PRODUCT FEATURES

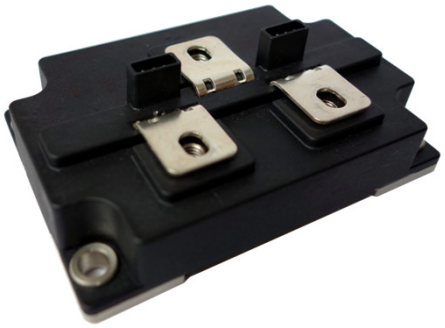
☐ $R_{DS(ON).typ}$=1.8mΩ@V_{GS}=10V

☐ 175℃ junction temperature

☐ Low Gate Charge Minimize Switching Loss

☐ Fast Recovery body Diode

☐ 20K Ω Gate Protected Resistance Inside



APPLICATIONS

☐ High efficiency DC/DC Converters

☐ ISG EV Products

☐ UPS inverter

Type	V_{DS}	I_D	$R_{DS(ON).max}$ T_J=25°C	T_{Jmax}	Marking	Package
MMN600DB015B	150V	600A	2.1mΩ	175℃	MMN600DB015B	NDB

ABSOLUTE MAXIMUM RATINGS

T_C=25°C unless otherwise specified

Symbol	Parameter/Test Conditions		Values	Unit
V_{DSS}	Drain Source Voltage	T_J=25℃	150	V
V_{GSS}	Gate Source Voltage		±20	
I_D	Continuous Drain Current	T_C=25℃	850	A
		T_C=100℃	600	
I_{DM}	Pulsed Drain Current at V_{GS}=10V	Limited by T_{Jmax}	1700	
P_D	Maximum Power Dissipation		1500	W

THERMAL AND MODULE CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter/Test Conditions		Values	Unit
R_{thJC}	Thermal resistance,junction to case Per MOSFET		0.1	K/W
T_{Jmax}	Max. Junction Temperature		175	℃
T_{STG}	Storage Temperature Range		-40～125	
Torque	to heatsink	Recommended（M5）	2.5～5	Nm
	to terminal	Recommended（M5）	2.5～5	
Weight			240	g

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ELECTRICAL CHARACTERISTICS

T_C =25°C unless otherwise specified

Symbol	Parameter/Test Conditions			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain Source Breakdown Voltage	V_{GS}=0V, I_D=600μA		150			V
$R_{DS(ON)}$	Drain Source ON Resistance	V_{GS}=10V, I_D=600A			1.8	2.1	mΩ
I_{DSS}	Drain Source Leakage Current	V_{DS}=150V,V_{GS}=0V				2	mA
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}= V_{DS} , I_D=1.6mA		3	4	5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V(module)		-2		2	mA
Q_g	Total Gate Charge	V_{DD}=75V, I_D=300A , V_{GS}=10V			850		nC
Q_{gs}	Gate Source Charge				210		nC
Q_{gd}	Gate Drain Charge				320		nC
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=300A			496		S
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f =1MHz			60		nF
C_{oss}	Output Capacitance				4.7		nF
C_{rss}	Reverse Transfer Capacitance				0.95		nF
$t_{d(on)}$	Turn on Delay Time	V_{DD}=75V,I_D=300A, R_G=5Ω,V_{GS}=15V (Inductive Load)	T_J=25℃		230		ns
t_r	Rise Time				350		ns
$t_{d(off)}$	Turn off Delay Time				600		ns
t_f	Fall Time				310		ns
E_{on}	Turn on Energy				TBD		mJ
E_{off}	Turn off Energy				TBD		mJ

Source-Drain BODY-DIODE CHARACTERISTICS

T_C =25°C unless otherwise specified

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
I_{SD}	Continuous Source Drain Current				600	A
I_{SDM}	Pulse Source Drain Current	Limited by T_{Jmax}			1200	A
V_{SD}	Forward Voltage	I_S=300A , V_{GS}=0V		1.0	1.2	V
t_{rr}	Reverse Recovery time	I_F=300A , V_{GS}=0V dI$_F$/dt=-650A/μs		150		ns
Q_{rr}	Reverse Recovery Charge			6500		nC

