

• General Description

The AGMH022P10C 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

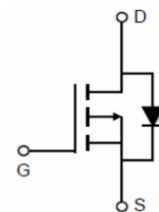
• Application

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

Product Summary

| BVDSS | RDSON | ID |
|-------|-------|------|
| -100V | 20mΩ | -65A |

TO-220C Pin Configuration



Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|-------------|----------------|-----------|------------|----------|
| AGMH022P10C | AGMH022P10C | TO-220C | ---- | ---- | 1000 |

Table 1. Absolute Maximum Ratings (Tc=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) | -65 | A |
| | Drain Current-Continuous(Tc=100°C) | -41 | A |
| IDM (pluse) | Drain Current-Continuous@ Current-Pulsed (Note 2) | -260 | A |
| PD | Maximum Power Dissipation(Tc=25°C) | 250 | w |
| | Maximum Power Dissipation(Tc=100°C) | 100 | w |
| EAS | Avalanche energy (Note 3) | 465 | 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 | °C/W |
| RθJC | Thermal Resistance Junction-Case ¹ | --- | 0.5 | °C/W |

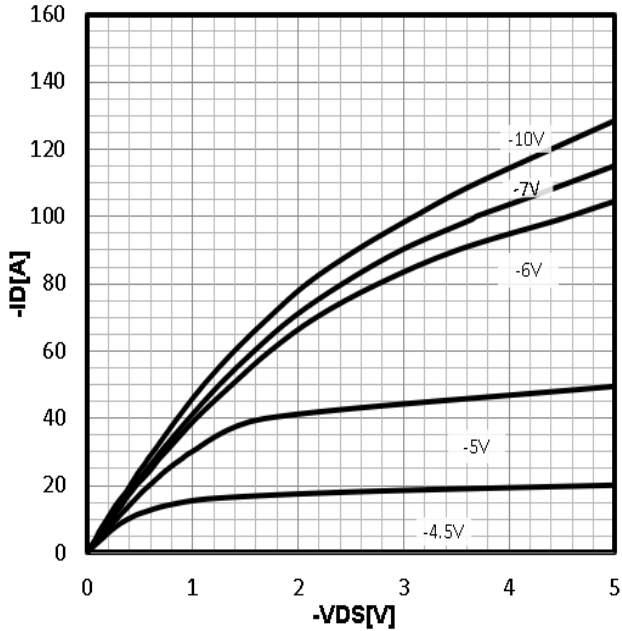
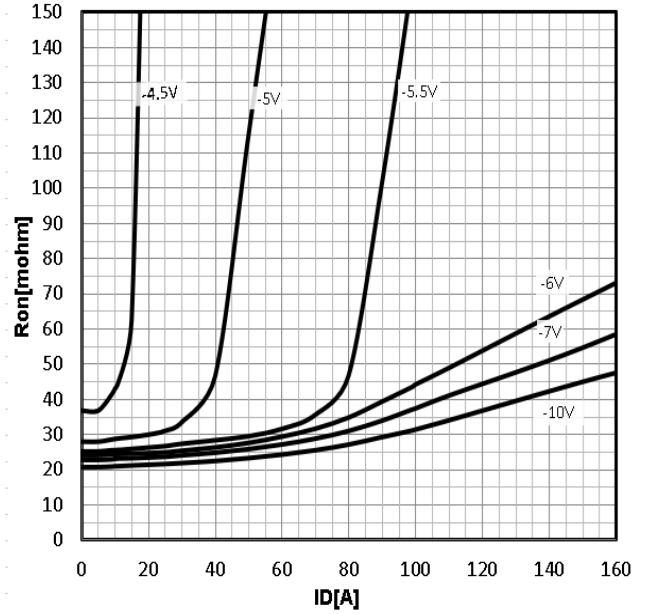
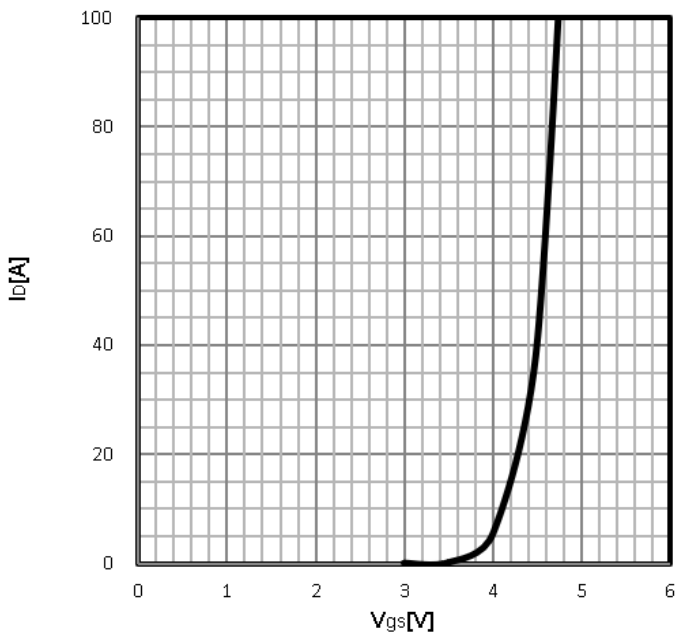
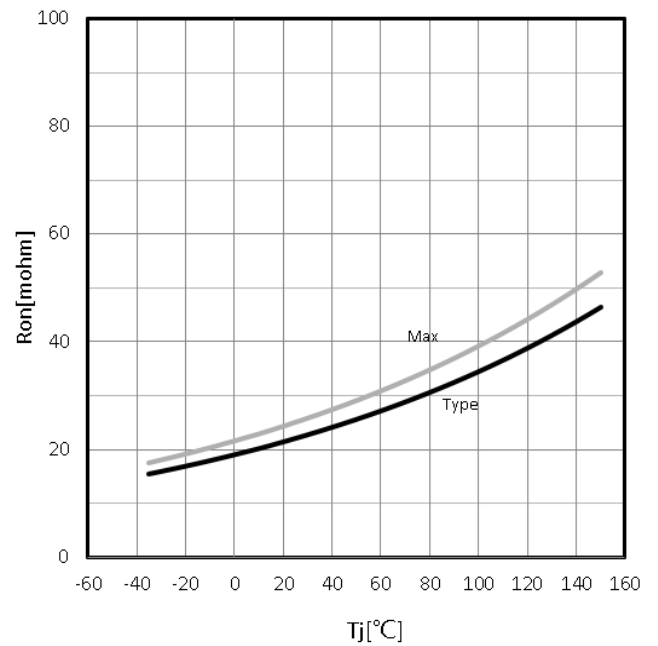
Table 2. P-Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

