

● General Description

The AGM025N08H 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

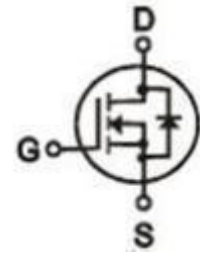
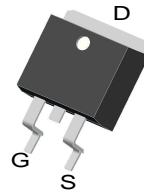
● Application

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

Product Summary

| BVDSS | RDSON | ID |
|-------|-------|------|
| 85V | 2.3mΩ | 180A |

TO-263 Pin Configuration



Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|------------|----------------|-----------|------------|----------|
| AGM025N08H | AGM025N08H | TO-263 | ---- | ---- | 800 |

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

| Symbol | Parameter | Value | Unit |
|-------------|--|------------|------|
| VDS | Drain-Source Voltage (VGS=0V) | 85 | V |
| VGS | Gate-Source Voltage (VDS=0V) | ±20 | V |
| ID | Drain Current-Continuous(Tc=25°C) (Note 1) | 180 | A |
| | Drain Current-Continuous(Tc=100°C) | 145.5 | A |
| IDM (pluse) | Drain Current-Continuous@ Current-Pulsed (Note 2) | 720 | A |
| PD | Maximum Power Dissipation(Tc=25°C) | 250 | w |
| | Maximum Power Dissipation(Tc=100°C) | 100 | w |
| EAS | Avalanche energy (Note 3) | 900 | 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 | --- | 62.5 | °C/W |
| RθJC | Thermal Resistance Junction-Case ¹ | --- | 0.50 | °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 | 85 | 95 | -- | V |
| IDSS | Zero Gate Voltage Drain Current | VDS=85V,VGS=0V | -- | -- | 1 | μA |
| IGSS | Gate-Body Leakage Current | VGS=±20V,VDS=0V | -- | -- | ±100 | nA |
| VGS(th) | Gate Threshold Voltage | VDS=VGS,ID=250μA | 2 | 3 | 4 | V |
| gFS | Forward Transconductance | VDS=5V,ID=20A | -- | -- | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=10V, ID=50A | -- | 2.3 | 3.0 | mΩ |
| | | VGS=4.5V, ID=50A | -- | -- | -- | mΩ |
| Dynamic Characteristics | | | | | | |
| Ciss | Input Capacitance | VDS=42.5V, VGS=0V, F=1MHZ | -- | 8237 | -- | pF |
| Coss | Output Capacitance | | -- | 1549 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 152 | -- | pF |
| Rg | Gate resistance | VGS=0V, VDS=0V,f=1.0MHz | -- | -- | -- | Ω |
| Switching Times | | | | | | |
| td(on) | Turn-on Delay Time | VGS=10V,VDS=42.5V, RGEN=3Ω | -- | 32 | -- | nS |
| tr | Turn-on Rise Time | | -- | 115 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 93 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 140 | -- | nS |
| Qg | Total Gate Charge | VGS=10V, VDS=42.5V, ID=50A | -- | 138.3 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 39.5 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 36.8 | -- | nC |
| Source-Drain Diode Characteristics | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | 180 | A |
| VSD | Forward on Voltage | VGS=0V,IS=50A | -- | -- | 1.2 | V |
| trr | Reverse Recovery Time | IF=50A , dI/dt=100A/μs , TJ=25°C | -- | 80 | -- | ns |
| Qrr | Reverse Recovery Charge | | -- | 196 | -- | 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 Curves

