## General Description

The AGM15T06C 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

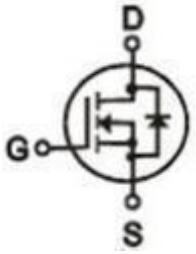
## Application

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

## Product Summary

| BVDSS | RDSON | ID |
|---|---|---|
| 150V | 6.5mΩ | 140A |

**TO-220C Pin Configuration**


## Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|---|---|---|---|---|---|
| AGM15T06C | AGM15T06C | TO-220C | ---- | ---- | 1000 |

**Table 1. Absolute Maximum Ratings (TA=25℃)**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| VDS | Drain-Source Voltage (VGS=0V) | 150 | V |
| VGS | Gate-Source Voltage (VDS=0V) | ±20 | V |
| ID | Drain Current-Continuous(Tc=25℃) **(Note 1)** | 140 | A |
| | Drain Current-Continuous(Tc=100℃) | 95 | A |
| IDM (pluse) | Drain Current-Continuous@ Current-Pulsed **(Note 2)** | 500 | A |
| PD | Maximum Power Dissipation(Tc=25℃) | 250 | w |
| | Maximum Power Dissipation(Tc=100℃) | 100 | w |
| EAS | Avalanche energy **(Note 3)** | 600 | mJ |
| TJ,TSTG | Operating Junction and Storage Temperature Range | -55 To 150 | ℃ |

**Table 2. Thermal Characteristic**

| Symbol | Parameter | Typ | Max | Unit |
|---|---|---|---|---|
| RθJA | Thermal Resistance Junction-ambient (Steady State)[1] | --- | 60 | ℃/W |
| RθJC | Thermal Resistance Junction-Case[1] | --- | 0.5 | ℃/W |

**Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)**

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **On/Off States** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | VGS=0V ID=250μA | 150 | -- | -- | V |
| IDSS | Zero Gate Voltage Drain Current | VDS=150V,VGS=0V | -- | -- | 1 | μA |
| IGSS | Gate-Body Leakage Current | VGS=±20V,VDS=0V | -- | -- | ±100 | nA |
| VGS(th) | Gate Threshold Voltage | VDS=VGS,ID=250μA | 2.0 | 2.8 | 4.0 | V |
| gFS | Forward Transconductance | VDS=5V,ID=20A | -- | 18 | -- | S |
| RDS(on) | Drain-Source On-State Resistance | VGS=10V, ID=20A | -- | 6.5 | 7.5 | mΩ |
| | | VGS=4.5V, ID=15A | -- | -- | -- | mΩ |
| **Dynamic Characteristics** | | | | | | |
| Ciss | Input Capacitance | VDS=75V,VGS=0V, F=1MHZ | -- | 5025 | -- | pF |
| Coss | Output Capacitance | | -- | 410 | -- | pF |
| Crss | Reverse Transfer Capacitance | | -- | 10 | -- | pF |
| Rg | Gate resistance | VGS=0V, VDS=0V,f=1.0MHz | -- | -- | -- | Ω |
| **Switching Times** | | | | | | |
| td(on) | Turn-on Delay Time | VGS=10V,VDS=75V, ID=80A,RGEN=6Ω | -- | 25 | -- | nS |
| tr | Turn-on Rise Time | | -- | 31 | -- | nS |
| td(off) | Turn-Off Delay Time | | -- | 60 | -- | nS |
| tf | Turn-Off Fall Time | | -- | 20 | -- | nS |
| Qg | Total Gate Charge | VGS=10V, VDS=75V, ID=80A | -- | 19 | -- | nC |
| Qgs | Gate-Source Charge | | -- | 11 | -- | nC |
| Qgd | Gate-Drain Charge | | -- | 12 | -- | nC |
| **Source-Drain Diode Characteristics** | | | | | | |
| ISD | Source-Drain Current(Body Diode) | | -- | -- | 140 | A |
| VSD | Forward on Voltage | VGS=0V,IS=80A | -- | -- | 1.5 | V |
| trr | Reverse Recovery Time | IF=80A , dI/dt=100A/μs , TJ=25℃ | -- | -- | -- | ns |
| Qrr | Reverse Recovery Charge | | -- | -- | -- | nc |