| 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 | -2 | -3 | -4 | V |
| gFS | Forward Transconductance | VDS=-5V, ID=-5A | -- | 18 | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=-10V, ID=-10A | -- | 20 | 27 | mΩ |
| Dynamic Characteristics | | | | | | |
| Ciss | Input Capacitance | VDS=-50V, VGS=0V, F=1MHZ | -- | 4276 | -- | pF |
| Coss | Output Capacitance | | -- | 336 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 25 | -- | pF |
| Rg | Gate resistance | VGS=0V | -- | 19 | -- | Ω |
| Switching Times | | | | | | |
| td(on) | Turn-on Delay Time | ID =-20A VDS = -50V VGS = -10V RG = 5Ω | -- | 15 | -- | nS |
| tr | Turn-on Rise Time | | -- | 18 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 50 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 19 | -- | nS |
| Qg | Total Gate Charge | VGS=-10V, VDS=-50V, ID=-20A | -- | 52.1 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 16.7 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 7.1 | -- | nC |
| Source-Drain Diode Characteristics | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | -65 | A |
| VSD | Forward on Voltage | VGS=0V, IS=-10A | -- | -- | -1.2 | V |
| trr | Reverse Recovery Time | IS=-10A, VDD=-50V di/dt=100A/μs | -- | 55 | -- | ns |
| Qrr | Reverse Recovery Charge | | -- | 102 | -- | nc |