Figure 1. Safe Operating Area

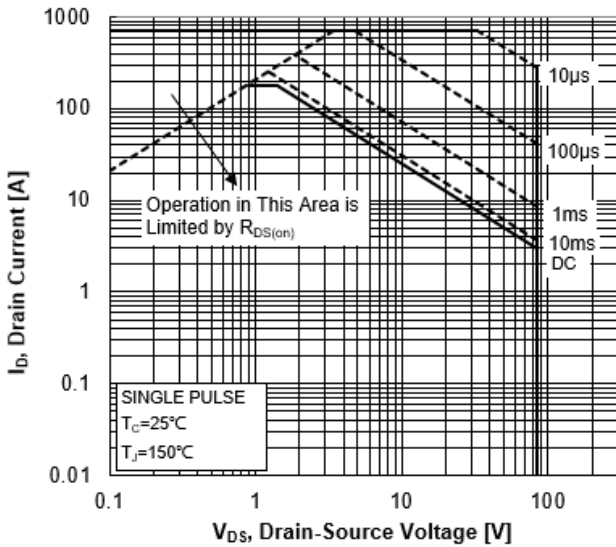


Figure 2. Maximum Power Dissipation vs Case Temperature

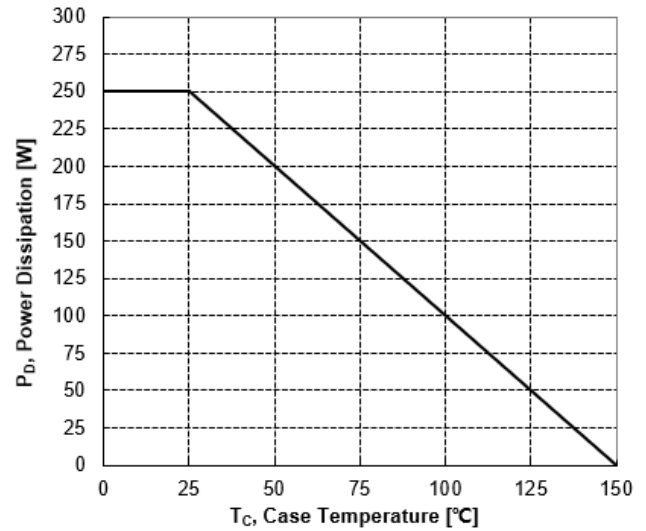


Figure 3. Maximum Continuous Drain Current vs Case Temperature

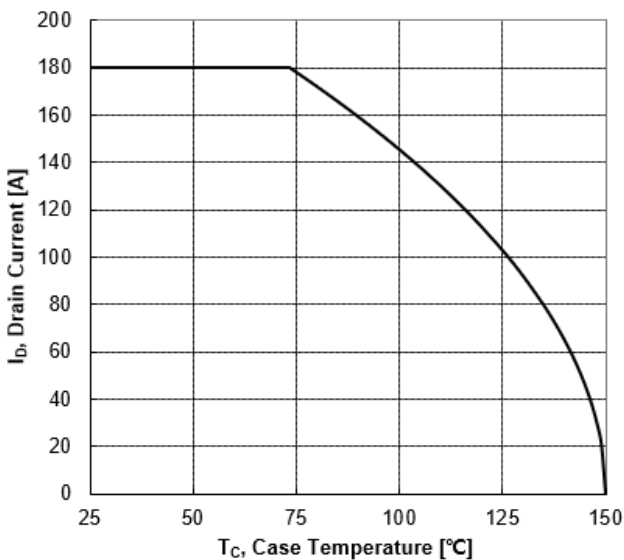


