

PM002N100BG

100V 288A 2.2mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

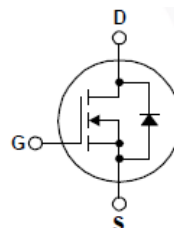
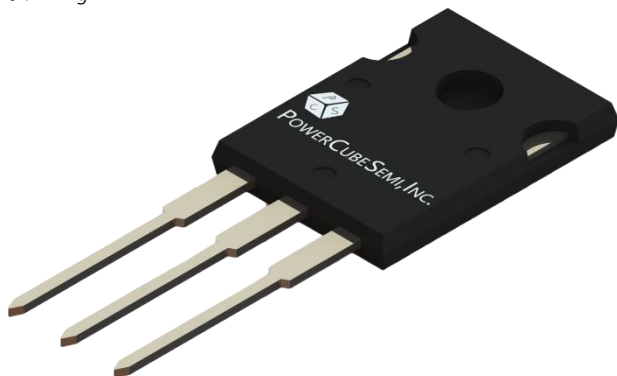
Features

Si Single N-ch Enhancement Mode Power MOSFET

- Rated to 100V at 288Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 2.2\text{ m}\Omega$
- Typ $R_{DS(on)} = 1.65\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=165\text{ nC}$)

Application

- DC/DC Converters
- Power Switch



PKG type : TO-247

Description

The PM002N100BG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. it can be used in a wide variety of applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	V
I_D	Drain Current	$T_c=25^\circ\text{C}$	288	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	1152	A
V_{GS}	Gate-Source Voltage		± 20	V
E_{AS}	Single Pulsed Avalanche Energy	$R_G=25\Omega, V_{GS}=10V$ $V_{DD}=50V, L=0.5mH$	625	mJ
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	329	W
T_j	Operating Junction Temperature		150	$^\circ\text{C}$
T_{stg}	Storage Temperature		-55 to 150	$^\circ\text{C}$

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM002N100BG	PM002N100	TO-247	TUBE	-	30

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3.0	4.5	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS}=10V, I_D=20A$	-	1.65	2.2	m Ω
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=20A$	-	41	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD}=50 V, I_D=20A, R_G=4.5\Omega$	-	29	-	ns
T_r	Turn-on Rise time		-	64	-	
$t_{d(off)}$	Turn-off Delay time		-	120	-	
T_f	Turn-off Fall time		-	106	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.38	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input Capacitance	$V_{DS} = 50\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	9530	-	pF
C_{oss}	Output Capacitance		3838	-	
C_{rss}	Reverse Transfer Capacitance		565	-	
$Q_{g(\text{tot})}$	Total Gate Charge at 10V	$V_{DD} = 50\text{V}, I_D = 20\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	165		nC
Q_{gs}	Gate to Source Gate Charge		33	-	
Q_{gd}	Gate to Drain "Miller" Charge		48	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	288	A
V_{SD}	Drain to Source Diode Forward Voltage	$I_S = 20\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
T_{rr}	Reverse Recovery Time	$I_F = 20\text{A}, di_F/dt = 100\text{A}/\mu\text{s}$	91	-	ns
Q_{rr}	Reverse Recovery Charge		166	-	nC