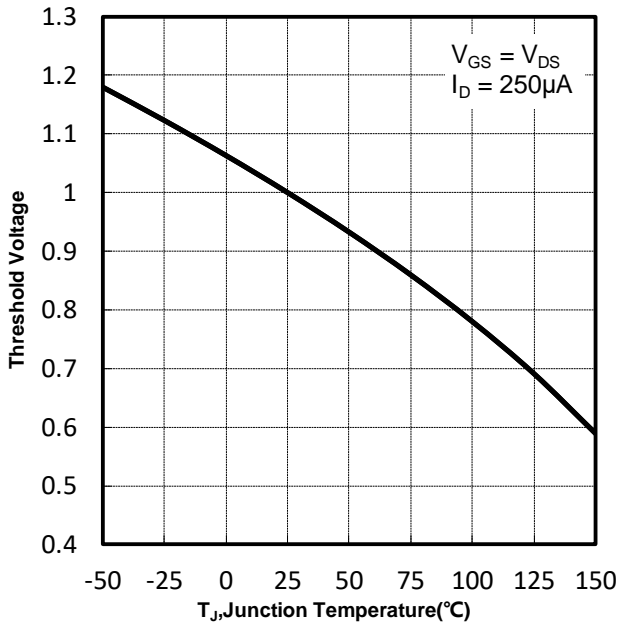
Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulsewidth limited by maximum junction temperature Notes

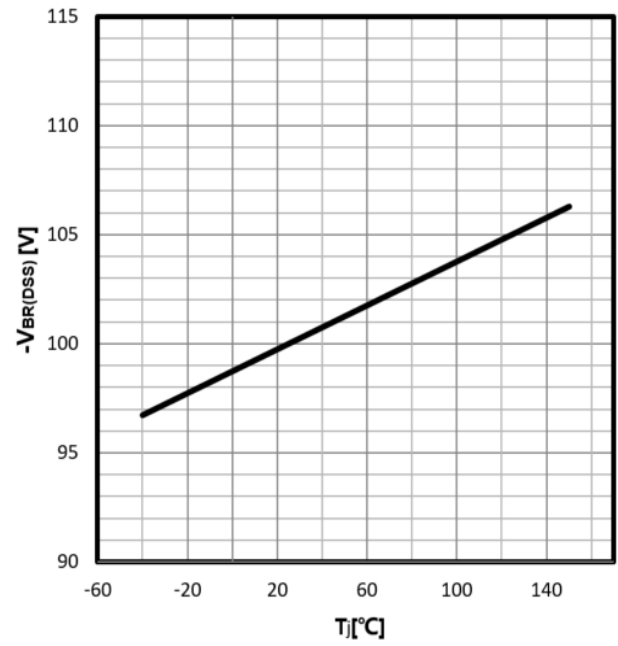
3.EAS condition: T_J=25°C

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

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

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

Drain-source on-state resistance
 $R_{DS(on)} = f(T_j); I_D = -10A; V_{GS} = -10V$


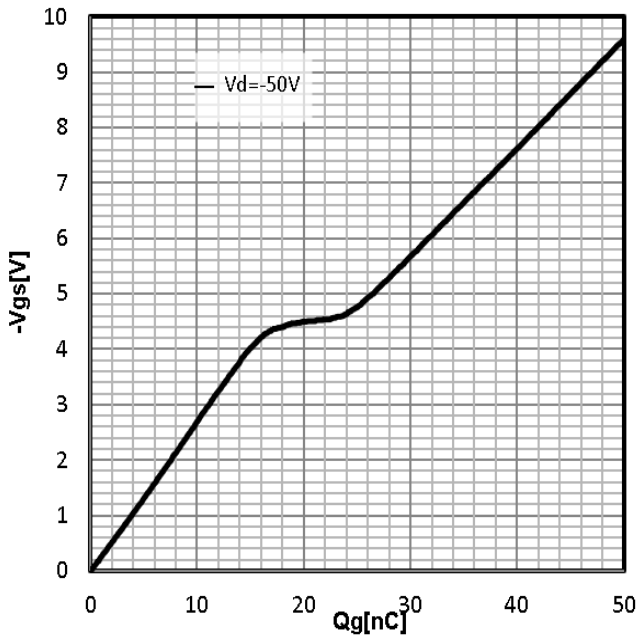
Gate Threshold Voltage
 $-V_{TH}=f(T_j); I_D=-250\mu A$



