

● General Description

The AGM605Q 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

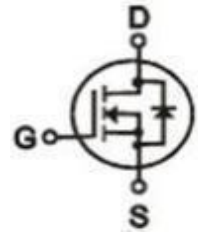
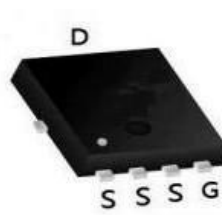
● Application

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

Product Summary

| BVDSS | RDSON | ID |
|-------|-------|-----|
| 60V | 6.2mΩ | 58A |

PDFN5*6 Pin Configuration



Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|---------|----------------|-----------|------------|----------|
| AGM605Q | AGM605Q | PDFN5*6 | ---- | ---- | 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) | 58 | A |
| | Drain Current-Continuous(Tc=100°C) | 37 | A |
| IDM (pluse) | Drain Current-Continuous@ Current-Pulsed (Note 2) | 250 | A |
| PD | Maximum Power Dissipation(Tc=25°C) | 50 | w |
| | Maximum Power Dissipation(Tc=100°C) | 20 | w |
| EAS | Avalanche energy (Note 3) | 26.5 | 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 | --- | 60 | °C/W |
| RθJC | Thermal Resistance Junction-Case ¹ | --- | 2.5 | °C/W |

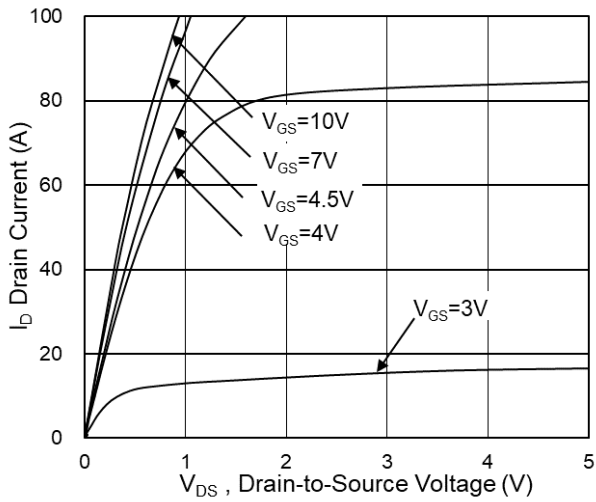
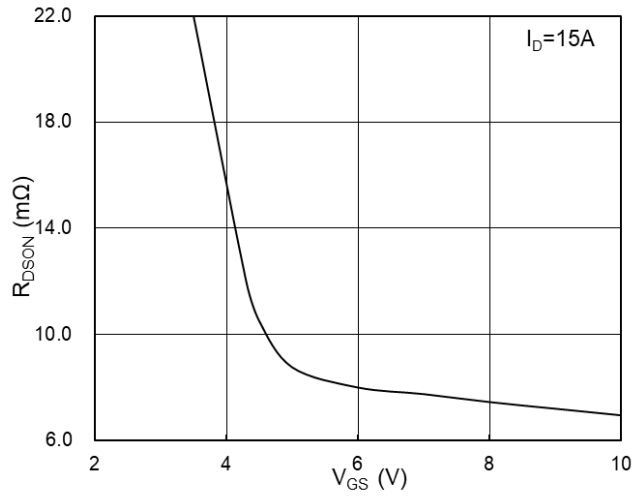
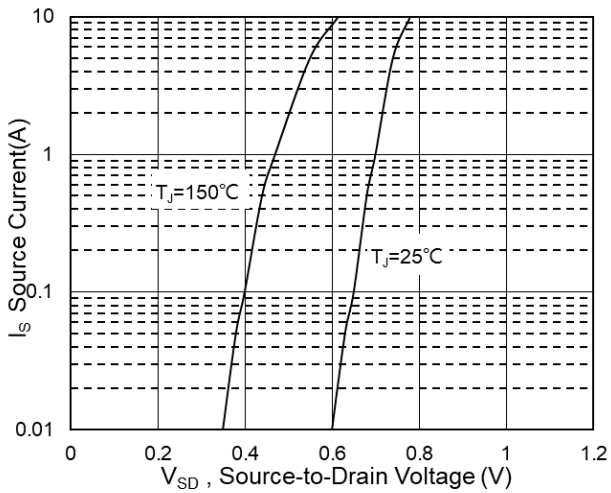
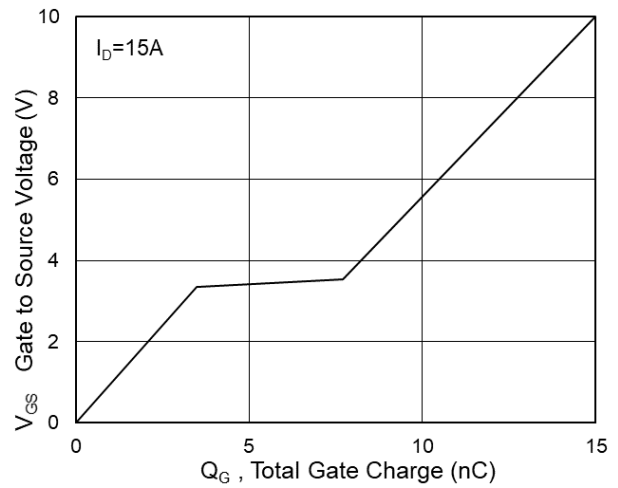
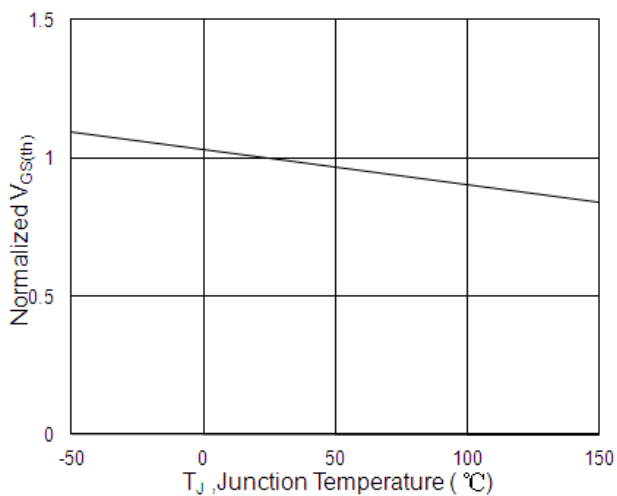
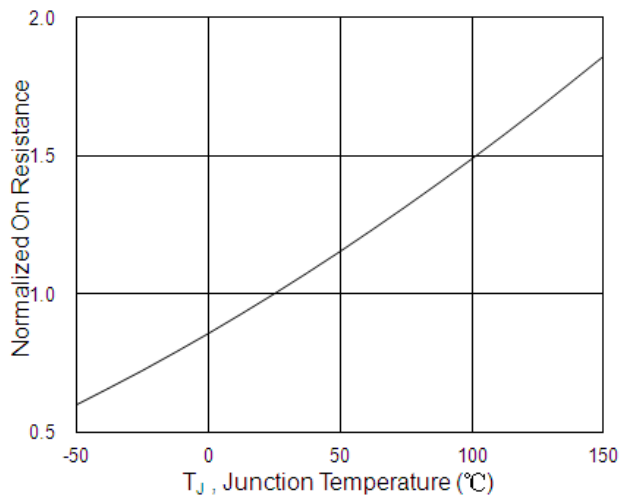
Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

