS | Forward Transconductance | VDS=5V, ID=20A | -- | 10 | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=10V, ID=15A | -- | 13 | 17 | mΩ |
| | | VGS=4.5V, ID=10A | -- | 18 | 24 | mΩ |
| Dynamic Characteristics | | | | | | |
| Ciss | Input Capacitance | VDS=30V, VGS=0V, F=1MHZ | -- | 700 | -- | pF |
| Coss | Output Capacitance | | -- | 340 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 28 | -- | pF |
| Rg | Gate resistance | VGS=0V, VDS=0V, f=1.0MHz | -- | 1.7 | -- | Ω |
| Switching Times | | | | | | |
| td(on) | Turn-on Delay Time | VGS=10V, VDS=30V, ID=12A, RGEN=4.5Ω | -- | 6.2 | -- | nS |
| tr | Turn-on Rise Time | | -- | 2.3 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 23 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 17 | -- | nS |
| Qg | Total Gate Charge | VGS=10V, VDS=30V, ID=12A | -- | 15 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 3.6 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 3.1 | -- | nC |
| Source-Drain Diode Characteristics | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | 11 | A |
| VSD | Forward on Voltage | VGS=0V, IS=8A | -- | -- | 1.3 | V |
| trr | Reverse Recovery Time | IF=8A , dI/dt=100A/μs , TJ=25°C | -- | 32 | -- | ns |
| Qrr | Reverse Recovery Charge | | -- | 11 | -- | nc |

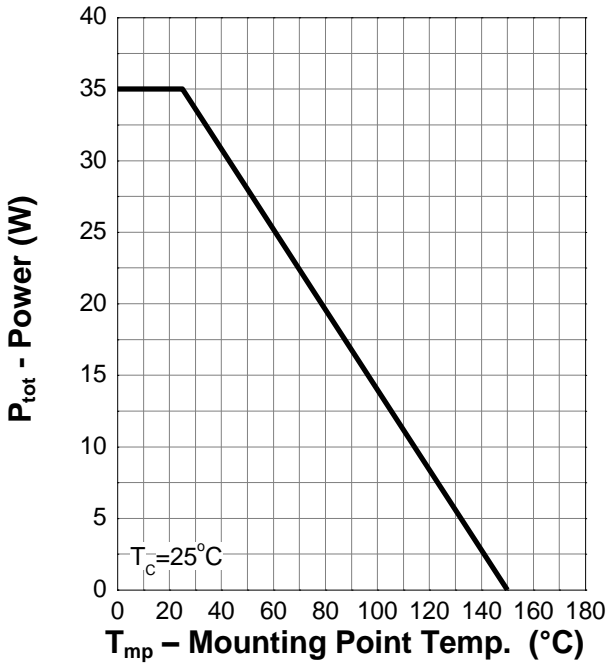
Notes 1.The maximum current rating is package limited.