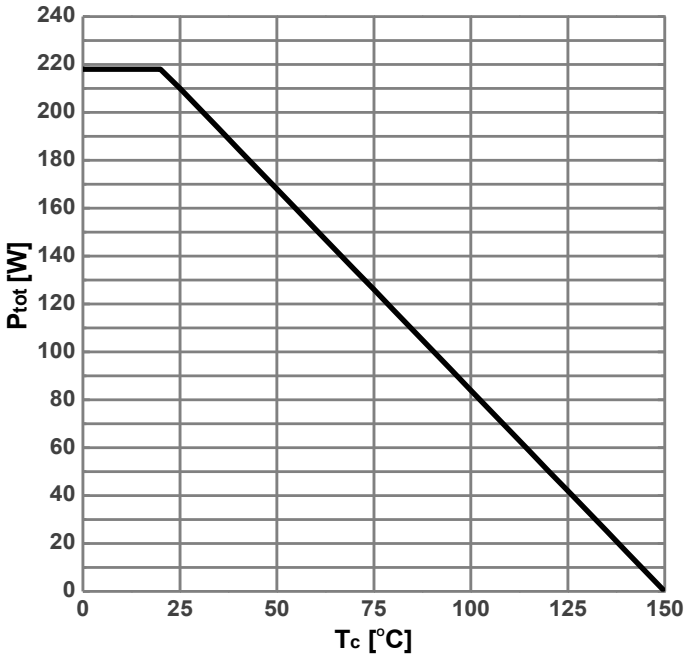
Notes 1.The maximum current rating is package limited.