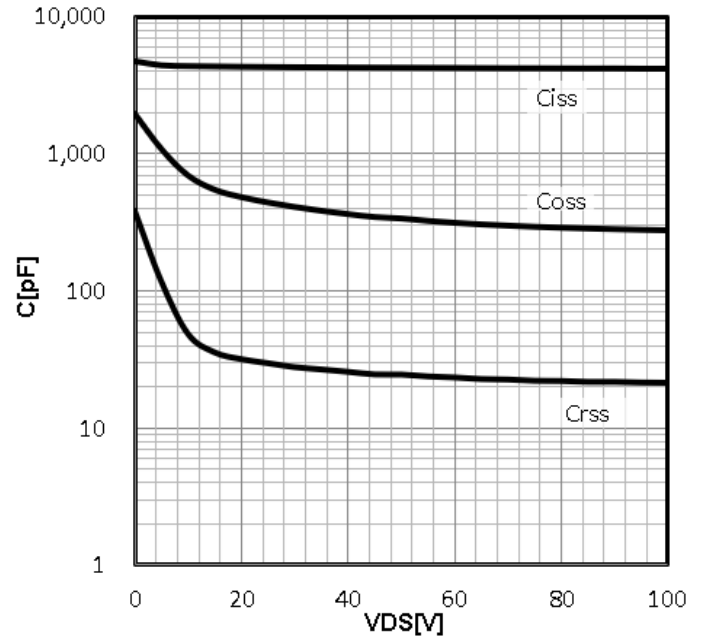
Drain-source breakdown voltage
 $-V_{BR(DSS)}=f(T_j); I_D=-250\mu A$