Figure 4. Typical Output Characteristics

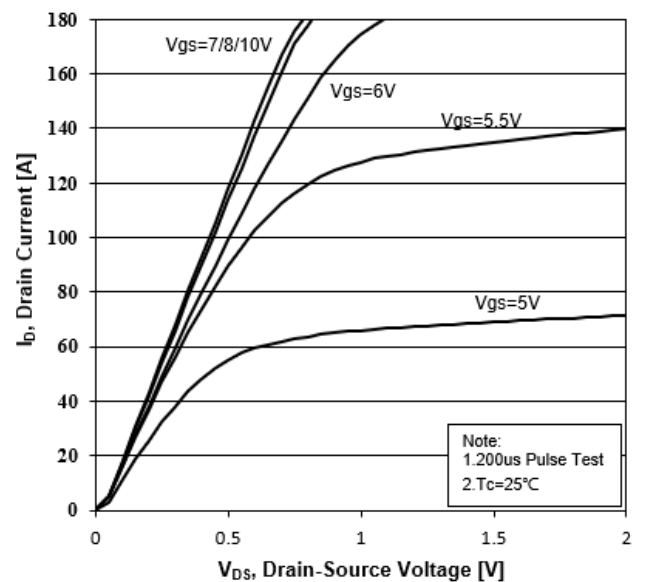


Figure 5. Transient Thermal Impedance

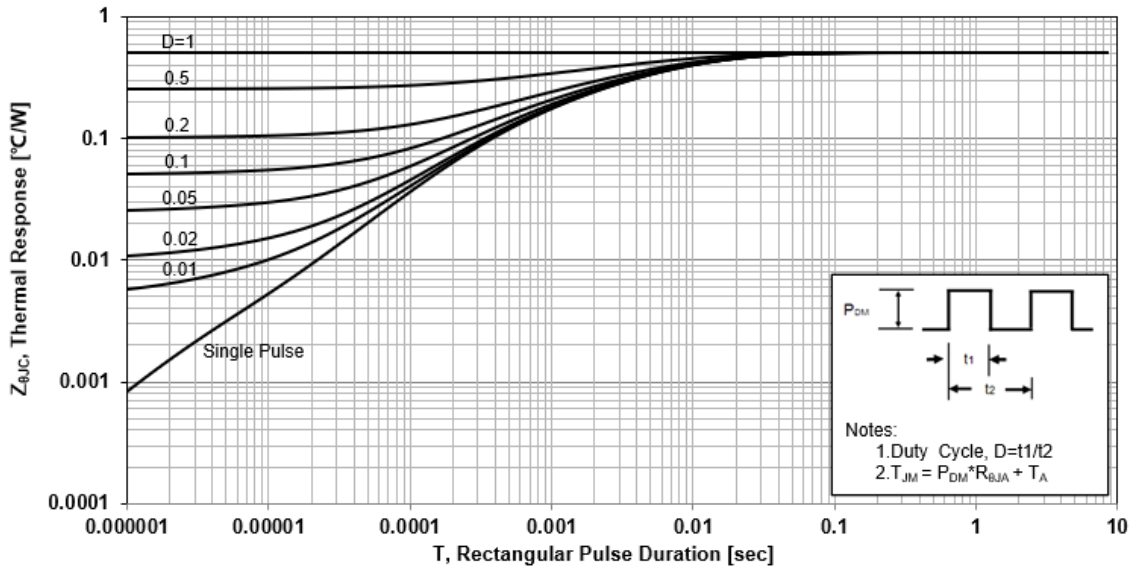


Figure 6. Typical Transfer Characteristics

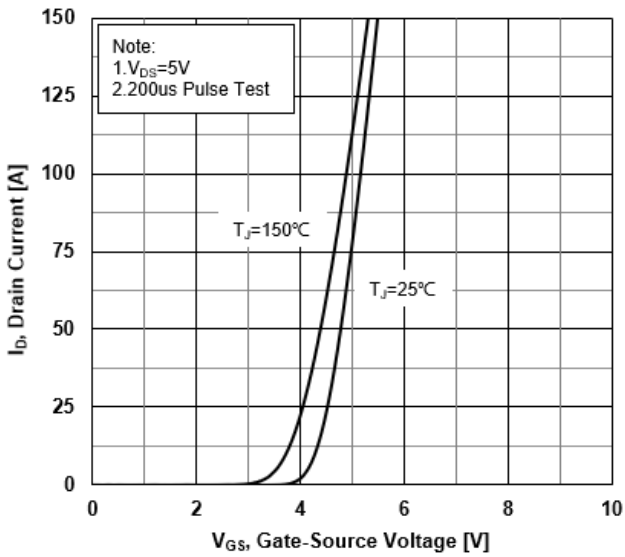


Figure 7. Source-Drain Diode Forward Characteristics