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

Notes 3.EAS condition: TJ=25℃

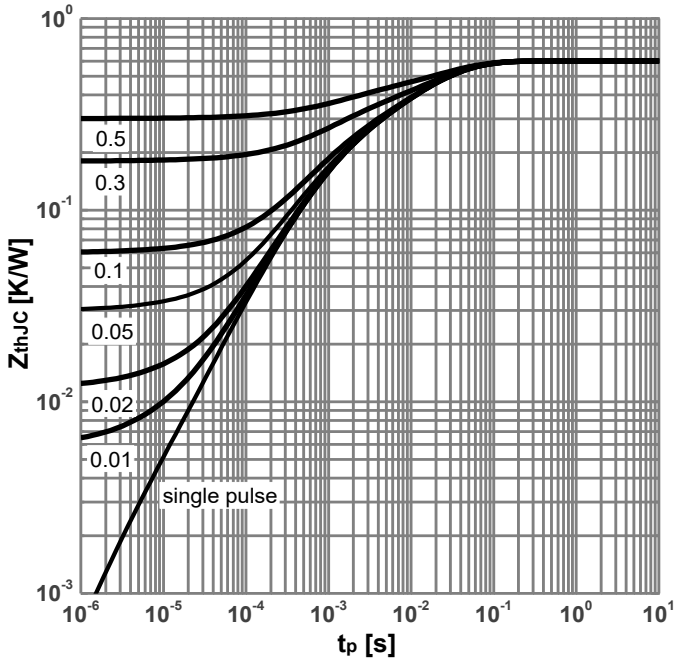
## Electrical characteristics diagrams

**Diagram 1: Power dissipation**



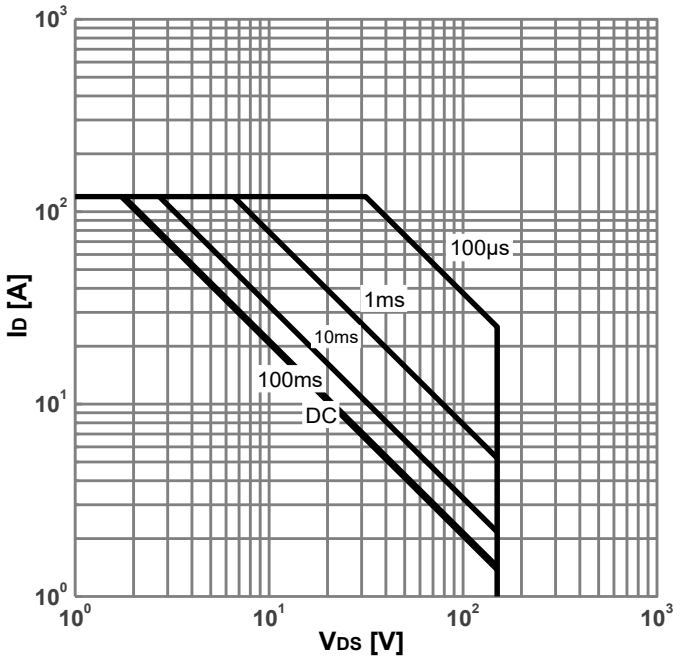

$P_{tot}$=f($T_C$)