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

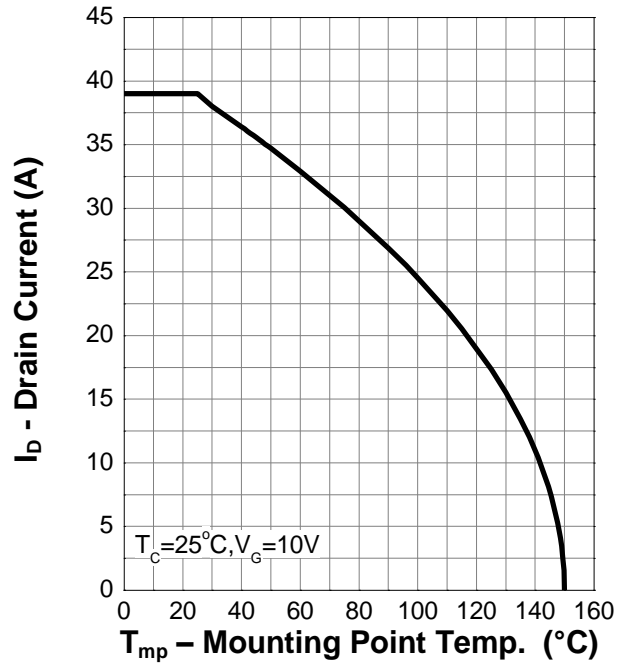
Notes 3.EAS condition: TJ=25°C

Typical Characteristics

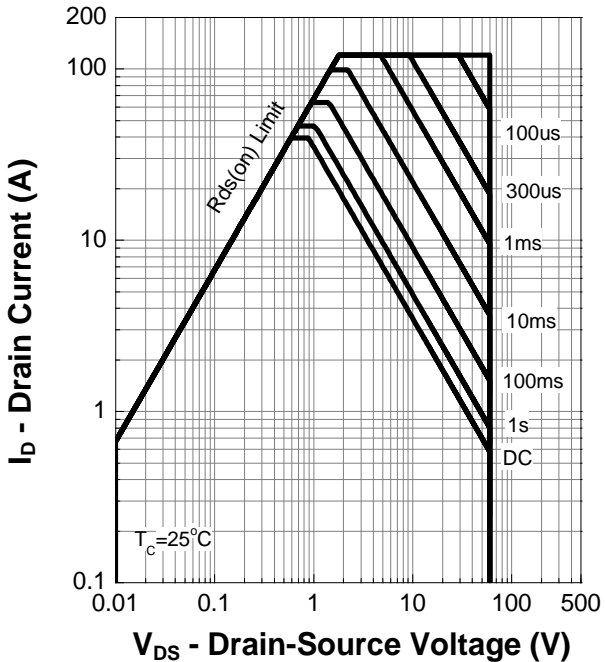
Power Capability



