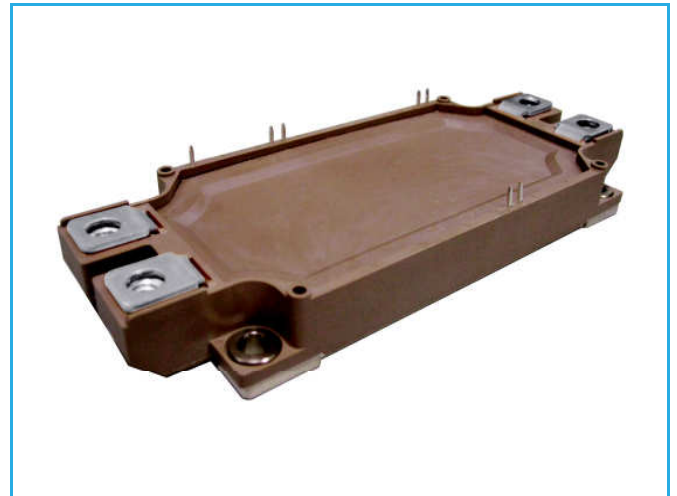


PRODUCT FEATURES

- ☐ Proprietary New Trench Technology
- ☐ $R_{DS(ON),typ}=1.5m\Omega@V_{GS}=10V$
- ☐ Low Gate Charge Minimize Switching Loss
- ☐ Fast Recovery Schottky Diode
- ☐ 10K Ω Gate Protected Resistance Inside
- ☐ Inside the module,each MOSFET chip has a gate resistance:10 Ω

APPLICATIONS

- ☐ High efficiency DC/DC Converters
- ☐ ISG EV Products
- ☐ UPS inverter



Type	V_{DS}	I_D	$R_{DS(ON),max}$ $T_J=25^{\circ}C$	T_{Jmax}	Marking	Package
MMN550WB025B	250V	550A	1.75m Ω	175 $^{\circ}C$	MMN550WB025B	NWB

ABSOLUTE MAXIMUM RATINGS($T_C=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_{DSS}	Drain - Source Voltage	$T_J=25^{\circ}C$	250	V
V_{GSS}	Gate - Source Voltage		± 20	
I_D	Continuous Drain Current	$T_C=25^{\circ}C, T_{Jmax}=175^{\circ}C$	690	A
		$T_C=80^{\circ}C, T_{Jmax}=175^{\circ}C$	550	
I_{DM}	Pulsed Drain Current at $V_{GS}=10V$	Limited by T_{Jmax}	1100	
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C, T_{Jmax}=175^{\circ}C$	2500	W
E_{AS}	Single Pulse Avalanche Energy	$V_{DD}=50V, L=1mH$	5000	mJ

THERMAL AND MODULE CHARACTERISTICS ($T_C=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
R_{thJC}	Thermal resistance, junction to case Per MOSFET		0.06	K/W
T_{Jmax}	Max. Junction Temperature		175	$^{\circ}C$
T_{STG}	Storage Temperature Range		-40~125	
V_{isol}	Isolation Breakdown Voltage	AC, 50Hz(R.M.S), t=1minute	3000	V
Torque	to heatsink	Recommended (M5)	2.5~5	Nm
	to terminal	Recommended (M6)	3~5	Nm
Weight			350	g

MacMic Science & Technology Co., Ltd.

Add: #18, Hua Shan Zhong Lu, New District, Changzhou City, Jiangsu Province, P. R .of China

MMN550WB025B

MOSFET

ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain Source Breakdown Voltage	$V_{GS}=0V, I_D=12mA$	250			V
$R_{DS(ON)}$	Drain Source ON Resistance	$V_{GS}=10V, I_D=550A$		1.5	1.75	m Ω
I_{DSS}	Drain Source Leakage Current	$V_{DS}=250V, V_{GS}=0V$			500	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=3.24mA$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-400		400	nA
R_{gint}	Integrated Gate Resistor			1.05		Ω
Q_g	Total Gate Charge	$V_{DD}=100V, I_D=300A, V_{GS}=10V$		768		nC
Q_{gs}	Gate Source Charge			264		nC
Q_{gd}	Gate Drain Charge			84		nC
C_{iss}	Input Capacitance	$V_{DS}=100V, V_{GS}=0V, f=1MHz$		64		nF
C_{oss}	Output Capacitance			3.6		nF
C_{rss}	Reverse Transfer Capacitance			48		pF
$t_{d(on)}$	Turn on Delay Time	$V_{DD}=100V, I_D=250A, R_G=2.7\Omega, V_{GS}=10V$ (Inductive Load)	$T_J=25^{\circ}\text{C}$	230		ns
t_r	Rise Time			140		ns
$t_{d(off)}$	Turn off Delay Time			350		ns
t_f	Fall Time			90		ns