**Diagram 2: Max. transient thermal impedance**



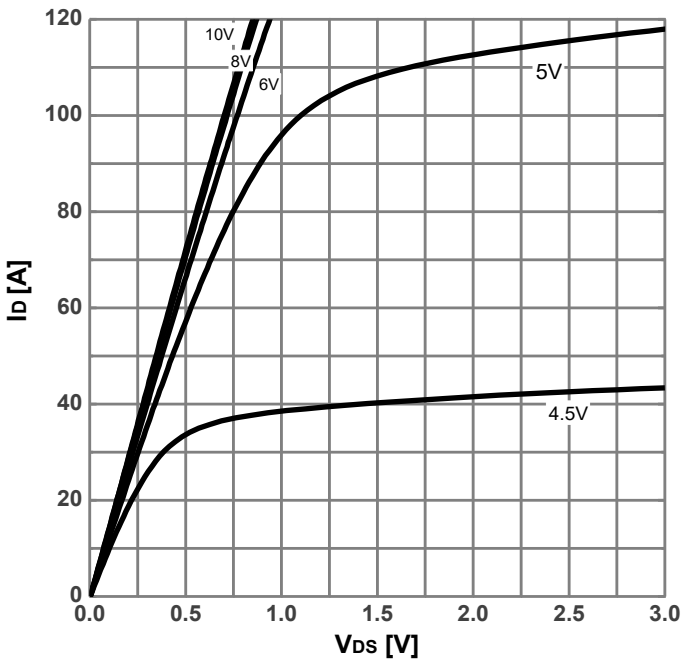

$Z_{thJC}$=f($t_p$); parameter: D= $t_p/T$

**Diagram 3: Safe operating area**



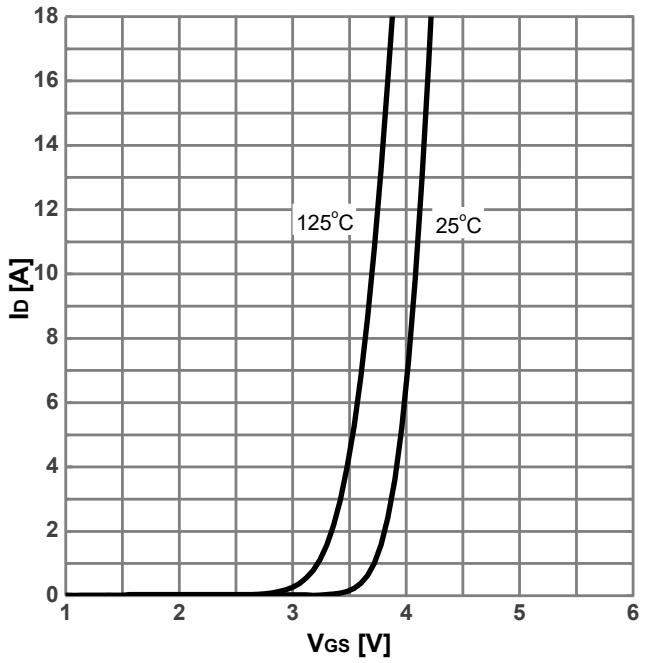

$I_D$=f($V_{DS}$); $T$j=25°C; D=0; parameter: $t_p$

**Diagram 4: Typ. output characteristics**



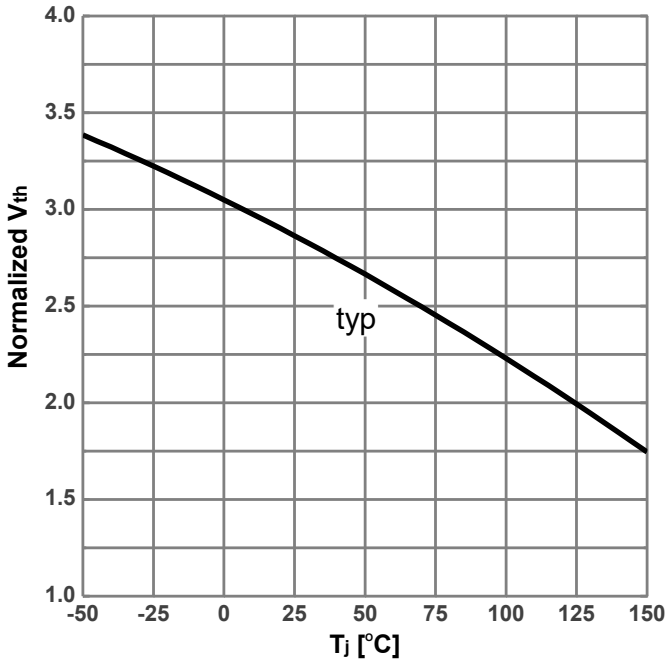