Typ. gate charge
 $-V_{GS}=f(Q_g); I_D=-20A$

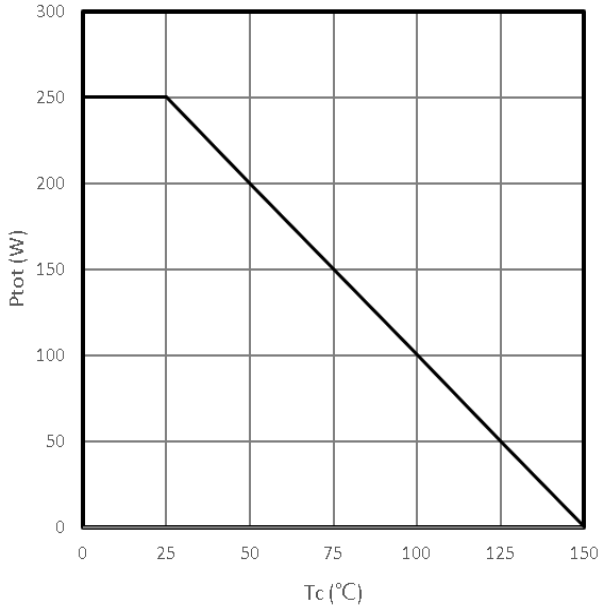


Typ. capacitances
 $C=f(-V_{DS}); V_{GS}=0V; f=1MHz$



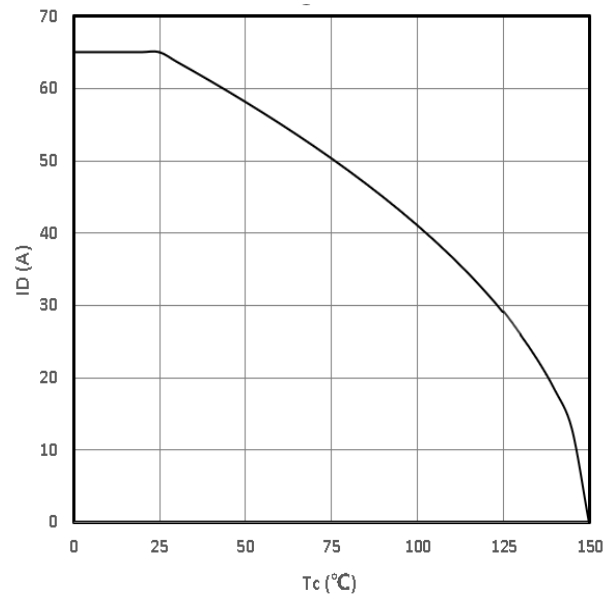
Power Dissipation

$P_{tot}=f(T_C)$



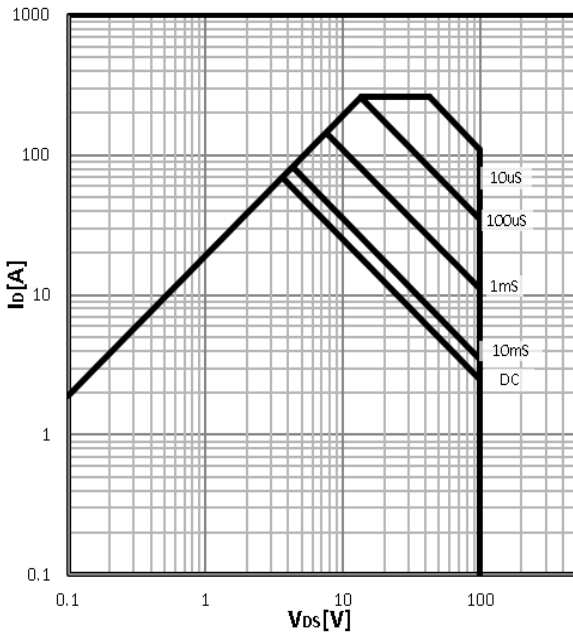
Maximum Drain Current