Source-Drain BODY-DIODE CHARACTERISTICS ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
I_{SD}	Continuous Source Drain Current				690	A
I_{SDM}	Pulse Source Drain Current	Limited by T_{Jmax}			1100	A
V_{SD}	Forward Voltage	$I_S=550A, V_{GS}=0V$		0.9	1.2	V
t_{rr}	Reverse Recovery time	$I_F=250A, V_{GS}=0V$		215		ns
Q_{RR}	Reverse Recovery Charge	$dI_F/dt=-150A/\mu s$		22.5		μC

NTC CHARACTERISTICS ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
R_{25}	Resistance	$T_C=25^{\circ}\text{C}$		5		K Ω
$B_{25/50}$	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298.15 K))]$			3375		K

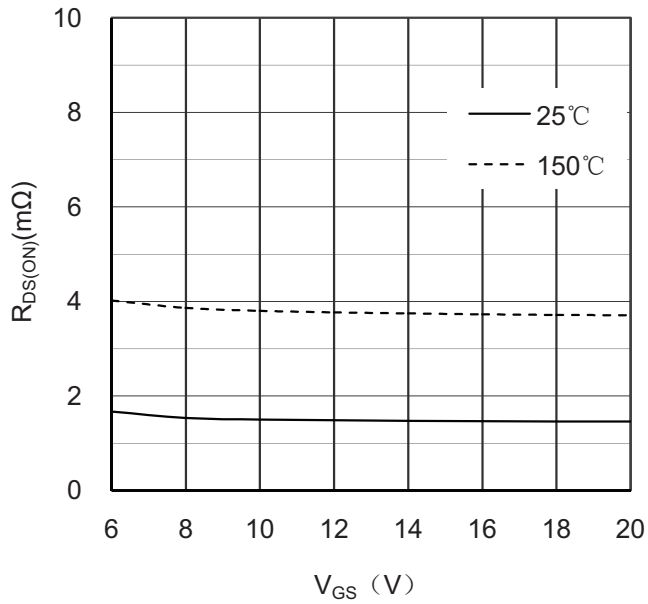
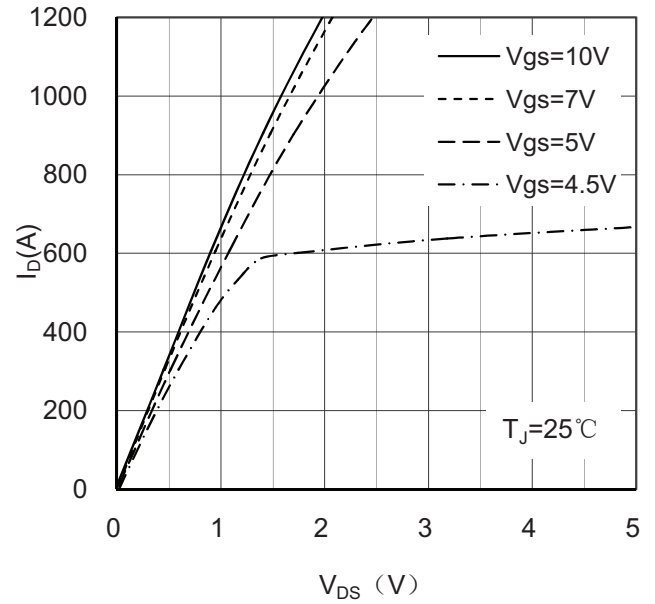
Figure 1. Typical $R_{DS(on)}$ vs Gate Voltage