$I_D$=f($V_{DS}$); $T$j=25°C; parameter: $V_{GS}$

**Diagram 5: Typ. transfer characteristics**



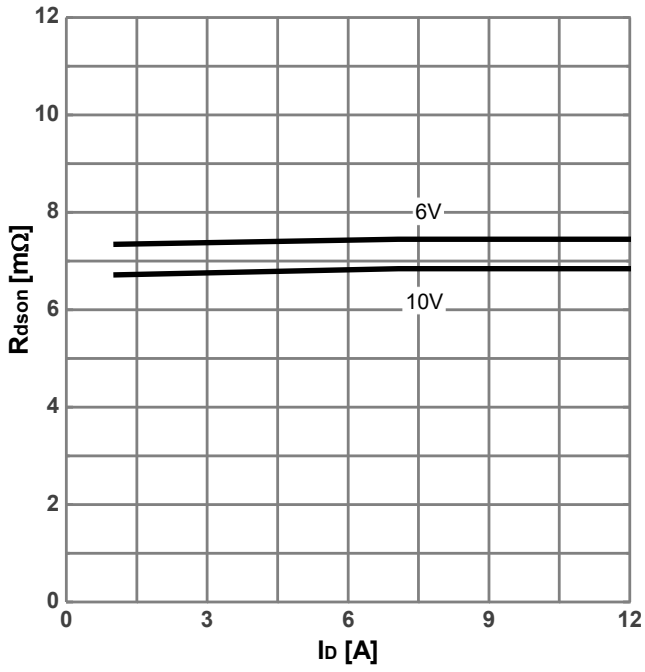

$I_D$=f($V_{GS}$); $V_{DS}$=5V; parameter: $T_j$

**Diagram 6: Gate threshold voltage vs. Junction temperature**



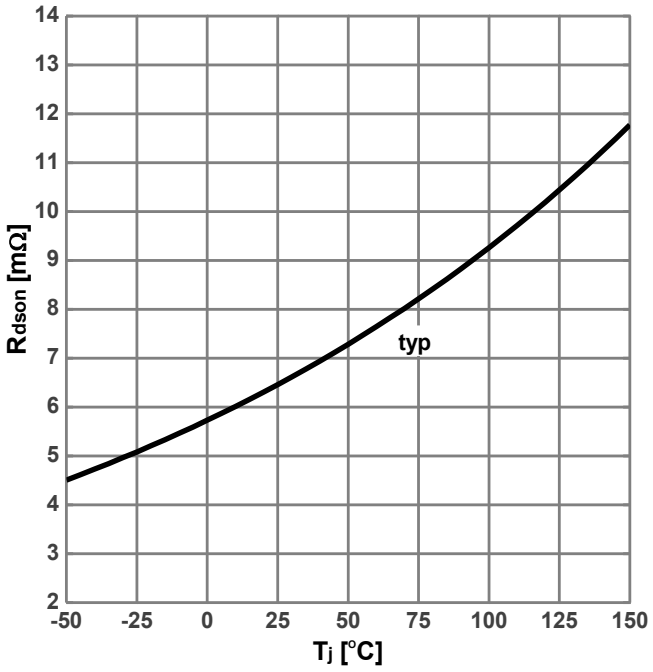

$V_{th}$=f($T_j$); $I_D$=250µA

