

PM001N100TM



POWERCUBESEMI, INC.

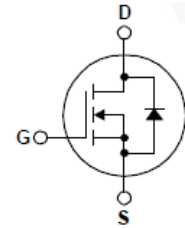
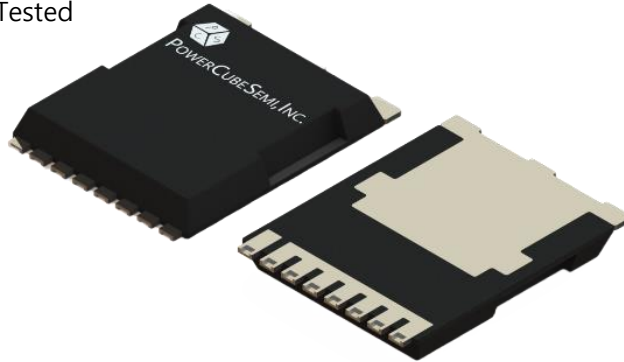
Potential · Convergence · Smart

100V 362A 1.6mΩ Single N channel Trench MOSFET with Normal Diode

Features

Si Single N channel Trench MOSFET

- Rated to 100V at 362Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 1.6\text{ m}\Omega$
- Typ $R_{DS(on)} = 1.3\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=165\text{ nC}$)
- 100% Avalanche Tested



PKG type : TOLL 8L

Description

PM001N100TM 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	$T_c=25^\circ\text{C}$	362	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	1448	A
V_{GS}	Gate-Source Voltage		± 20	V
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=50V, V_{GS}=10V, R_G=25\Omega, L=0.5mH$	625	mJ
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	357	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
PM001N100TM	PM001N100	TOLL 8L	REEL	-	2000

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	$V_{GS} = 10V, I_D = 15A$	-	1.3	1.6	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 5V, I_D = 15A$	-	73	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 50V, I_D = 15A, R_G = 4.5\Omega$	-	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
			Min	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		0.35	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input capacitance	$V_{DS} = 50\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	10037	-	pF
C_{oss}	Output capacitance		3782	-	
C_{rss}	Reverse transfer capacitance		585	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DD} = 50\text{V}, I_D = 15\text{A}$ $V_{GS(\text{on})} = 10\text{V}$	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		-	362	A
V_{SD}	Drain to source diode forward voltage	$I_F = 15\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
T_{rr}	Reverse recovery time	$I_F = 15\text{A}, V_{GS} = 0\text{V},$ $di_F/dt = 100\text{A}/\mu\text{s}$	91	-	ns
Q_{rr}	Reverse recovery charge		166	-	nC