Figure 2. Typical Output Characteristics

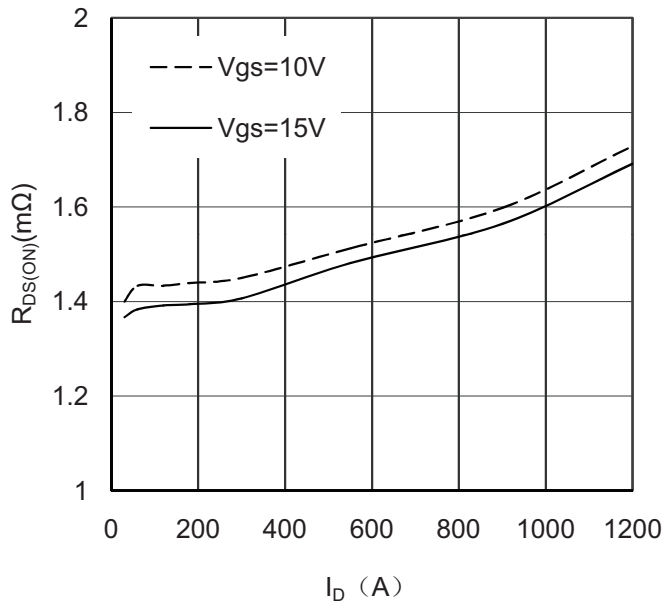
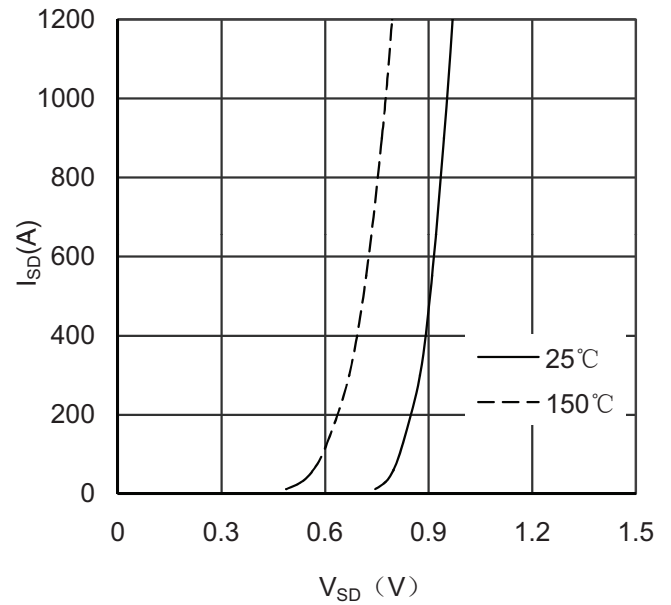
Figure 3. Drain-Source ON Resistance vs I_D 