$-I_D=f(T_C)$



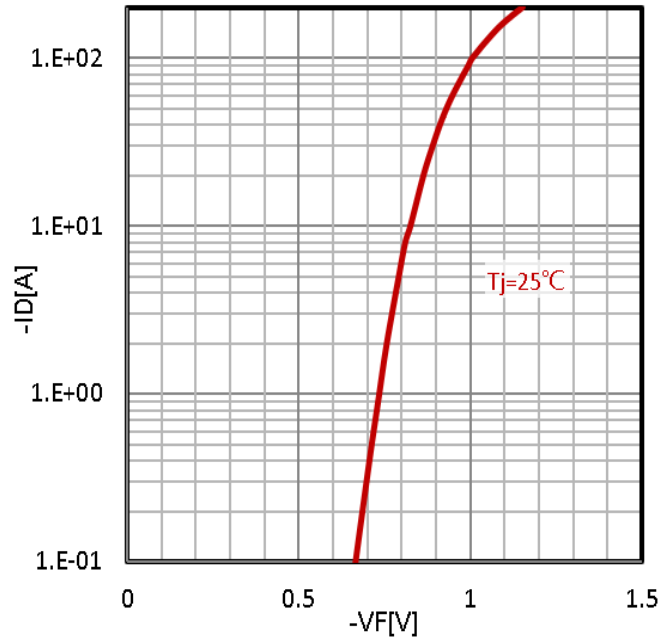
Safe operating area

$-I_D=f(-V_{DS})$

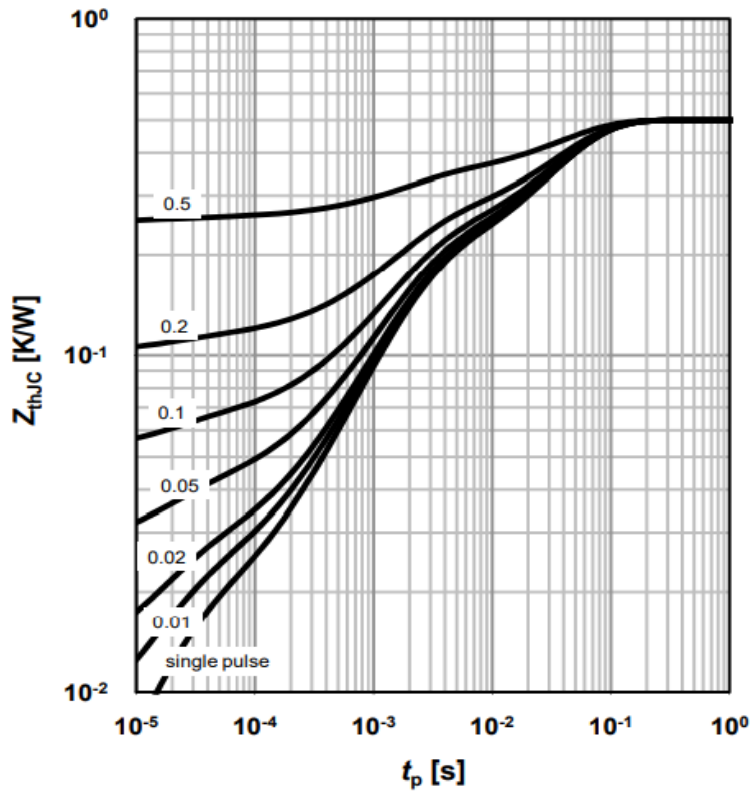


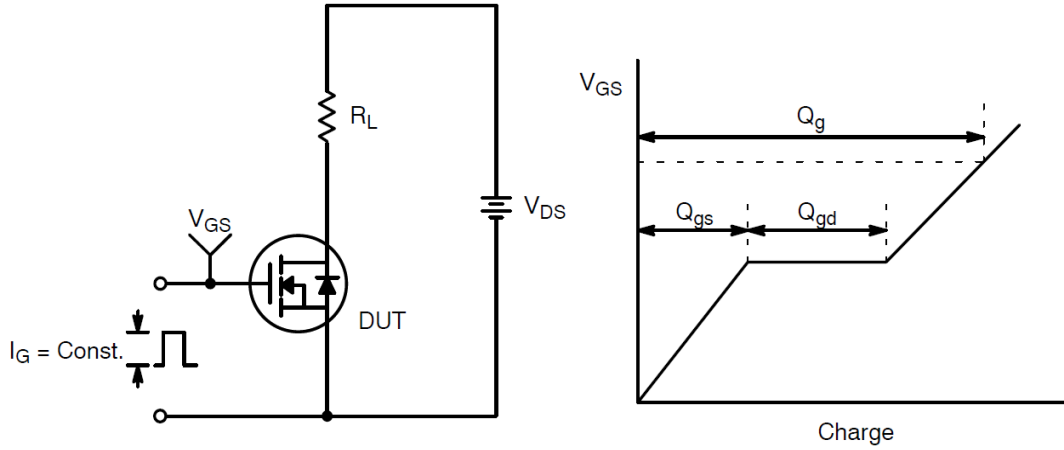
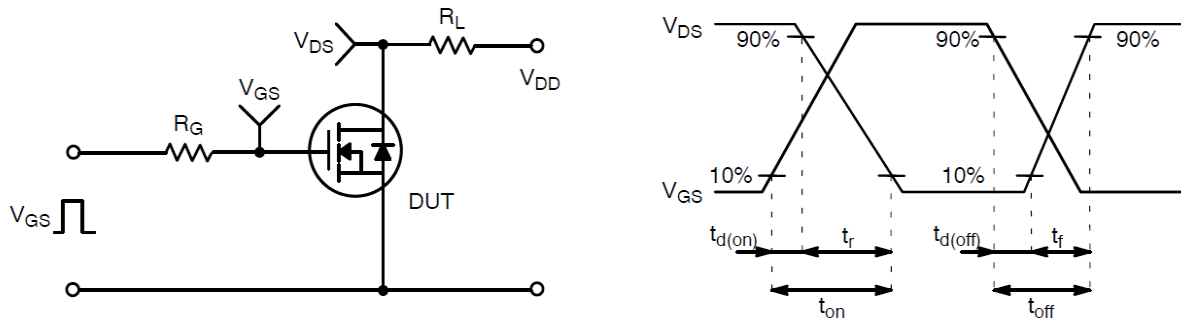
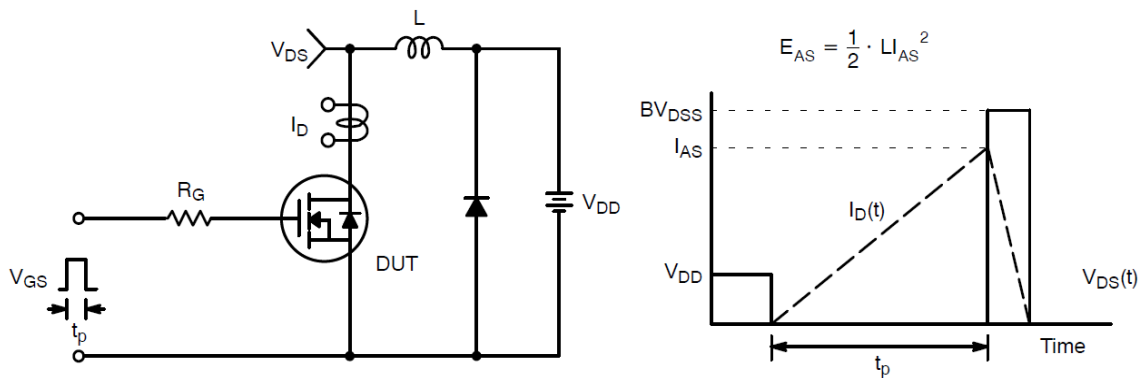
Body Diode Forward Voltage Variation