Typical Characteristics

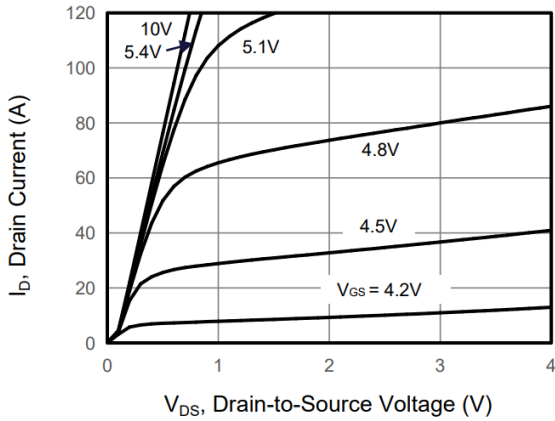


Figure 1. Output Characteristics

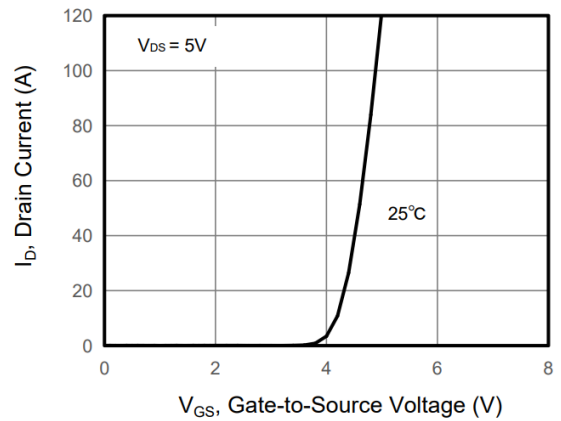


Figure 2. Transfer Characteristics

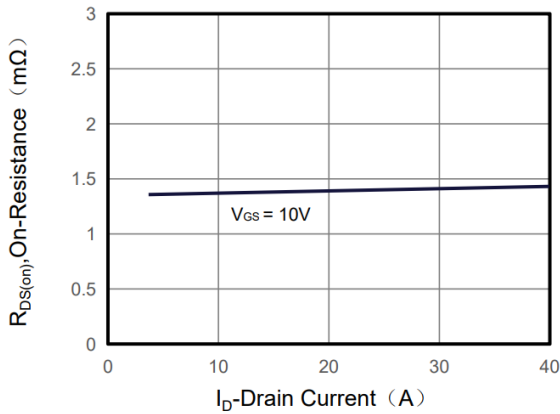


Figure 3. Drain to Source On-Resistance

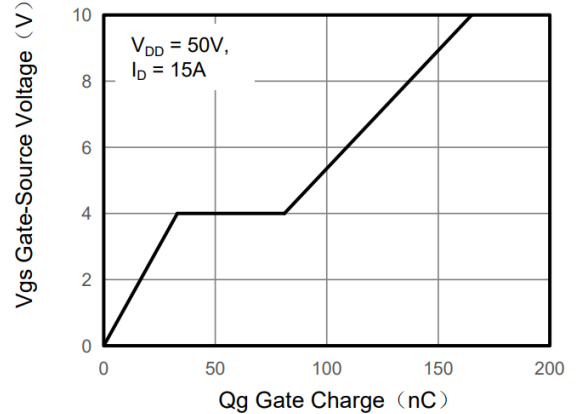


Figure 4. Gate Charge

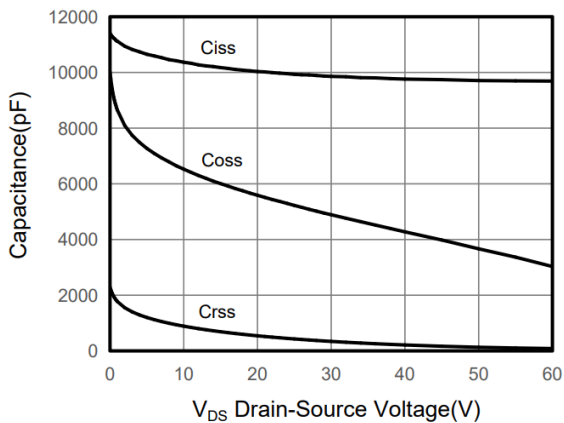