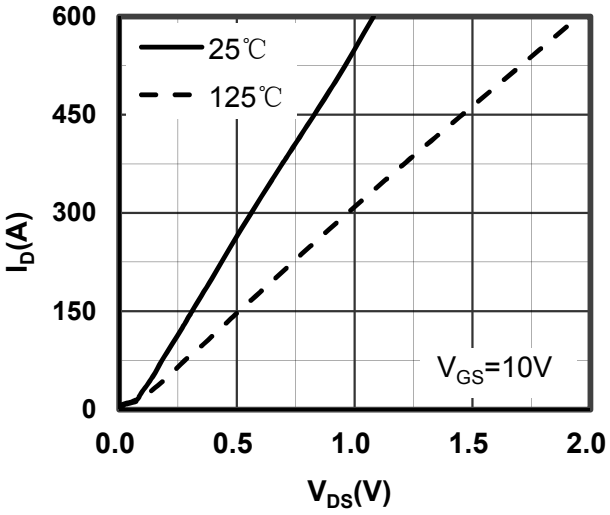


Figure 1. Typical Output Characteristics

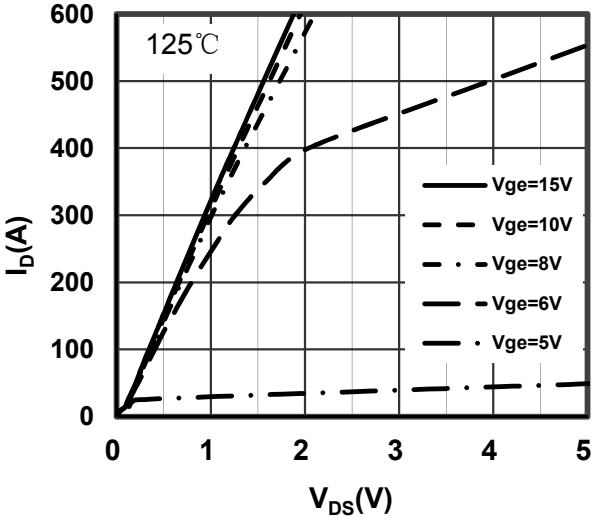


Figure 2. Typical Output Characteristics

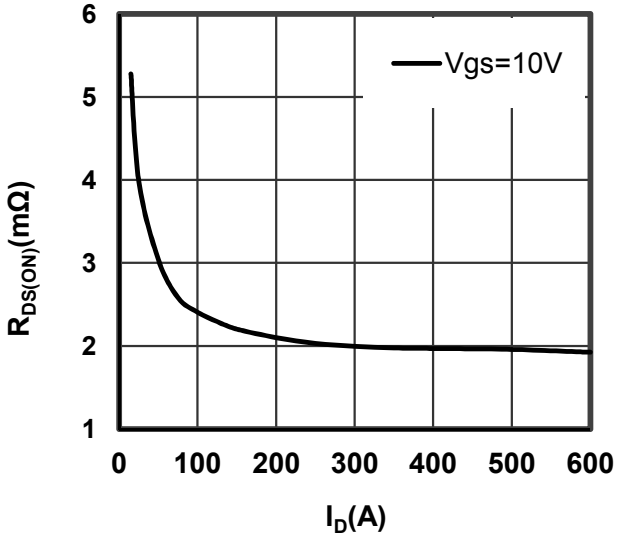


Figure 3. Drain-Source ON Resistance vs I_D