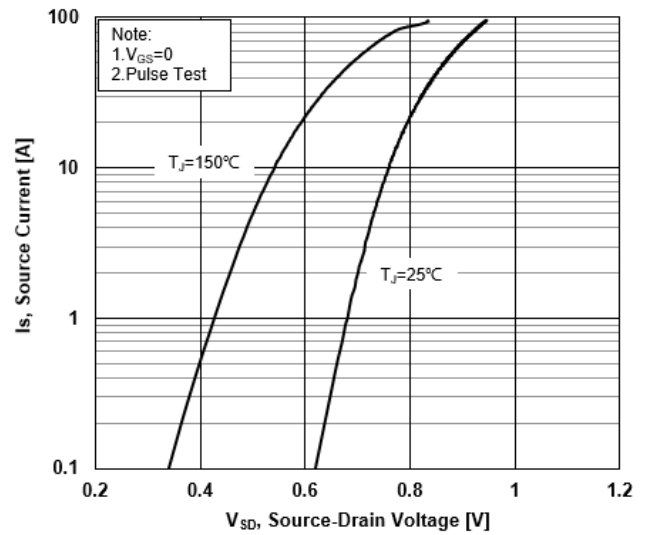


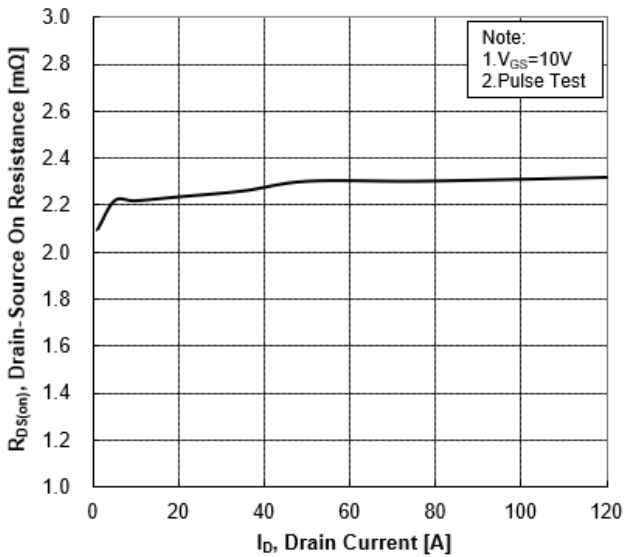
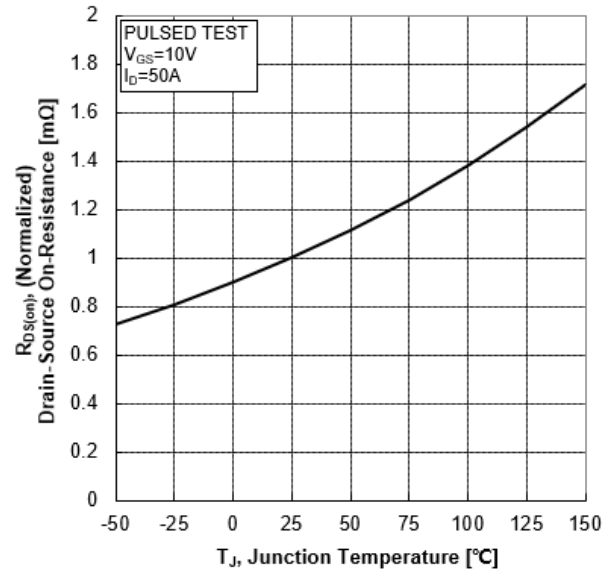
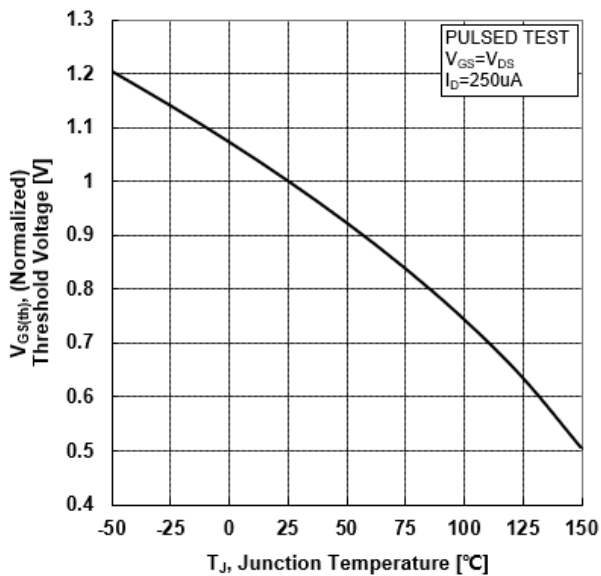
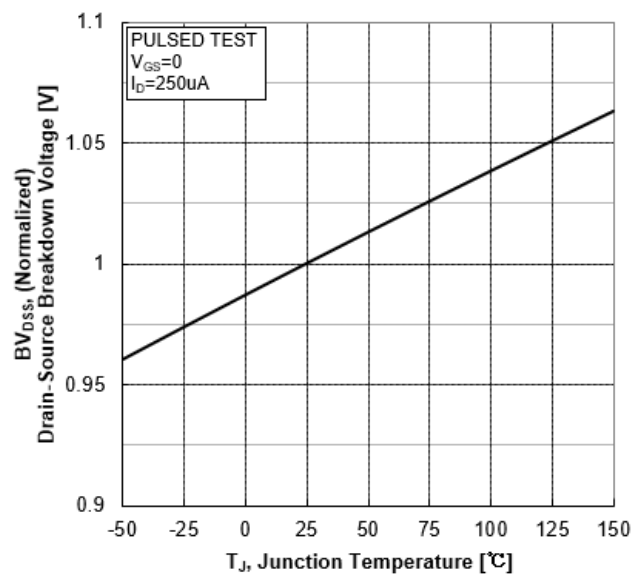
Figure 8. Drain-Source On-Resistance vs Drain Current