Figure 5. Capacitance Characteristics

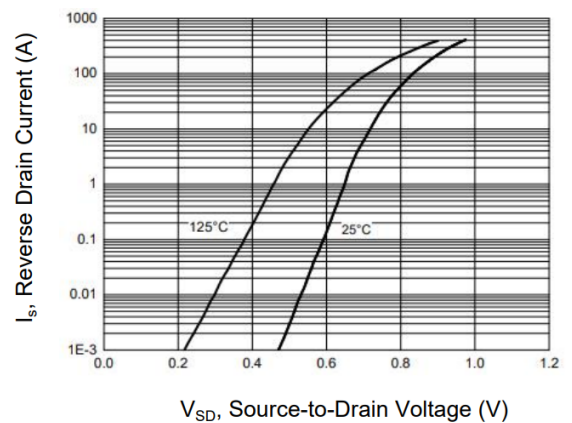


Figure 6. Source to Drain Diode Forward

Typical Characteristics

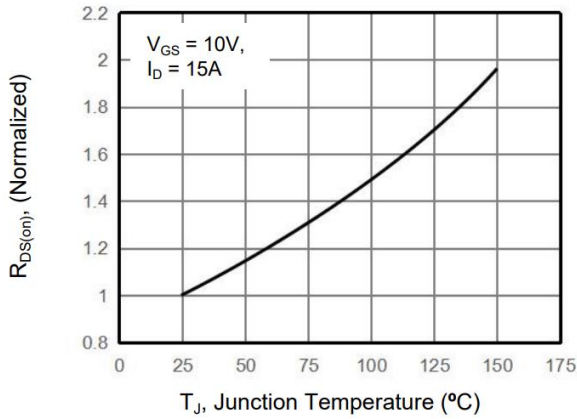


Figure 7. Drain to Source On-Resistance

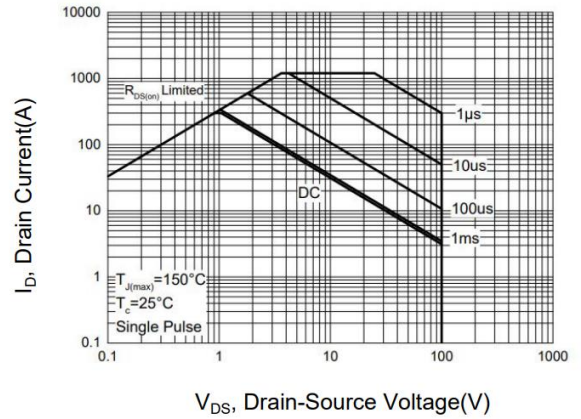


Figure 8. Safe Operation Area

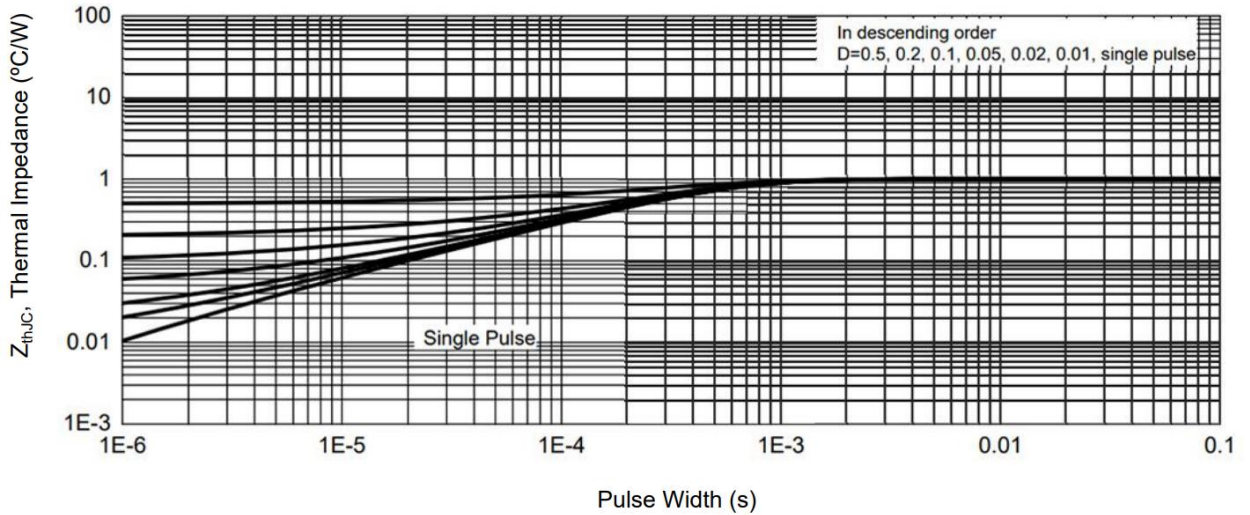
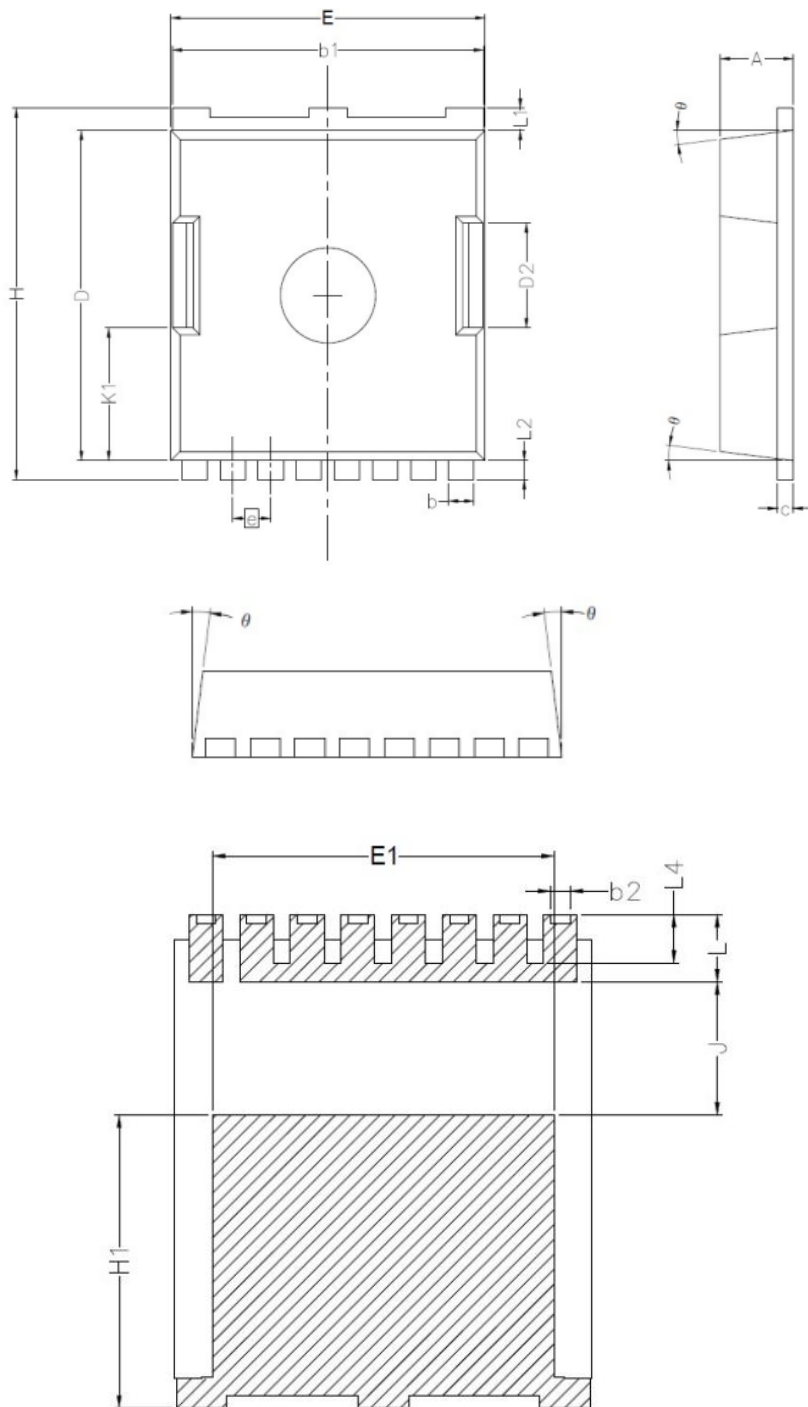


Figure 9. Normalized Maximum Transient Thermal Impedance

Package Outline

Unit : mm



SYMBOL	DIMENSION	
	MIN	MAX
A	2.20	2.40
b	0.70	0.90
b₁	9.70	9.90
b₂	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D₂	3.10	3.50
E	9.70	10.10
E₁	7.90	8.30
e	1.20 BSC	
H	11.48	11.88
H₁	6.75	7.15
N	8	
J	3.00	3.30
K₁	3.98	4.38
L	1.40	1.80
L₁	0.60	0.80
L₂	0.50	0.70
L₄	1.00	1.30
θ	4°	10°