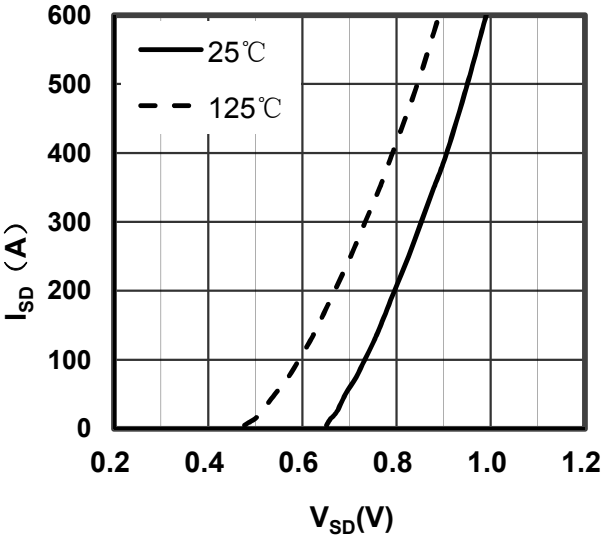


Figure 4. Source-Drain Voltage

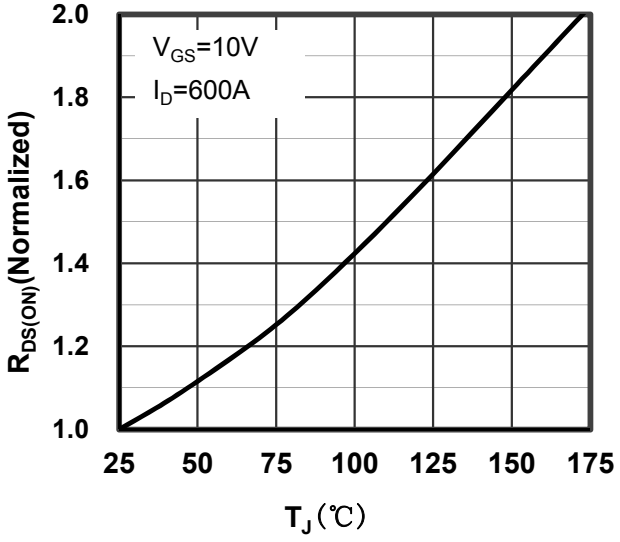


Figure 5. Drain-Source ON Resistance vs Junction Temperature

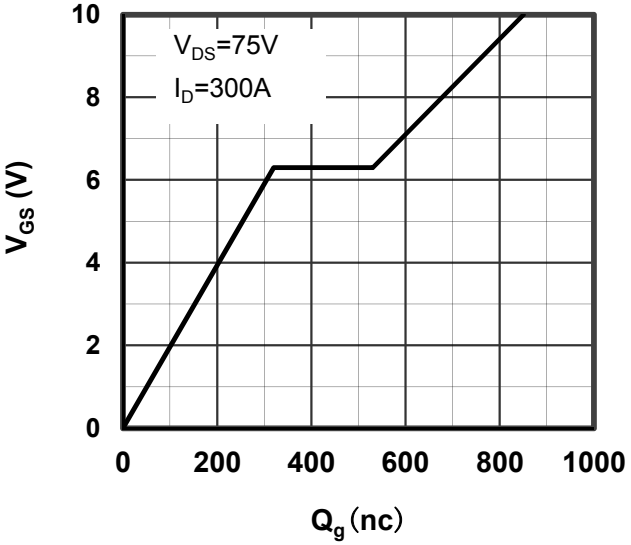


Figure 6. Gate Charge characteristics