Figure 4. Source-Drain Voltage

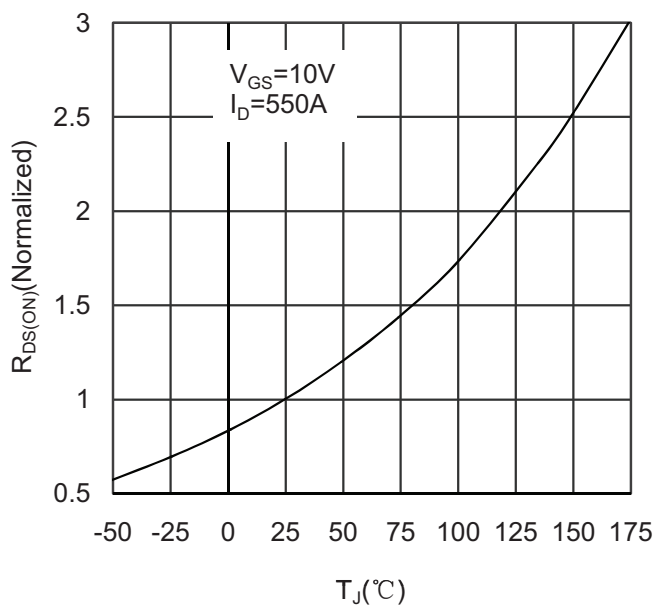


Figure 5. Drain-Source ON Resistance vs Junction Temperature

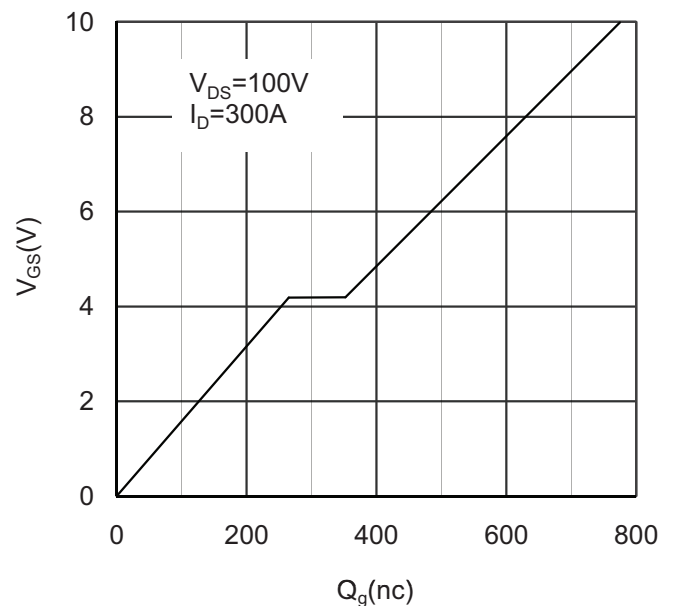


Figure 6. Gate Charge characteristics

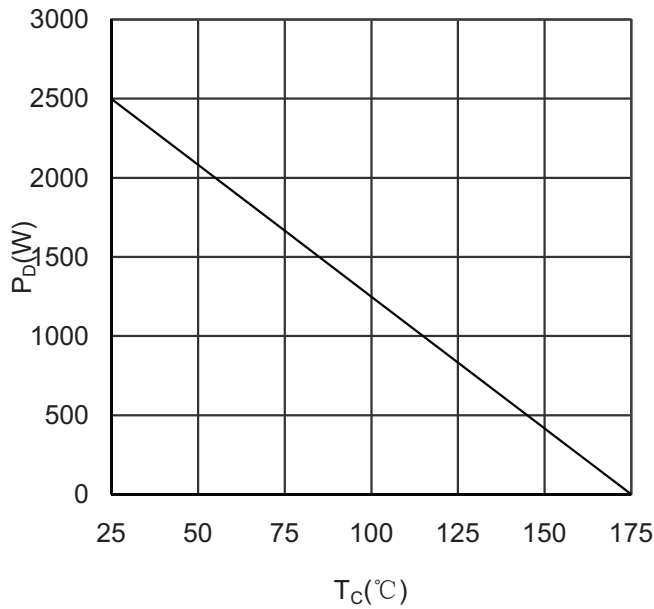


Figure 7. Maximum Power Dissipation vs Case Temperature