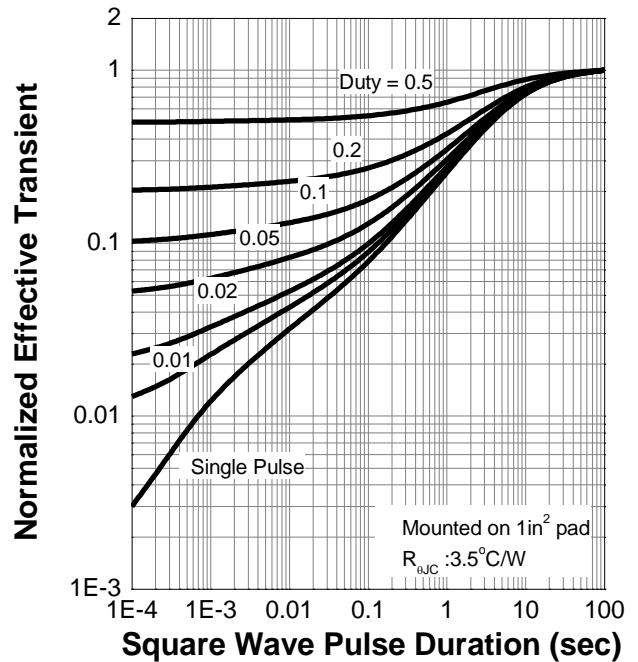
Current Capability



Safe Operating Area

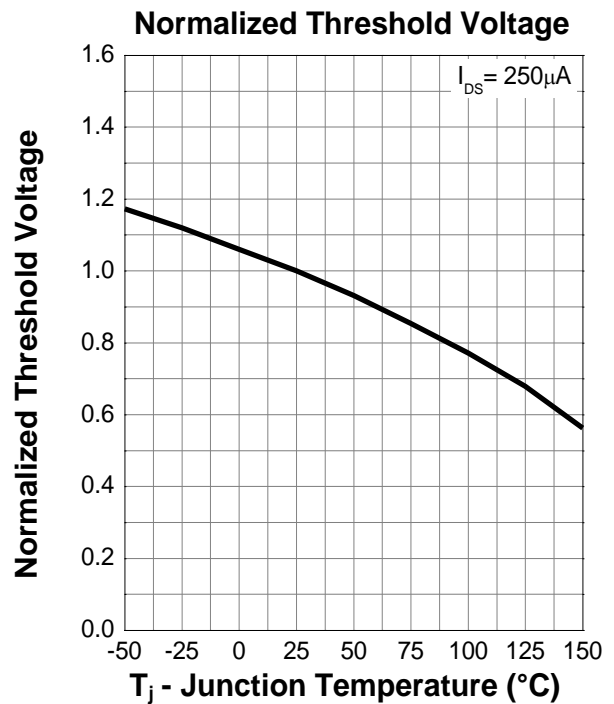
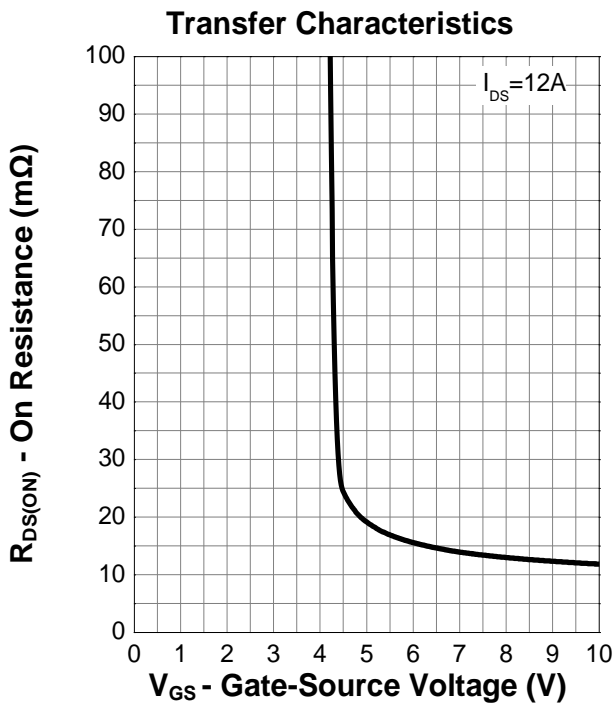
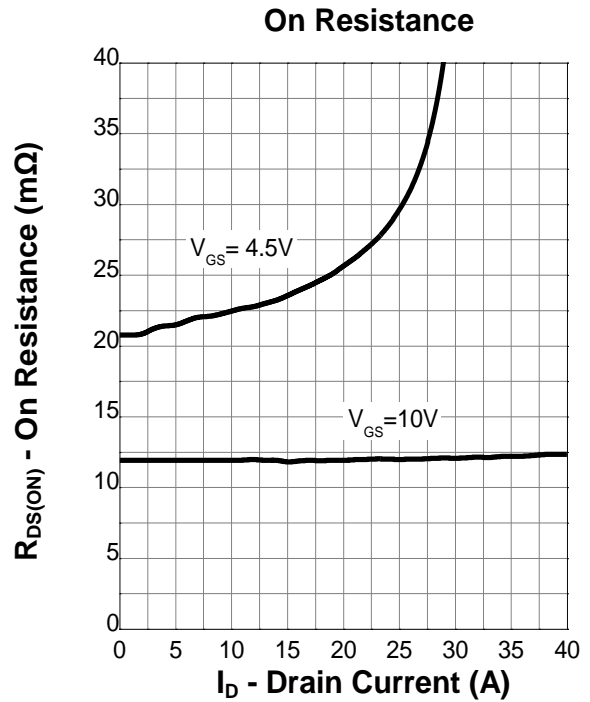
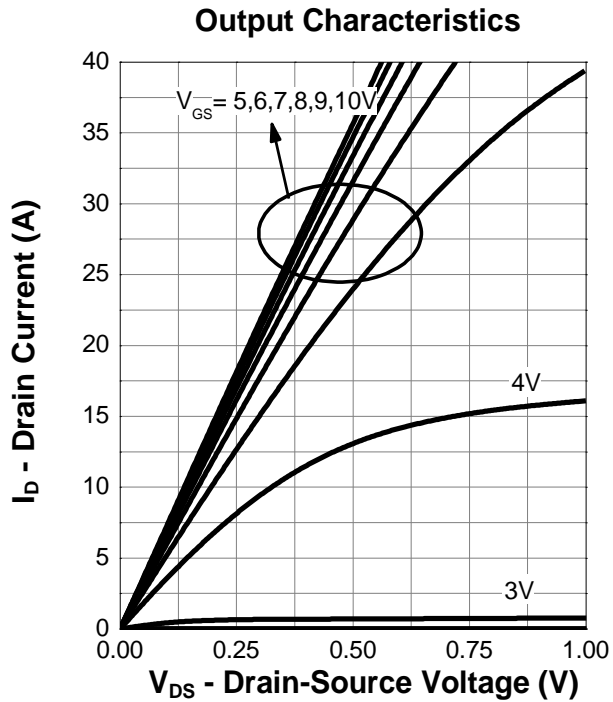