$-I_F=f(-V_{DS})$

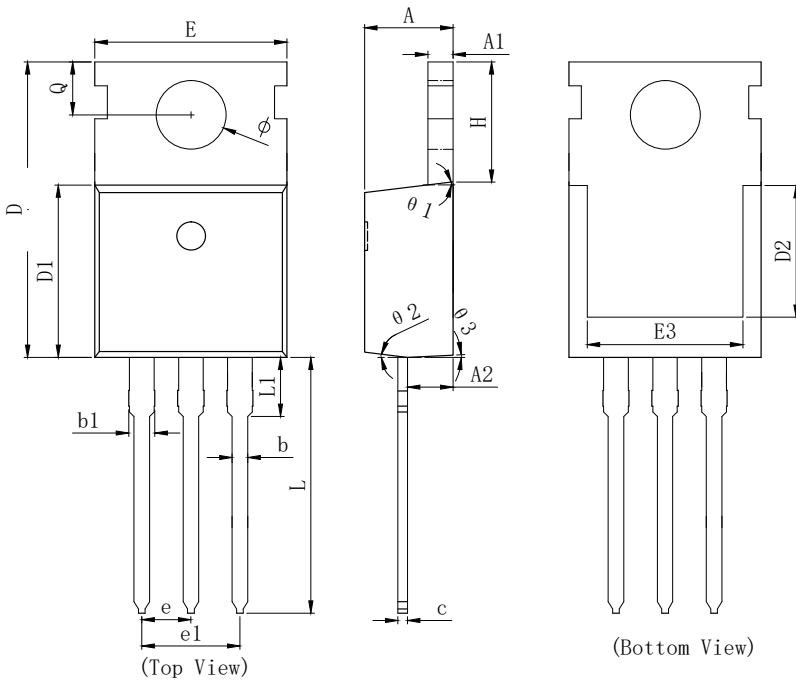


Max. transient thermal impedance
 $Z_{thJC}=f(t_p)$



Test Circuit and Waveform:

Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms

TO-220 PACKAGE INFORMATION



| SYMBOL | MILLIMETER | | |
|------------|------------|-----------|--------|
| | MIN | Typ. | MAX |
| A | 4.370 | 4.570 | 4.700 |
| A1 | 1.250 | 1.300 | 1.400 |
| A2 | 2.150 | 2.350 | 2.550 |
| b | 0.700 | 0.800 | 0.950 |
| b1 | 1.170 | 1.270 | 1.470 |
| c | 0.450 | 0.500 | 0.600 |
| D | 15.100 | 15.600 | 16.100 |
| D1 | 8.800 | 9.100 | 9.400 |
| D2 | 5.500 | 6.300 REF | |
| E | 9.700 | 10.000 | 10.300 |
| E3 | 7.000 | 7.600 REF | |
| e | 2.540 BSC | | |
| e1 | 5.080 BSC | | |
| L | 13.200 | 13.500 | 13.800 |
| L1 | | 3.100 | 3.400 |
| H | 6.250 | 6.500 | 6.750 |
| ϕ | 3.400 | 3.600 | 3.800 |
| Q | 2.600 | 2.800 | 3.000 |
| $\theta 1$ | 7° TYP | | |
| $\theta 2$ | 7° TYP | | |
| $\theta 3$ | 3° TYP | | |


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