

MG06300D-BN4MM



Agency Approvals

AGENCY	AGENCY FILE NUMBER
	E71639

Features

- High short circuit capability, self limiting short circuit current
- $V_{CE(sat)}$ with positive temperature coefficient
- Fast switching and short tail current
- Free wheeling diodes with fast and soft reverse recovery
- Low switching losses

Applications

- High frequency switching application
- Medical applications
- Motion/servo control
- UPS systems

Module Characteristics ($T_c = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Unit
$T_{J\max}$	Max. Junction Temperature				175	$^\circ\text{C}$
T_{Jop}	Operating Temperature		-40		150	$^\circ\text{C}$
T_{stg}	Storage Temperature		-40		125	$^\circ\text{C}$
V_{isol}	Insulation Test Voltage	AC, t=1min		3000		V
CTI	Comparative Tracking Index		350			
Torque	Module-to-Sink	Recommended (M6)	3		5	N·m
Torque	Module Electrodes	Recommended (M6)	2.5		5	N·m
Weight				320		g

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Parameters	Test Conditions	Values	Unit
IGBT				
V_{CES}	Collector - Emitter Voltage	$T_J=25^\circ\text{C}$	600	V
V_{GES}	Gate - Emitter Voltage		± 20	V
I_C	DC Collector Current	$T_c=25^\circ\text{C}$	400	A
		$T_c=70^\circ\text{C}$	300	A
I_{CM}	Repetitive Peak Collector Current	$t_p=1\text{ms}$	600	A
P_{tot}	Power Dissipation Per IGBT		940	W
Diode				
V_{RRM}	Repetitive Reverse Voltage	$T_J=25^\circ\text{C}$	600	V
$I_{F(AV)}$	Average Forward Current	$T_c=25^\circ\text{C}$	400	A
		$T_c=70^\circ\text{C}$	300	A
I_{FRM}	Repetitive Peak Forward Current	$t_p=1\text{ms}$	600	A
I^2t		$T_J=125^\circ\text{C}$, $t=10\text{ms}$, $V_R=0\text{V}$	8000	A^2s

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

Power Module

600V 300A IGBT Module

Electrical and Thermal Specifications ($T_c = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Parameters	Test Conditions		Min	Typ	Max	Unit
IGBT							
V _{GE(th)}	Gate - Emitter Threshold Voltage	V _{CE} =V _{GE} , I _C =4.8mA		4.9	5.8	6.5	V
V _{CE(sat)}	Collector - Emitter Saturation Voltage	I _C =300A, V _{GE} =15V, T _J =25°C			1.45		V
		I _C =300A, V _{GE} =15V, T _J =125°C			1.6		V
I _{CES}	Collector Leakage Current	V _{CE} =600V, V _{GE} =0V, T _J =25°C				1	mA
		V _{CE} =600V, V _{GE} =0V, T _J =125°C				5	mA
I _{GES}	Gate Leakage Current	V _{CE} =0V, V _{GE} =±15V, T _J =125°C		-400		400	nA
R _{Gint}	Integrated Gate Resistor				1		Ω
Q _{ge}	Gate Charge	V _{CC} =300V, I _C =300A , V _{GE} =±15V			3.2		μC
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f =1MHz			19		nF
C _{res}	Reverse Transfer Capacitance				0.57		nF
t _{d(on)}	Turn - on Delay Time	V _{CC} =300V I _C =300A R _G =2.4Ω V _{GE} =±15V Inductive Load	T _J =25°C		110		ns
			T _J =125°C		120		ns
t _r	Rise Time		T _J =25°C		50		ns
			T _J =125°C		60		ns
t _{d(off)}	Turn - off Delay Time		T _J =25°C		490		ns
			T _J =125°C		520		ns
t _f	Fall Time		T _J =25°C		60		ns
			T _J =125°C		70		ns
E _{on}	Turn - on Energy		T _J =25°C		2.0		mJ
			T _J =125°C		3.1		mJ
E _{off}	Turn - off Energy		T _J =25°C		9		mJ
			T _J =125°C		12		mJ
I _{SC}	Short Circuit Current	t _{psc} ≤6μS , V _{GE} =15V; T _J =125°C, V _{CC} =360V			1500		A
R _{thJC}	Junction-to-Case Thermal Resistance (Per IGBT)					0.16	K/W
Diode							
V _F	Forward Voltage	I _F =300A , V _{GE} =0V, T _J =25°C			1.55		V
		I _F =300A , V _{GE} =0V, T _J =125°C			1.5		V
I _{RRM}	Max. Reverse Recovery Current	I _F =300A , V _R =300V di _F /dt=-6500A/μs T _J =125°C			235		A
Q _{rr}	Reverse Recovery Charge				24		μC
E _{rec}	Reverse Recovery Energy				6.2		mJ
R _{thJCD}	Junction-to-Case Thermal Resistance (Per Diode)					0.32	K/W