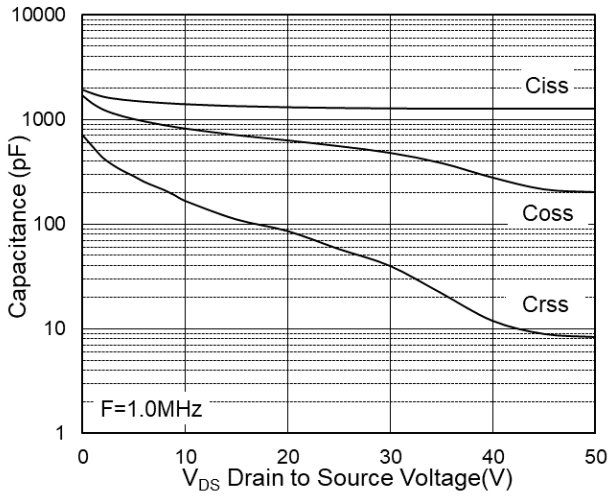
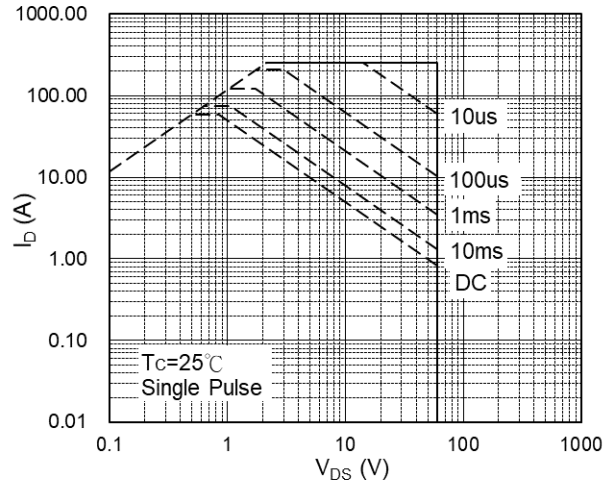
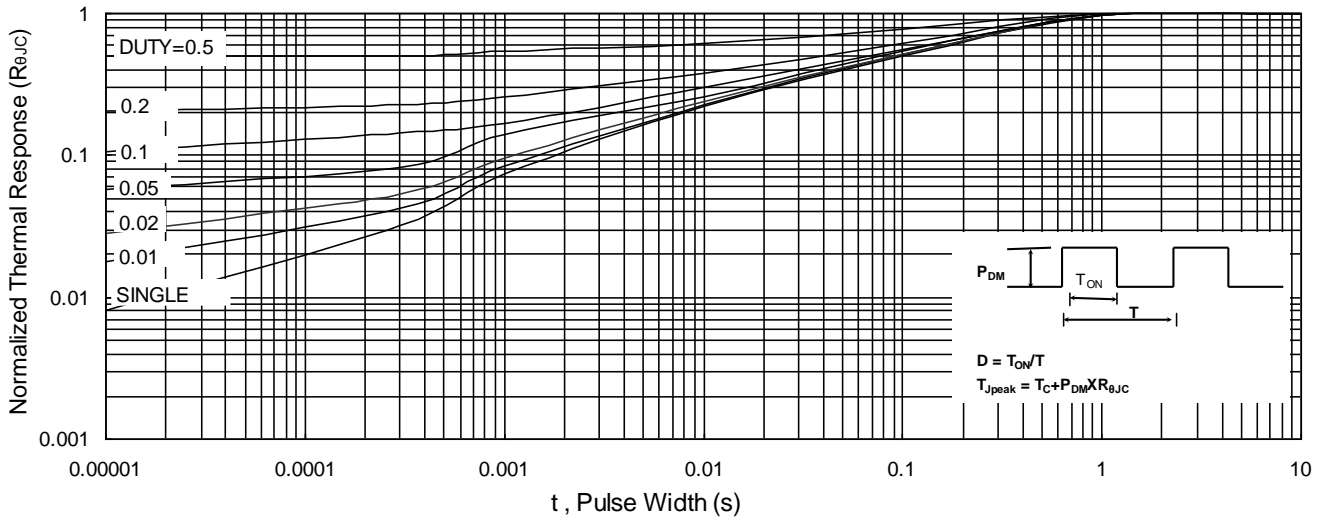
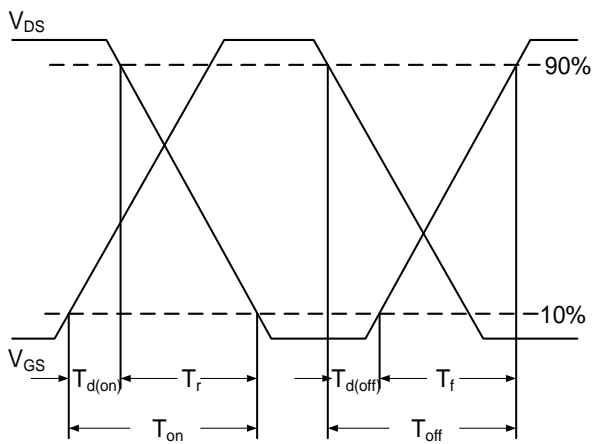
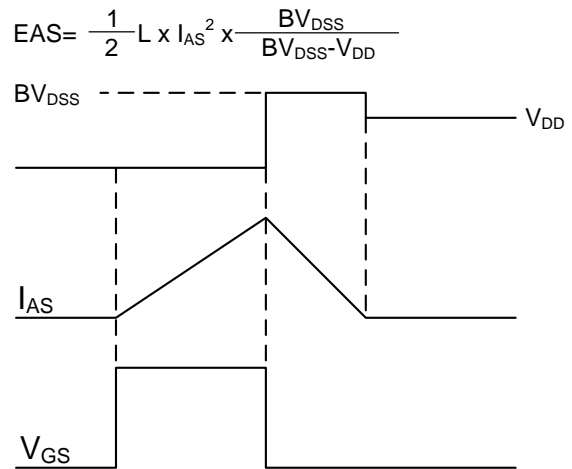
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|----------------------------------|--------------------------------------|-----|-----|------|------|
| On/Off States | | | | | | |
| BVDSS | Drain-Source Breakdown Voltage | VGS=0V ID=250μA | 60 | -- | -- | V |
| IDSS | Zero Gate Voltage Drain Current | VDS=48V,VGS=0V | -- | -- | 1 | μA |
| IGSS | Gate-Body Leakage Current | VGS=±20V,VDS=0V | -- | -- | ±100 | nA |
| VGS(th) | Gate Threshold Voltage | VDS=VGS,ID=250μA | 1.0 | 1.6 | 2.3 | V |
| gFS | Forward Transconductance | VDS=5V,ID=20A | -- | 8 | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=10V, ID=15A | -- | 6.2 | 8.5 | mΩ |
| | | VGS=4.5V, ID=15A | -- | 9.5 | 12.5 | mΩ |
| Dynamic Characteristics | | | | | | |
| Ciss | Input Capacitance | VDS=30V,VGS=0V, F=100MHZ | -- | 976 | -- | pF |
| Coss | Output Capacitance | | -- | 440 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 41 | -- | 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=30V, ID=30A,RGEN=3.3Ω | -- | 7.0 | -- | nS |
| tr | Turn-on Rise Time | | -- | 4.5 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 26 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 5.0 | -- | nS |
| Qg | Total Gate Charge | VGS=10V, VDS=30V, ID=12A | -- | 15 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 3.5 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 4.2 | -- | nC |
| Source-Drain Diode Characteristics | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | 58 | A |
| VSD | Forward on Voltage | VGS=0V,IS=20A | -- | -- | 1.2 | V |
| trr | Reverse Recovery Time | IS=20A , dI/dt=100A/μs , | -- | 22 | -- | ns |
| Qrr | Reverse Recovery Charge | TJ=25°C | -- | 72 | -- | nc |