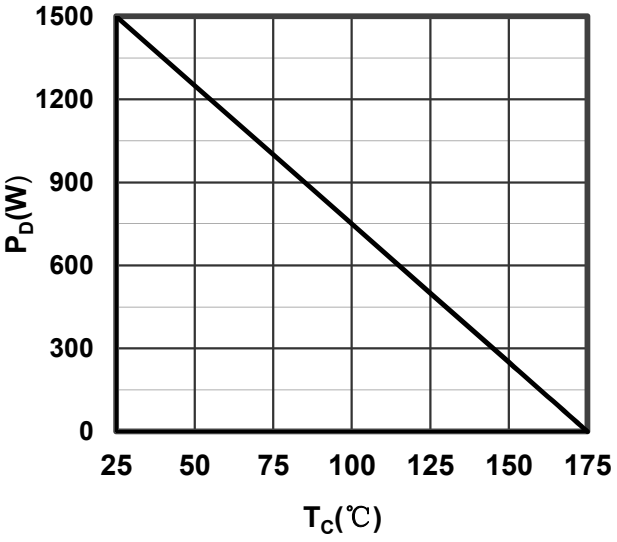


Figure 7. Maximum Power Dissipation vs Case Temperature

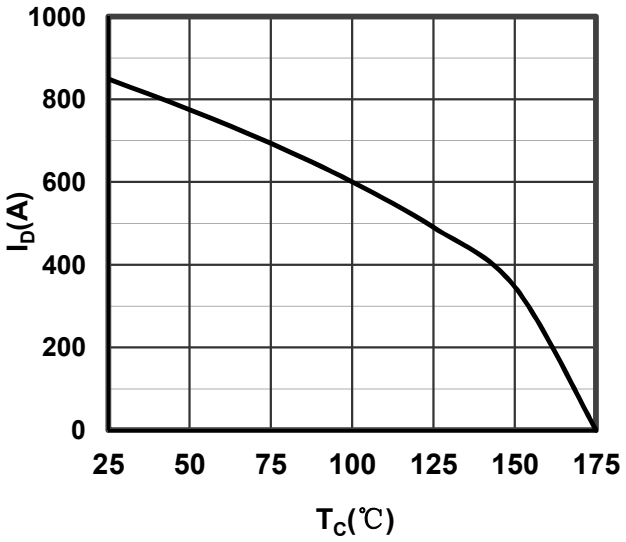


Figure 8. Maximum Continuous Drain Current vs Case Temperature

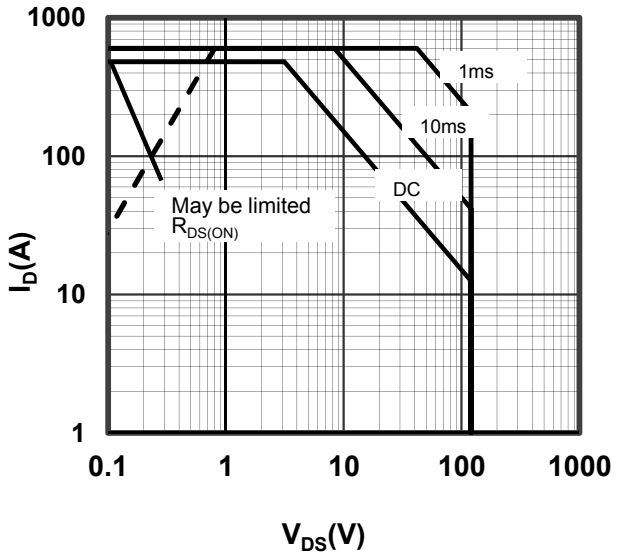


Figure 9. Maximum Forward Safe Operation Area