**Diagram 7: On-state resistance vs. Drain current**



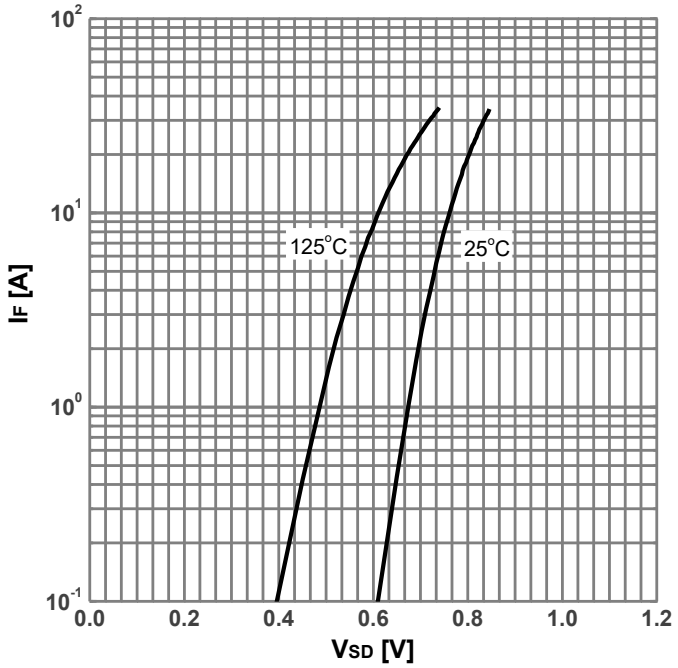

$R_{DS}$(on)=f($I_D$); $T$j=25°C; parameter: $V_{GS}$

**Diagram 8: On-state resistance vs. Junction temperature**



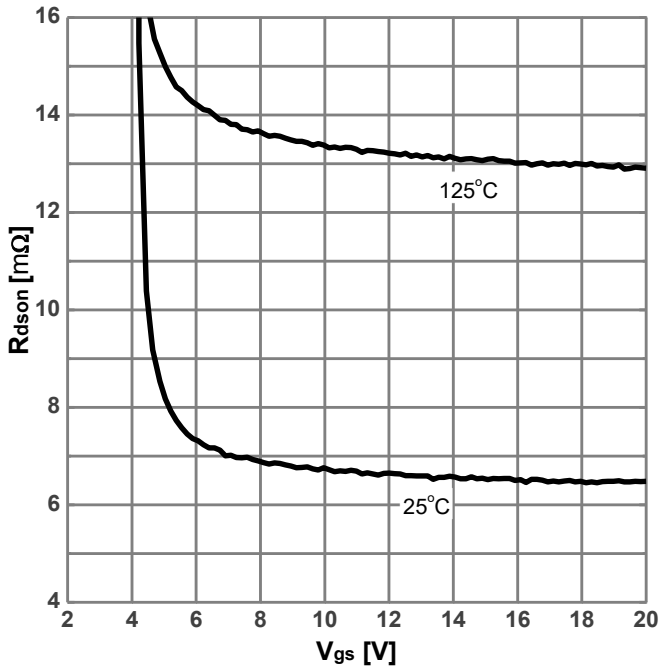

$R_{DS}$(on)=f($T_j$); $I_D$=20A; $V_{GS}$=10V

**Diagram 9: Forward characteristics of reverse diode**



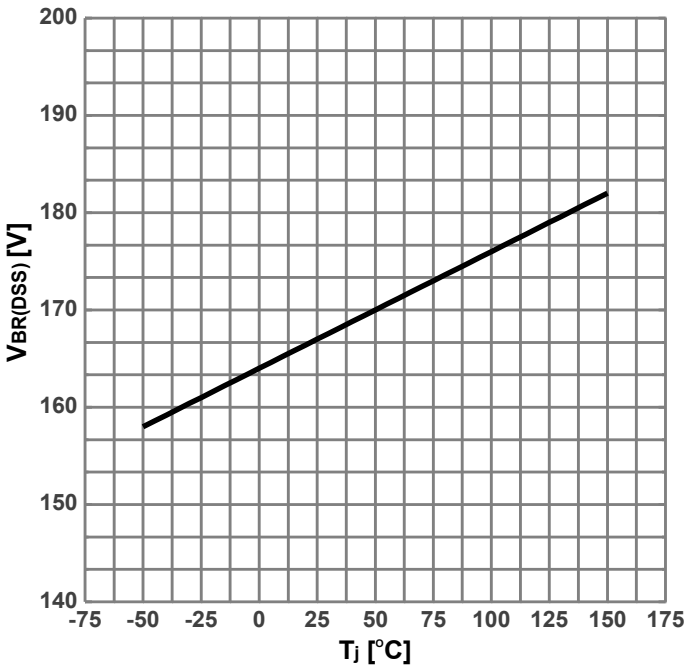