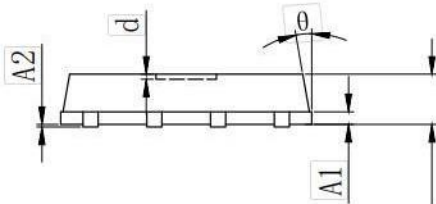
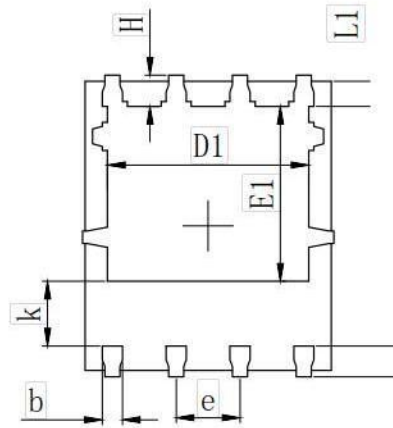
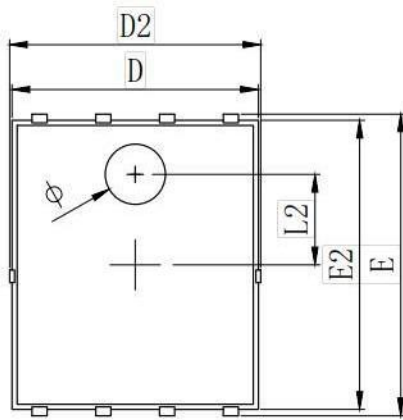
Notes 1.The maximum current rating is package limited.

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

Notes 3.EAS condition: TJ=25°C


Fig.1 Typical Output Characteristics

Fig.2 On-Resistance vs G-S Voltage

Fig.3 Source Drain Forward Characteristics

Fig.4 Gate-Charge Characteristics

Fig.5 Normalized $V_{GS(th)}$ vs T_J

Fig.6 Normalized R_{DSON} vs T_J


Fig.7 Capacitance

Fig.8 Safe Operating Area

Fig.9 Normalized Maximum Transient Thermal Impedance

Fig.10 Switching Time Waveform

Fig.11 Unclamped Inductive Switching Waveform

•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° |
| ∅ | 1.100 | 1.200 | 1.300 |
| d | | | 0.100 |


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