Figure 9. Normalized On-Resistance vs Junction Temperature

Figure 10. Normalized Threshold Voltage vs Junction Temperature

Figure 11. Normalized Breakdown Voltage vs Junction Temperature


Figure 12. Capacitance Characteristics

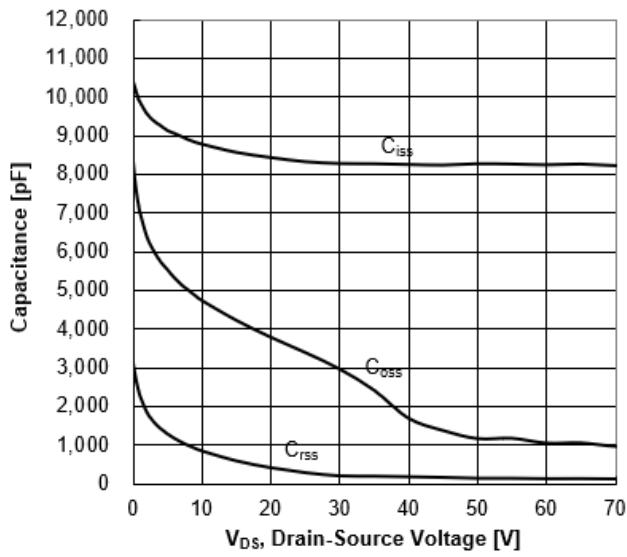
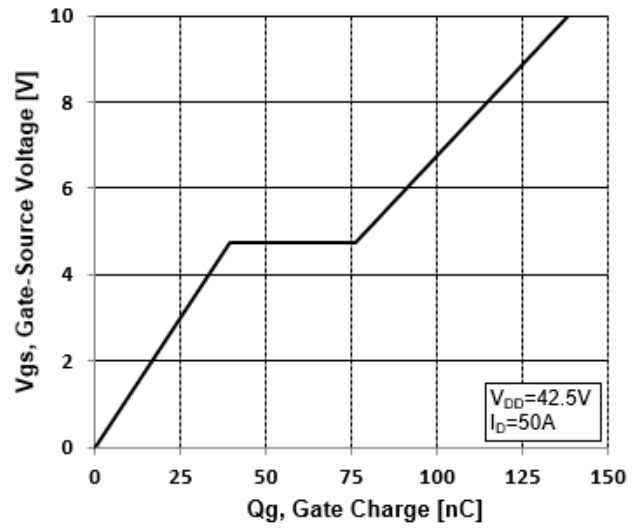