Typical Characteristics

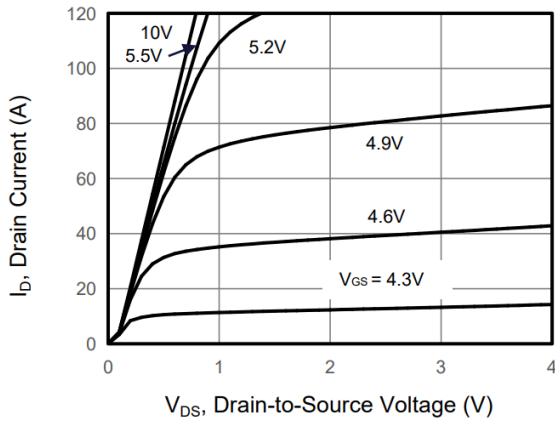


Figure 1. Output Characteristics

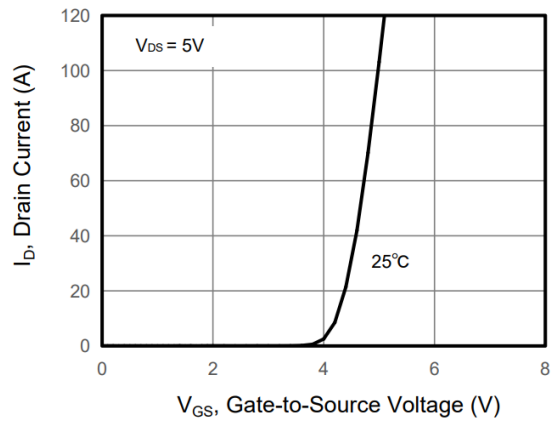


Figure 2. Transfer Characteristics

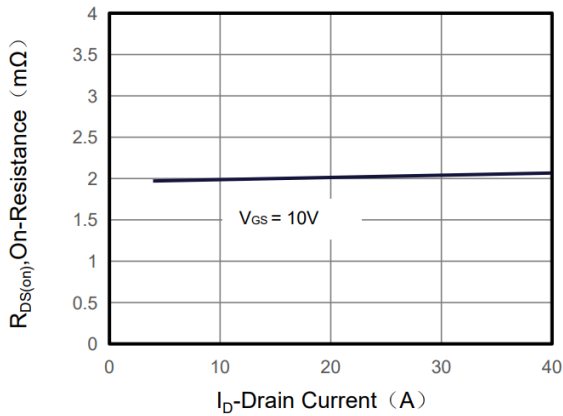


Figure 3. Drain to Source On-Resistance

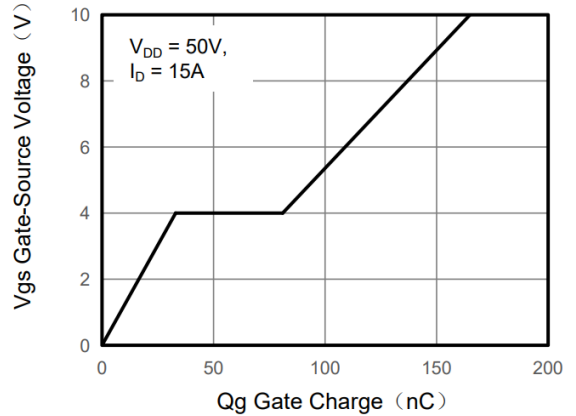


Figure 4. Gate Charge

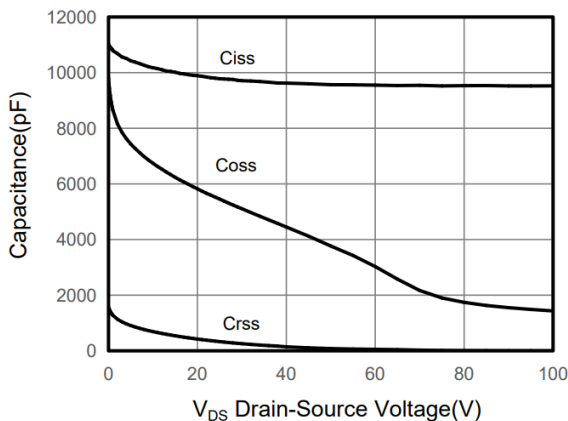


Figure 5. Capacitance Characteristics