$I_F$=f($V_{SD}$); parameter: $T_j$

**Diagram 10: On-state resistance vs. Vgs characteristics**



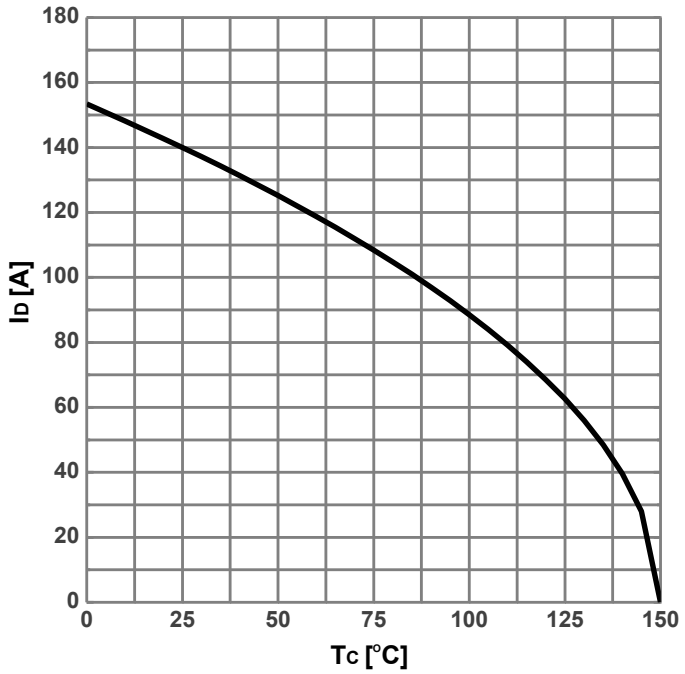

$R_{DS}$(on)=f($V_{gs}$); $I_D$=20A; parameter: $T_j$

**Diagram 11: Breakdown Voltage Variation vs. Temperature**

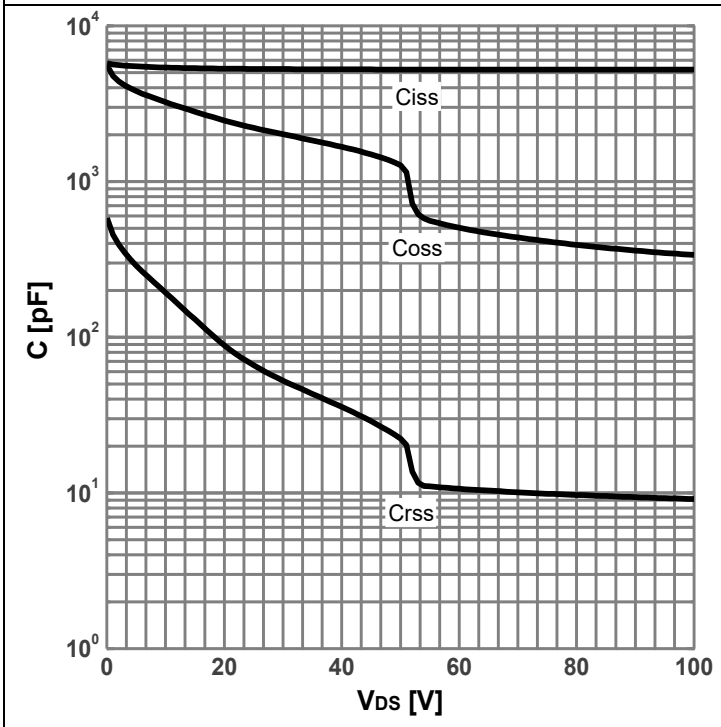
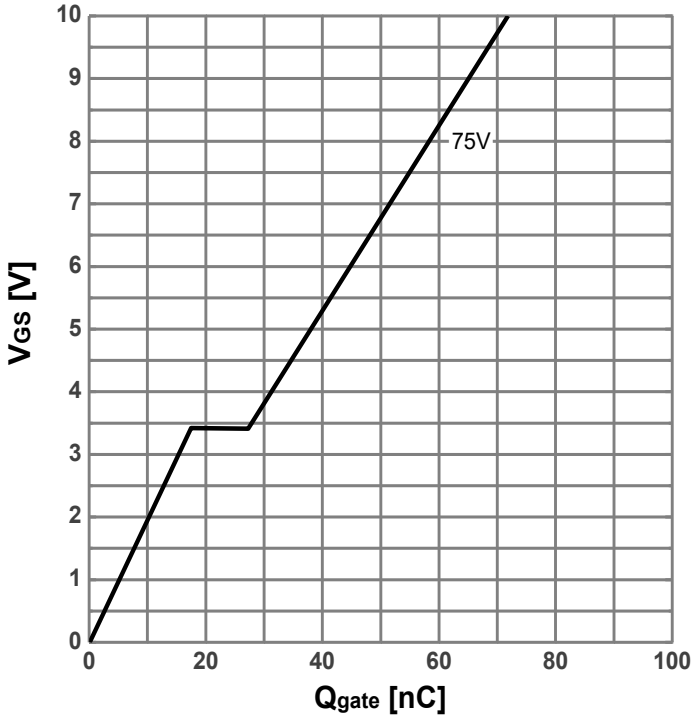