Transient Thermal Impedance

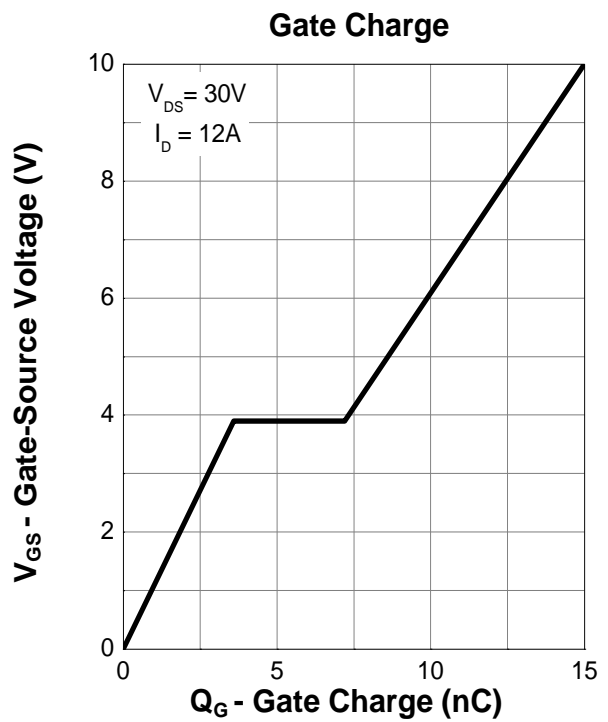
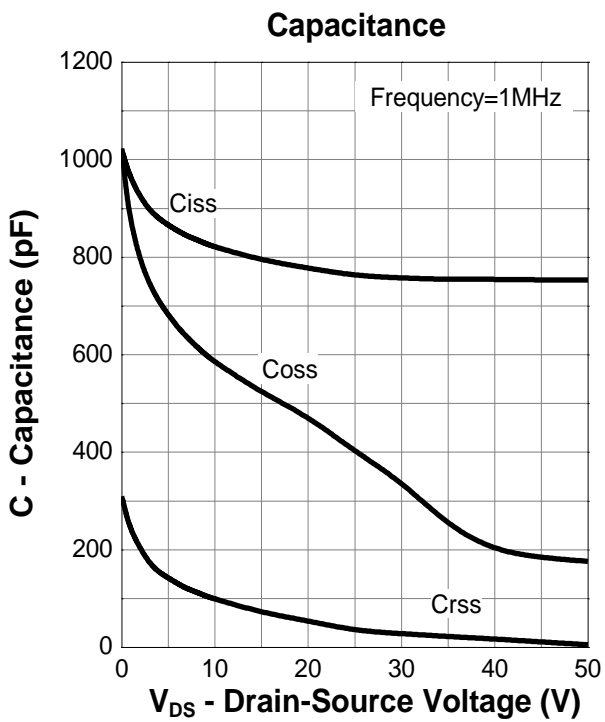
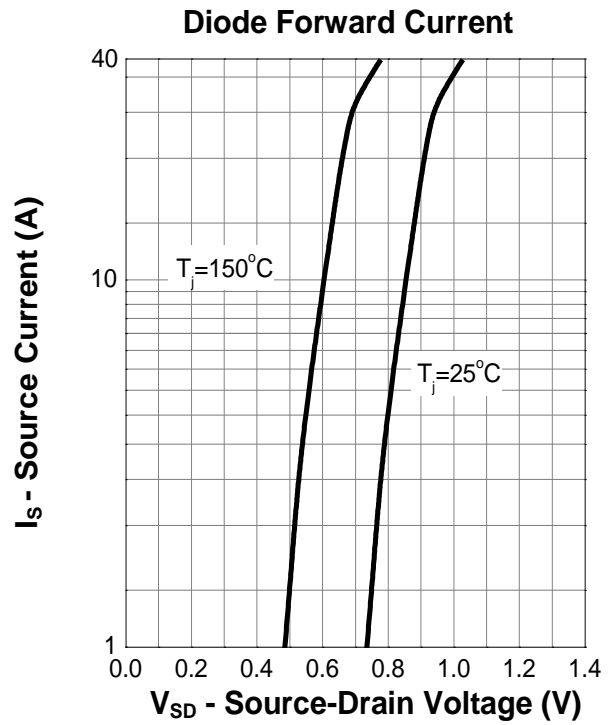
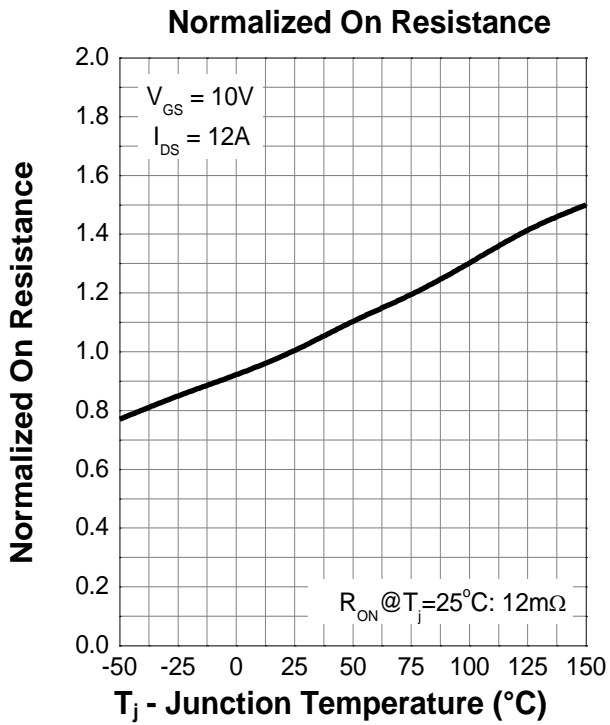