Figure 1: Typical Output Characteristics

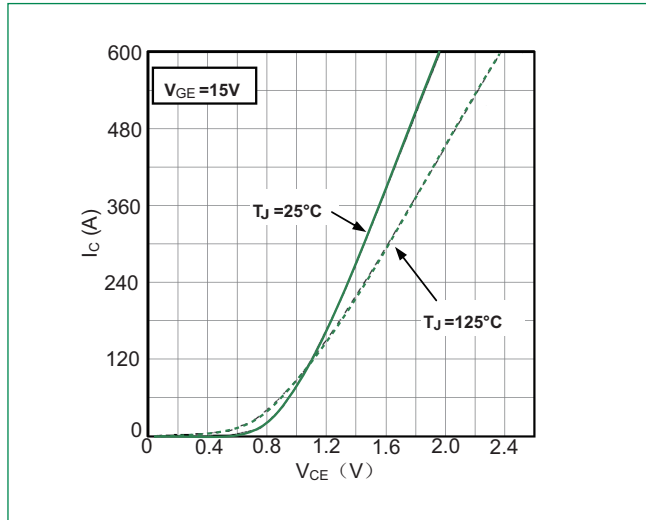


Figure 2: Typical Output characteristics

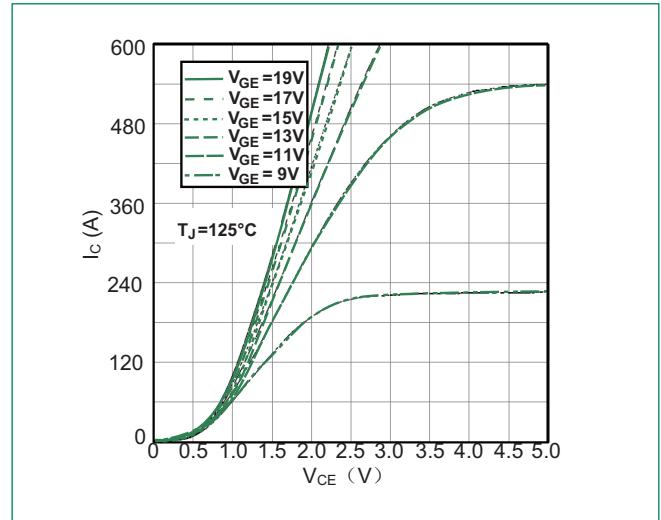


Figure 3: Typical Transfer characteristics

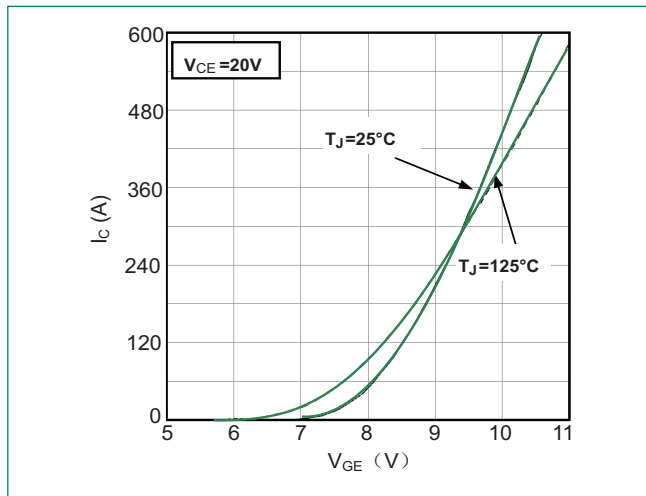


Figure 4: Switching Energy vs. Gate Resistor

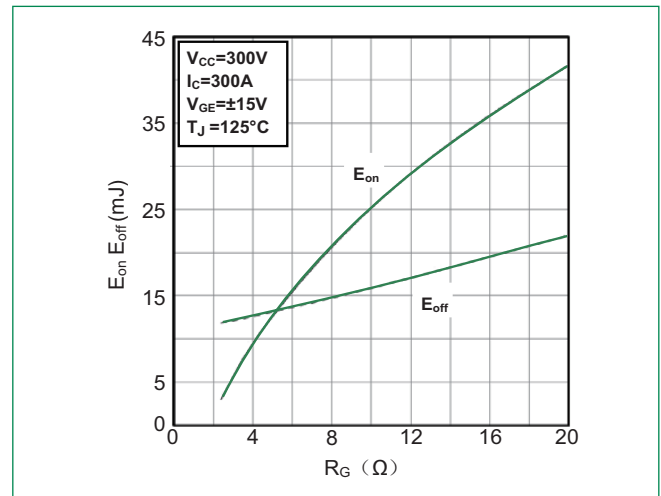


Figure 5: Switching Energy vs. Collector Current

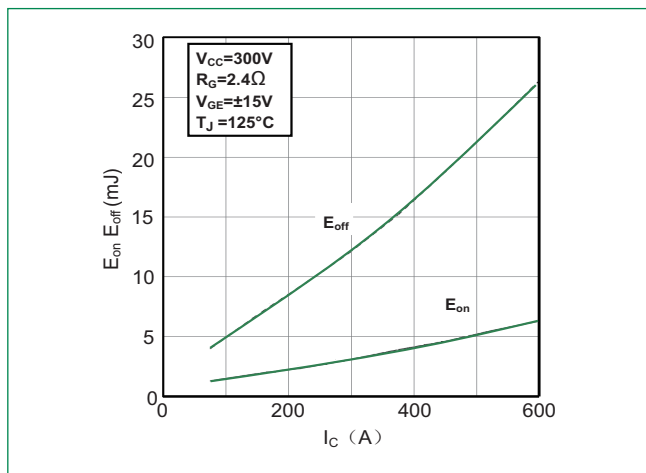


Figure 6: Reverse Biased Safe Operating Area

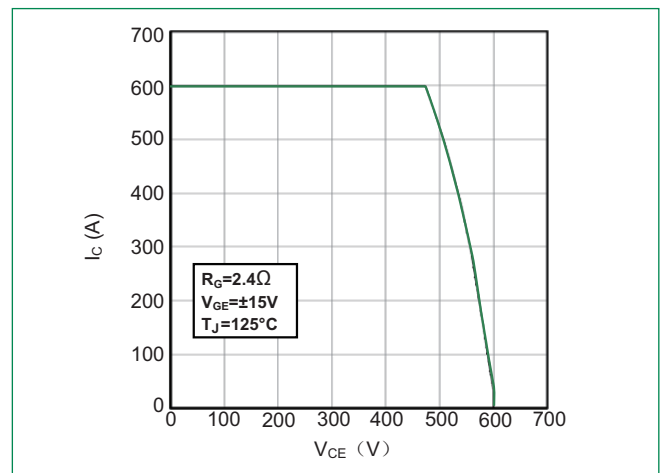


Figure 7: Diode Forward Characteristics

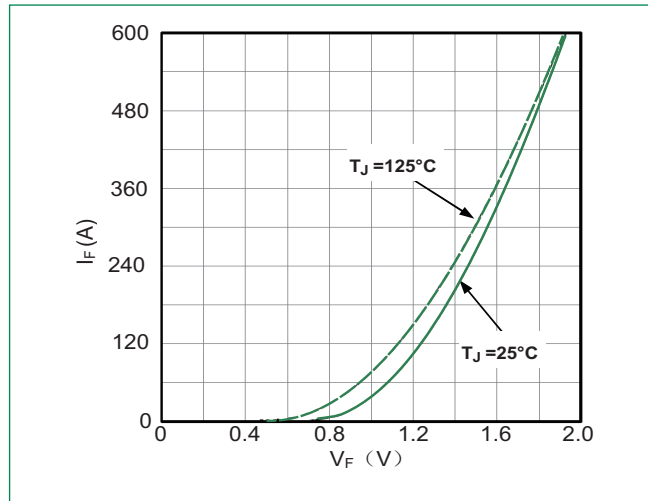


Figure 8: Switching Energy vs. Gate Resistor

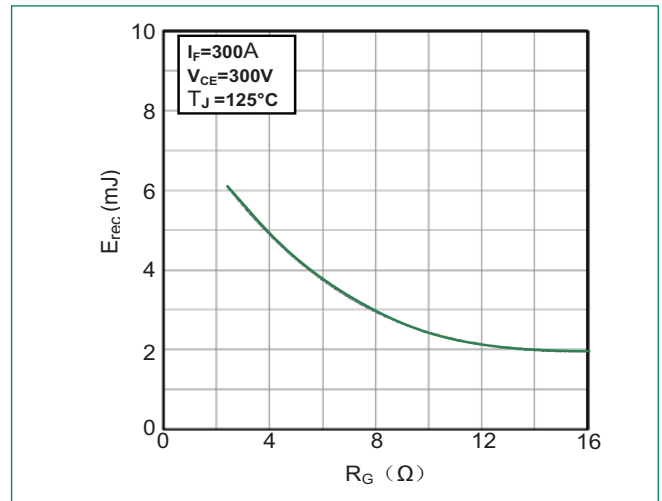


Figure 9: Switching Energy vs. Forward Current

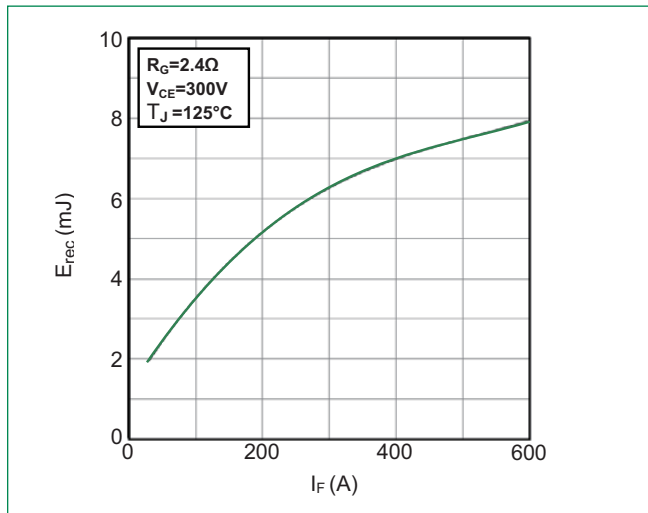
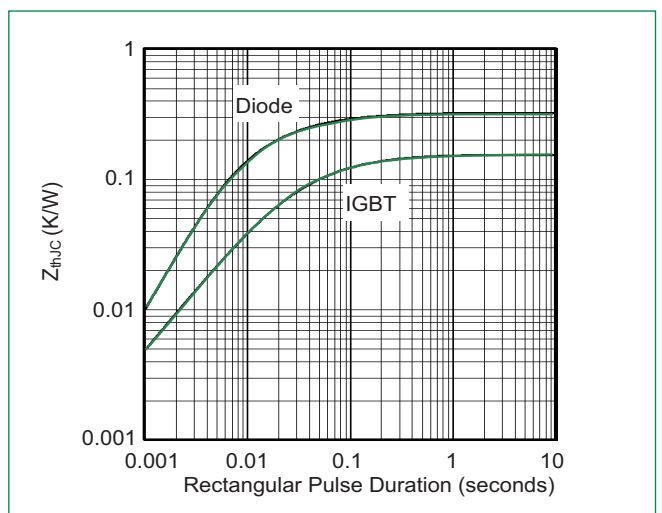


Figure 10: Transient Thermal Impedance



Technical drawing of the 3-axis bracket showing top and side views with dimensions.