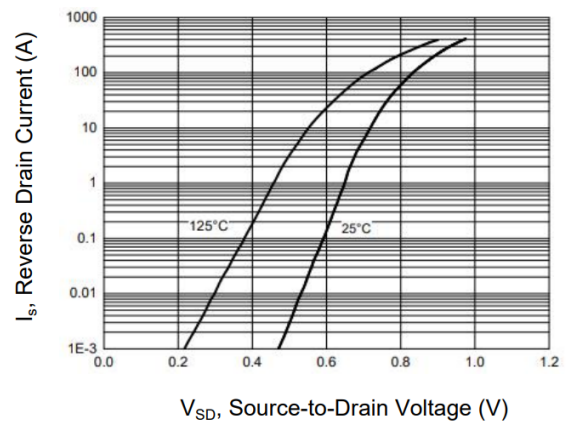


Figure 6. Source to Drain Diode Forward

Typical Characteristics

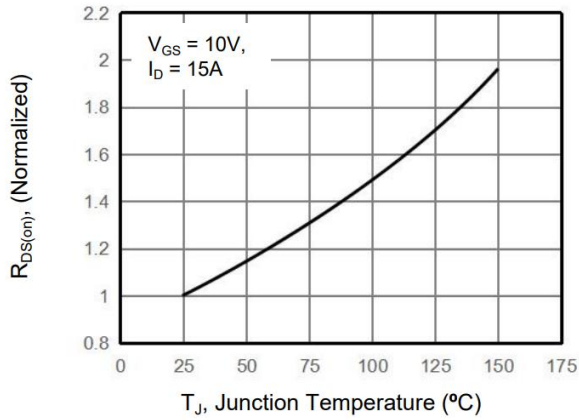


Figure 7. Drain to Source On-Resistance

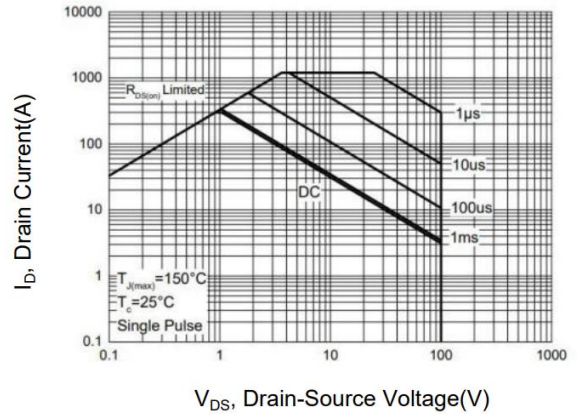


Figure 8. Safe Operation Area

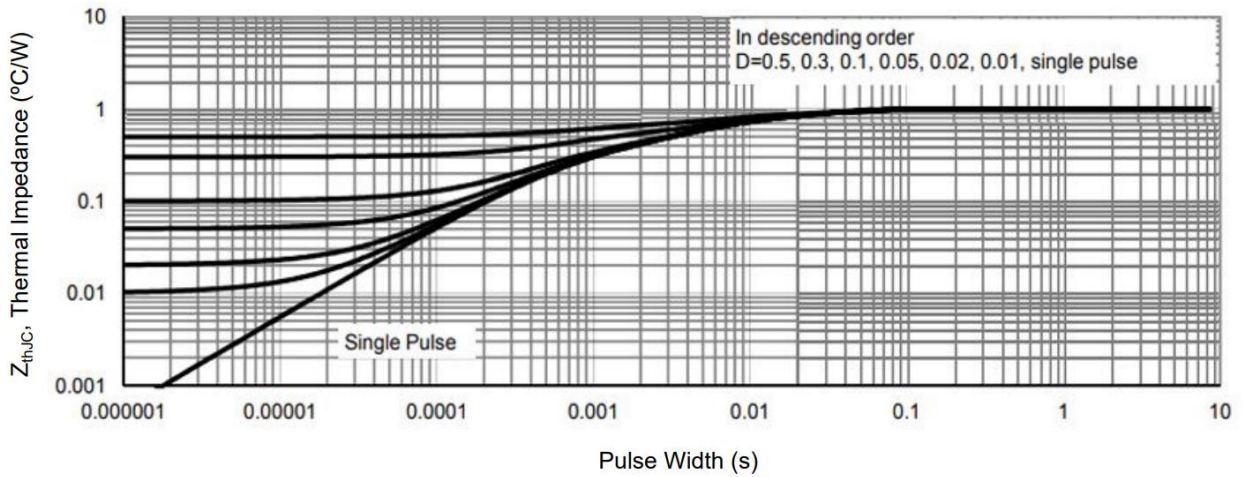
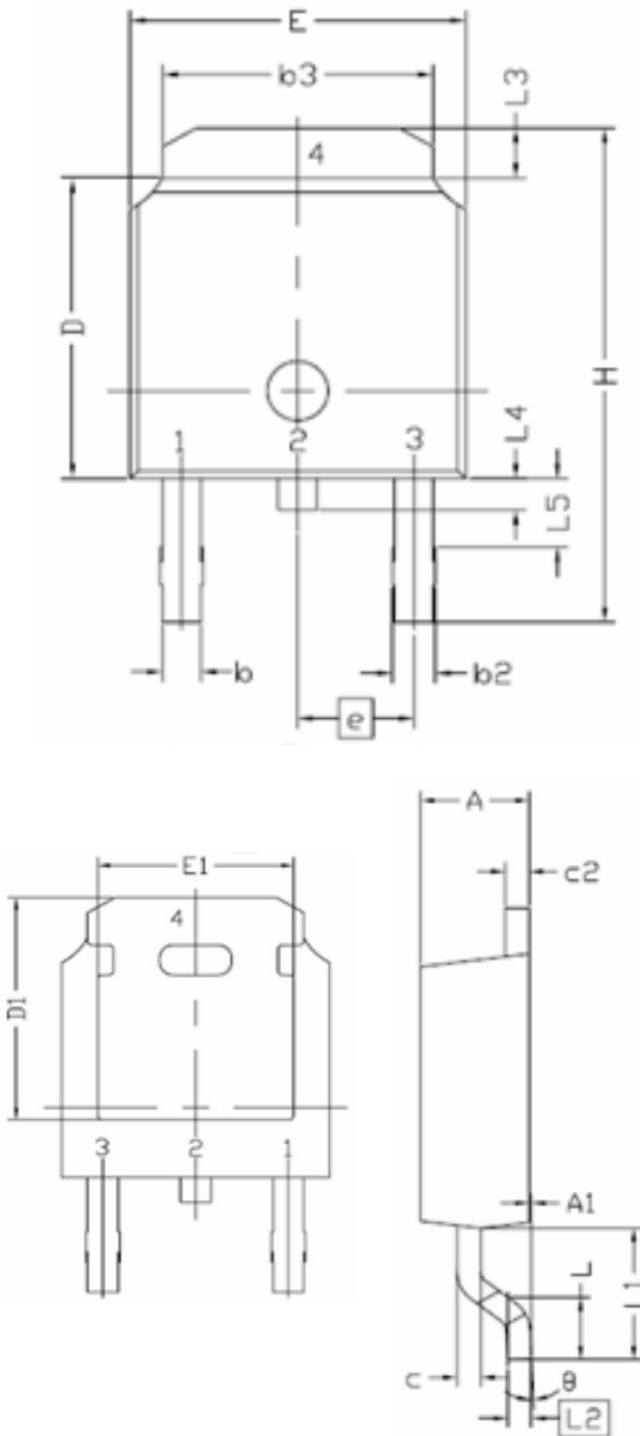


Figure 9. Normalized Maximum Transient Thermal Impedance

Package Outline

Unit : mm



SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
E	6.34	6.54	6.74
L	1.30	1.60	1.90
L1	2.60	2.90	3.20
L2	0.5 BSC		
L3	0.82	1.02	1.22
L4	0.80	1.00	1.20
L5	2.60	2.90	3.20
D	5.80	6.10	6.40
H	8.40	9.00	9.60
b	1.42	1.52	1.62
b2	2.35	2.55	2.75
b3	5.20	5.30	5.40
e	4.58 BSC		
A	2.08	2.28	2.48
A1	0.00	0.15	-
c	0.40	0.50	0.60
c2	0.40	0.50	0.60
D1	-	5.25	-
E1	-	4.8	-
θ	0.00°	10.00°	