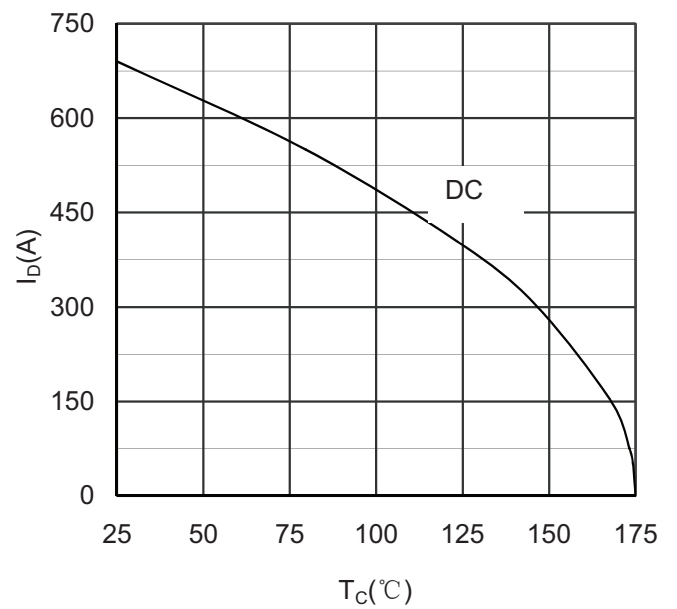


Figure 8. Maximum Continuous Drain Current vs Case Temperature

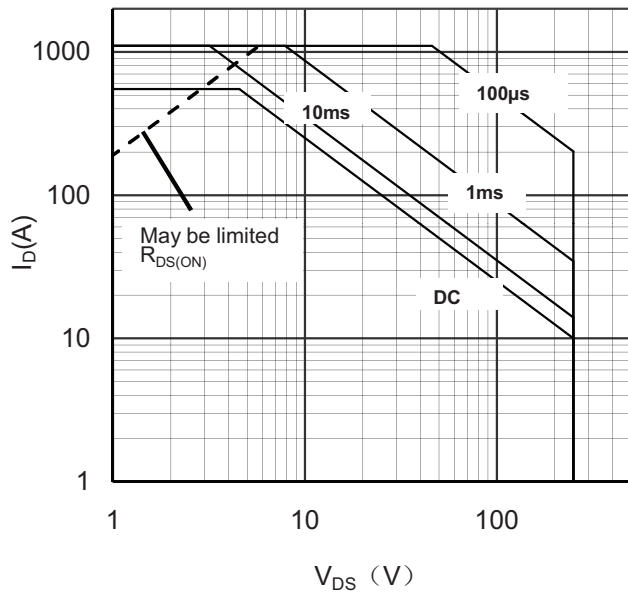


Figure 9. Maximum Forward Safe Operation Area

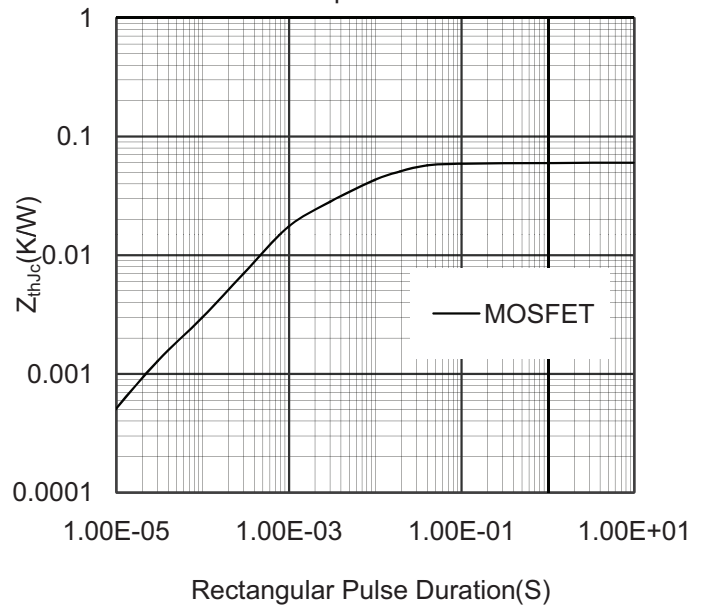


Figure 10. Transient Thermal Impedance

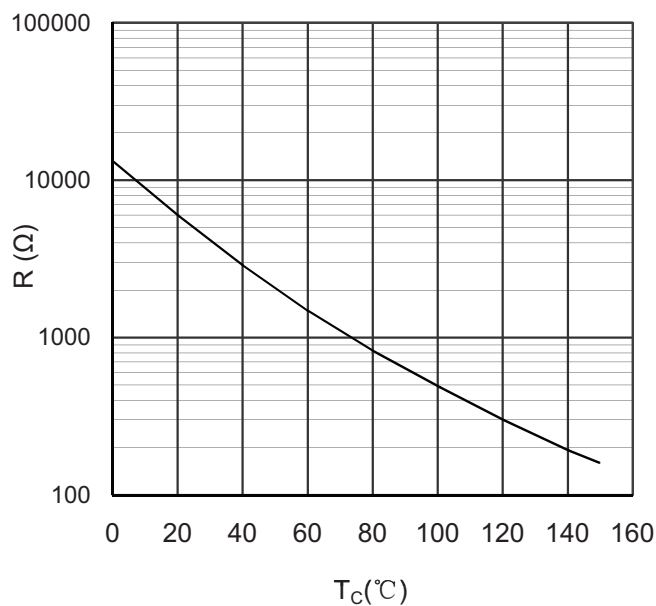


Figure 11. NTC Characteristics