Top View Dimensions:

- Overall width: 108.0 ± 0.5
- Overall height: 62.0 ± 0.5
- Distance between mounting holes: 28.0 ± 0.5
- Distance between mounting holes: 28.0 ± 0.5
- Distance between mounting holes: 20.0
- Distance between mounting holes: 93.0 ± 0.5
- Distance between mounting holes: 16.0
- Distance between mounting holes: 48.0 ± 0.5
- Distance between mounting holes: 22.0
- Distance between mounting holes: 18
- Distance between mounting holes: 6.0
- Distance between mounting holes: $3-M6$
- Distance between mounting holes: $4-\phi 5$
- Distance between mounting holes: 15.0
- Distance between mounting holes: 27.0
- Distance between mounting holes: 29.8 ± 0.5

Side View Dimensions:

- Overall height: 30.5 ± 0.5
- Overall height: 30.0 ± 0.5
- Overall height: 2.8×0.5

The diagram shows a two-stage MOSFET amplifier. The first stage is a common-source amplifier with a PMOS load and an NMOS input device. Its output is connected to the gate of a second-stage NMOS common-source amplifier, which has a PMOS load. The input is at node 1, and the output is at node 3. Nodes 2, 4, 5, 6, and 7 are also labeled.

Part Number	Marking	Weight	Packing Mode	M.O.Q
MG06300D-BN4MM	MG06300D-BN4MM	320g	Bulk Pack	60

MG06300D-BN4MM

PRODUCT TYPE M: Power Module	ASSEMBLY SITE
MODULE TYPE G: IGBT	WAFER TYPE
VOLTAGE RATING 06: 600V	CIRCUIT TYPE 2x(IGBT+FWD)
CURRENT RATING 300:300A	PACKAGE TYPE

The diagram shows a side view of the MG06300D-BN4MM fuse assembly. It features three cylindrical fuses mounted on a base. To the right, a terminal block is shown with a wiring diagram. The diagram includes a fuse symbol with terminals labeled 1, 2, 3, 4, 5, and 6. Wires connect these terminals to a terminal block with pins labeled 0.1, 0.2, 0.3, 0.4, 0.5, and 0.6. Below the wiring diagram is a label for 'LOT NUMBER'.

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