$V_{BR(DSS)}$=f($T_j$); $I_D$=250μA

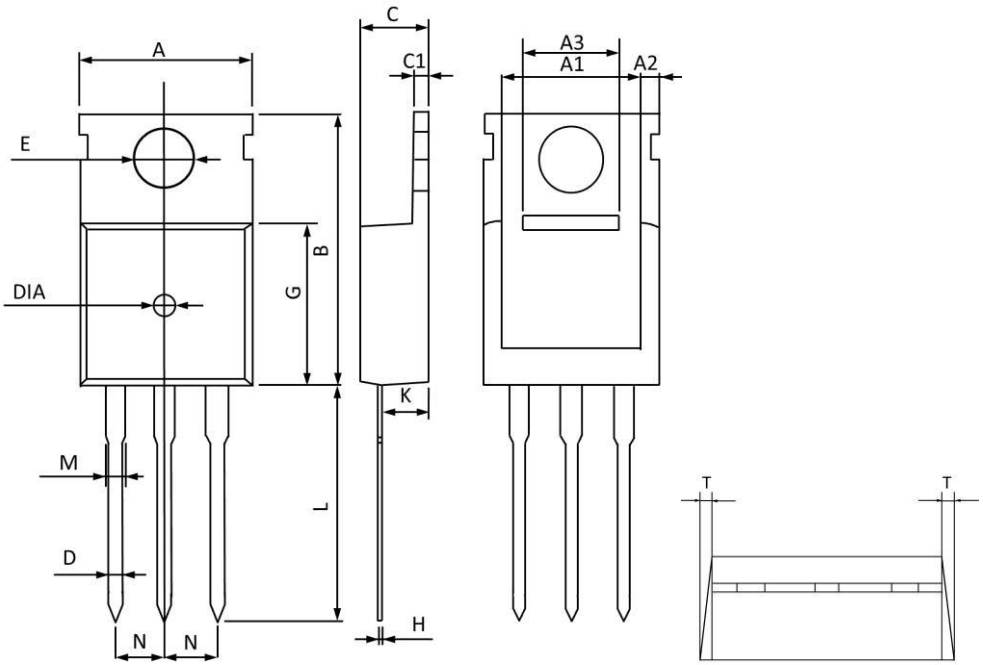
**Diagram 12: Maximum Drain Current**




$I_D$= f($T_C$); $V_{GS}$=10V

| Diagram 13: Typ. capacitances | Diagram 14: Typ. gate charge |
|---|---|
|  |  |
| $C$=f($V_{DS}$); $V_{GS}$=0V; f=1MHz | $V_{GS}$=f($Q_{gate}$); $I_D$=20A pulsed; $V_{DS}$=75V |

# TO220 PACKAGE INFORMATION




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | MAX | MIN | MAX | MIN |
| A | 10.300 | 9.700 | 0.406 | 0.382 |
| A1 | 8.840 | 8.440 | 0.348 | 0.332 |
| A2 | 1.250 | 1.050 | 0.049 | 0.041 |
| A3 | 5.300 | 5.100 | 0.209 | 0.201 |
| B | 16.200 | 15.400 | 0.638 | 0.606 |
| C | 4.680 | 4.280 | 0.184 | 0.169 |
| C1 | 1.500 | 1.100 | 0.059 | 0.043 |
| D | 1.000 | 0.600 | 0.039 | 0.024 |
| E | 3.800 | 3.400 | 0.150 | 0.134 |
| G | 9.300 | 8.700 | 0.366 | 0.343 |
| H | 0.600 | 0.400 | 0.024 | 0.016 |
| K | 2.700 | 2.100 | 0.106 | 0.083 |
| L | 13.600 | 12.800 | 0.535 | 0.504 |
| M | 1.500 | 1.100 | 0.059 | 0.043 |
| N | 2.590 | 2.490 | 0.102 | 0.098 |
| T | W0.35 | | W0.014 | |
| DIA | Φ1.5 TYP. | deep0.2 TYP. | Φ0.059 TYP. | deep0.008 TYP. |

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