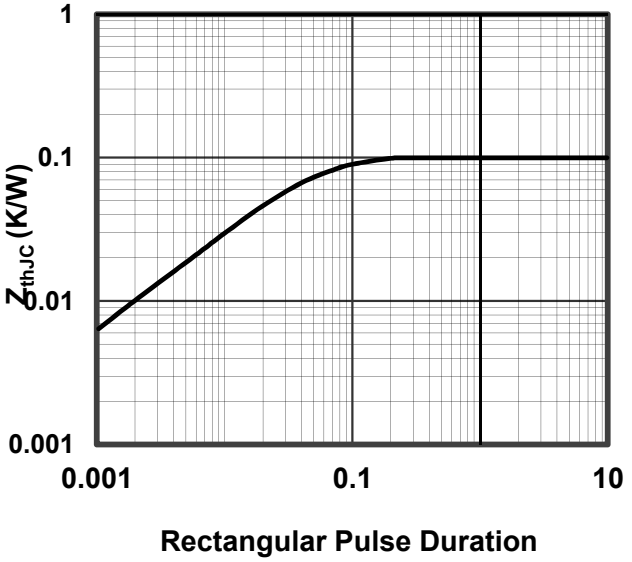


Figure 10. Transient Thermal Impedance

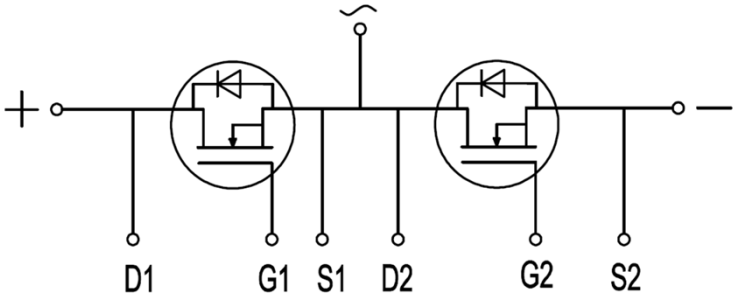
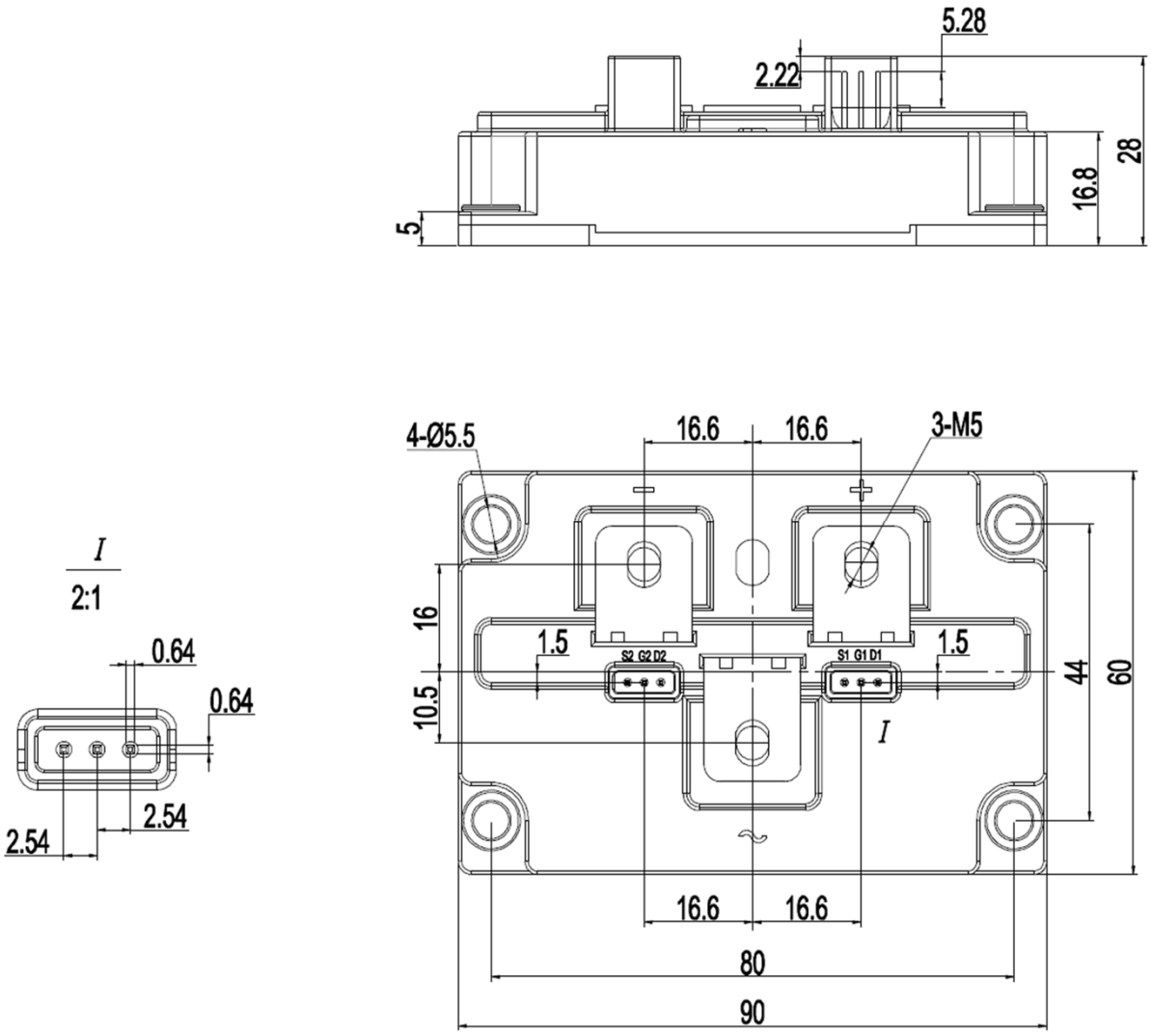


Figure 11. Circuit Diagram



Dimensions in (mm)

Figure 12. Package Outline