Figure 13. Typical Gate Charge vs Gate-Source Voltage



Test Circuit and Waveform

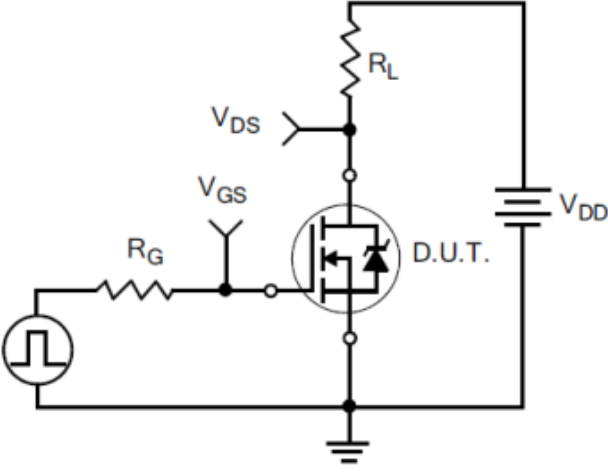
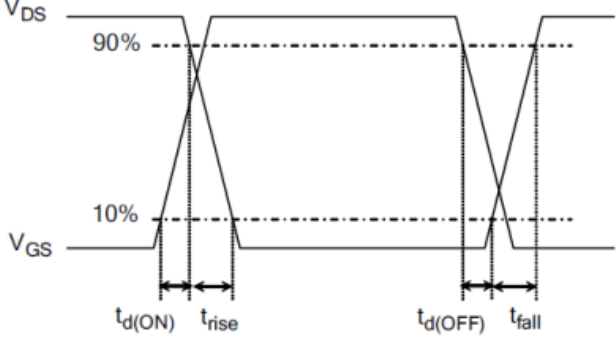
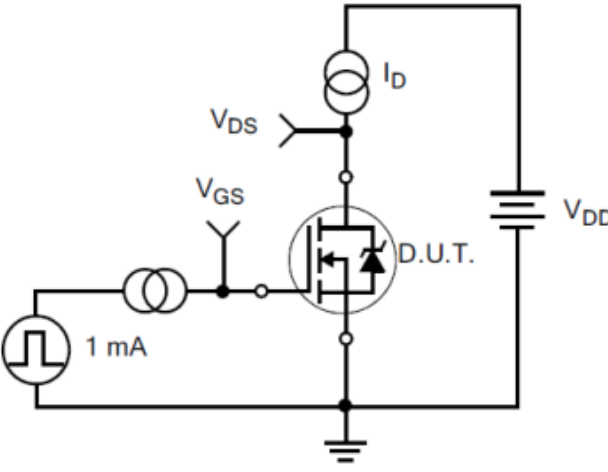
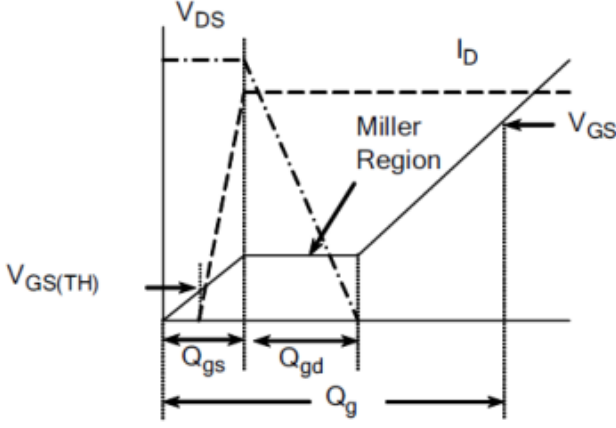
| | |
|---|--|
| <p>Figure 14. Resistive Switching Test Circuit</p> | <p>Figure 15. Resistive Switching Waveforms</p> |
|  |  |
| <p>Figure 16. Gate Charge Test Circuit</p> | <p>Figure 17. Gate Charge Waveforms</p> |
|  |  |