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Typical Characteristics (cont.)

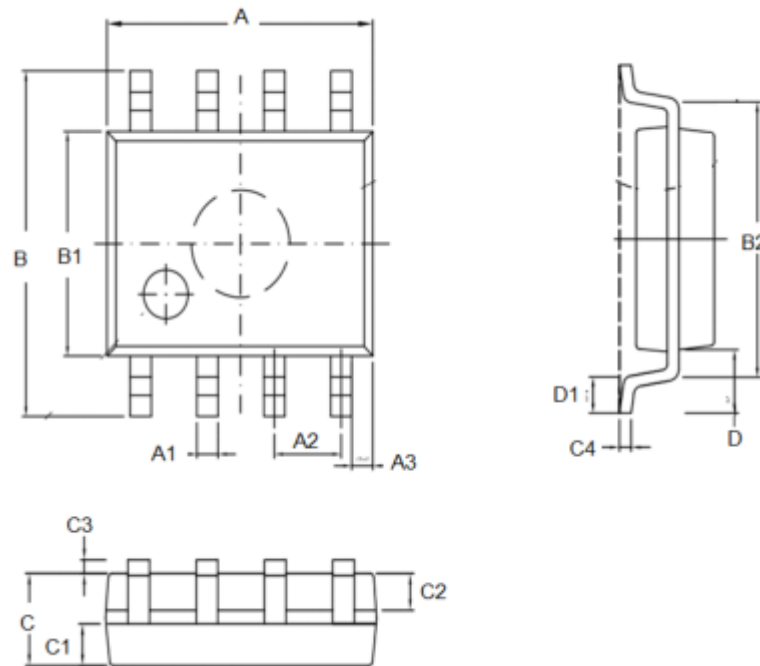


Typical Characteristics (cont.)



•Dimensions(SOP8)

| SYMBOL | min | TYP | max | SYMBOL | min | | max |
|--------|------|------|------|--------|------|------|------|
| A | 4.80 | | 5.00 | C | 1.30 | | 1.50 |
| A1 | 0.37 | | 0.47 | C1 | 0.55 | | 0.75 |
| A2 | | 1.27 | | C2 | 0.55 | | 0.65 |
| A3 | | 0.41 | | C3 | 0.05 | | 0.20 |
| B | 5.80 | | 6.20 | C4 | 0.19 | 0.20 | 0.23 |
| B1 | 3.80 | | 4.00 | D | | 1.05 | |
| B2 | | 5.00 | | D1 | 0.40 | | 0.62 |




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