Figure 18. Diode Reverse Recovery Test Circuit

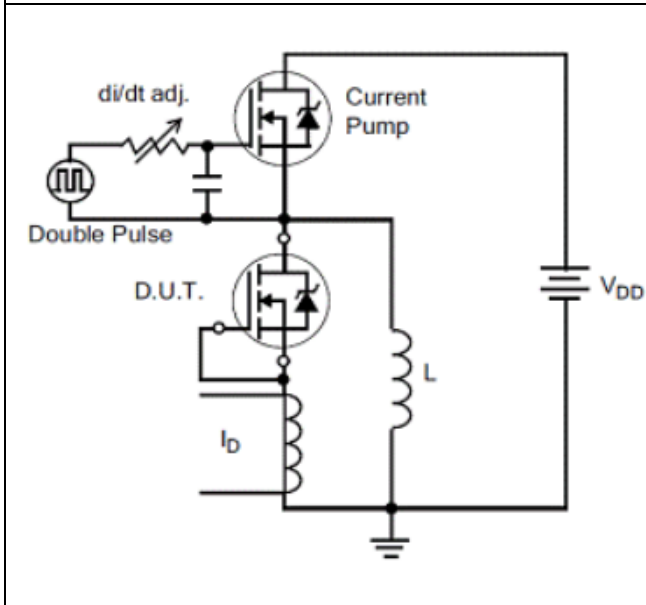


Figure 19. Diode Reverse Recovery Waveform

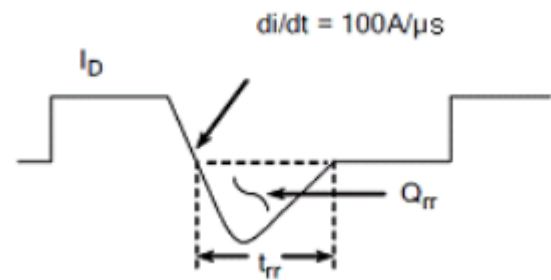


Figure 20. Unclamped Inductive Switching Test Circuit

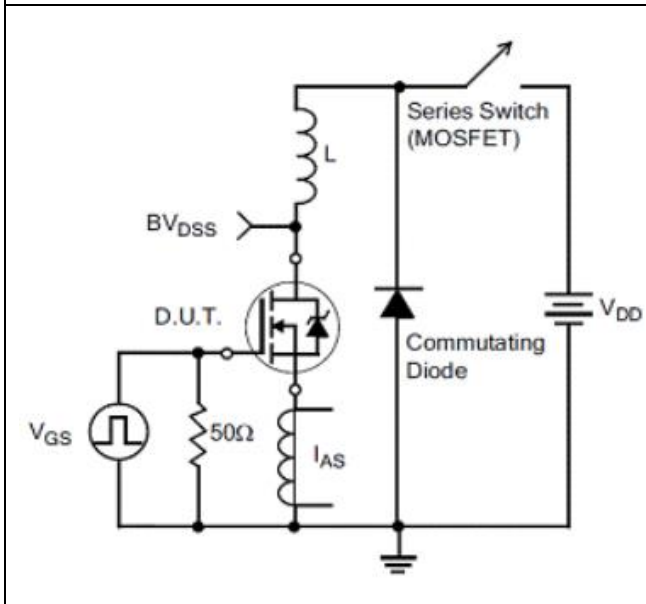
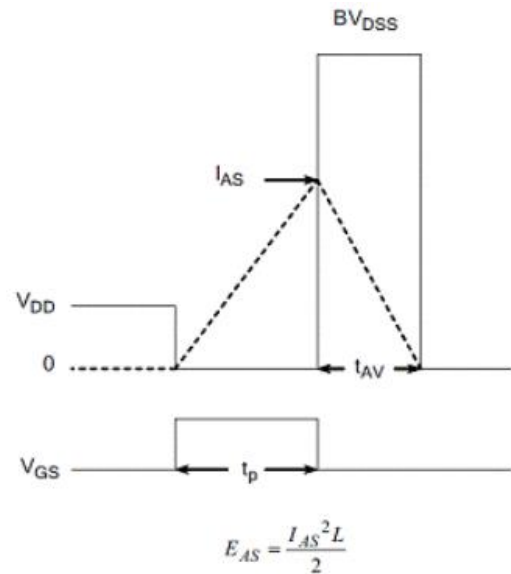
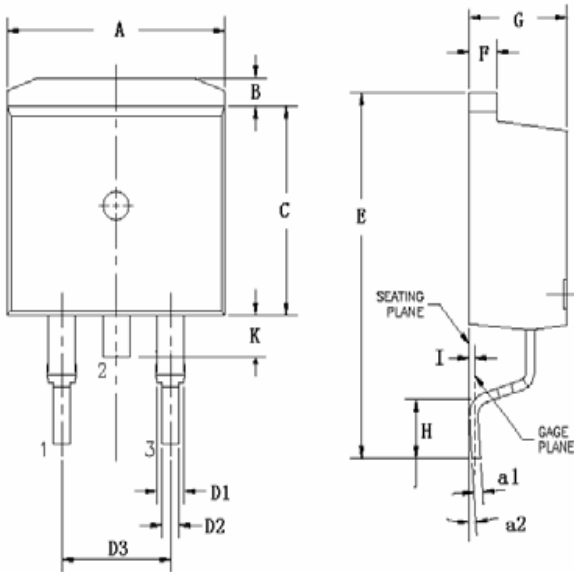


Figure 21. Unclamped Inductive Switching Waveform



TO-263 PACKAGE INFORMATION

Dimensions in mm unless otherwise specified



| Symbol | Min | Nom | Max |
|------------|-------|-------|-------|
| A | 9.66 | 9.97 | 10.28 |
| B | 1.02 | 1.17 | 1.32 |
| C | 8.59 | 9.00 | 9.40 |
| D1 | 1.14 | 1.27 | 1.40 |
| D2 | 0.70 | 0.83 | 0.95 |
| D3 | | 5.08 | |
| E | 15.09 | 15.24 | 15.39 |
| F | 1.15 | 1.28 | 1.40 |
| G | 4.30 | 4.50 | 4.70 |
| H | 2.29 | 2.54 | 2.79 |
| I | | 0.25 | |
| K | 1.30 | 1.45 | 1.60 |
| a1 | 0.45 | 0.55 | 0.65 |
| a2(degree) | 0° | | 8° |


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