PM001N040TG

40V 340A 0.95mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

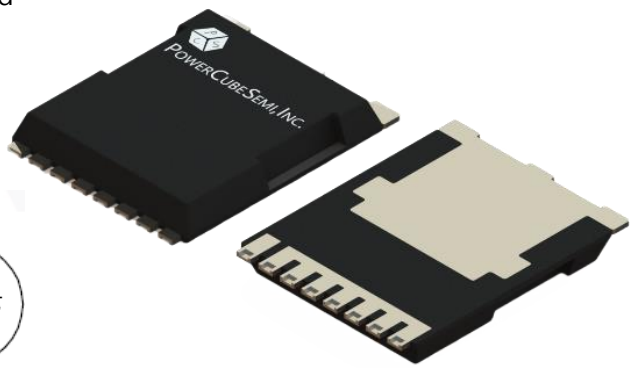
Features

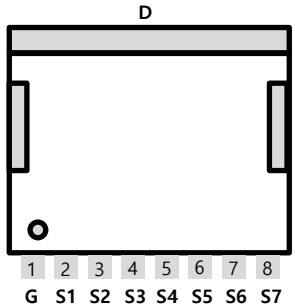
Si Single N-ch Enhancement Mode Power MOSFET

- Rated to 40V at 340Amps @T_J = 25℃
- Max $R_{DS(on)}$ = 0.95 mΩ
- Typ $R_{DS(on)}$ = 0.81 mΩ
- Gate Charge(Typ. Q_g=120 nC)
- 100% Avalanche Tested

Application

- Power switch
- DC/DC Converters





PKG type : TOLL 8L

Pin assignment

Description

The PM001N040TG 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=250μA	40	V
I_D	Drain Current	T_c=25℃	340	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	1360	A
V_{GS}	Gate-Source Voltage		±20	V
E_{AS}	Single Pulsed Avalanche Energy	R_G=25Ω, V_{GS}=10V, V_{DD}=40V, L=0.5mH	625	mJ
P_d	Power Dissipation	T_C=25℃	156	W
T_j	Operating Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55 to 150	℃

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM001N040TG	PM001N040	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 = 250μA, T_J = 25°C	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 40V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_D = 250μA	2.0	2.5	3.0	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	V_{GS} = 10V, I_D = 30A	-	0.81	0.95	mΩ
g_{FS}	Forward Transconductance	V_{DS} =5V, I_D = 30A	-	67	-	S
$t_{d(on)}$	Turn-on Delay time	V_{DD} = 20 V, I_D = 30A, R_G = 5Ω	-	19	-	ns
T_r	Turn-on Rise time		-	26	-	
$t_{d(off)}$	Turn-off Delay time		-	85	-	
T_f	Turn-off Fall time		-	45	-	

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Min	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		0.8	-	℃/W
C_{iss}	Input capacitance	V_{DS} = 20V, V_{GS} = 0V, f = 0.7㎒	7318	-	pF
C_{oss}	Output capacitance		2263	-	
C_{rss}	Reverse transfer capacitance		312	-	
$Q_{g(tot)}$	Total gate charge at 10V	V_{DD} = 20V, I_D = 30A $V_{GS(on)}$ = 10V	120	-	nC
Q_{gs}	Gate to source gate charge		39	-	
Q_{gd}	Gate to drain "Miller" charge		26	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current		-	340	A
V_{SD}	Drain to source diode forward voltage	I_F = 30A, V_{GS} = 0V	-	1.2	V
T_{rr}	Reverse recovery time	I_F = 30A, V_{GS} = 0V, dI_F/dt=500A/㎲	141	-	ns
Q_{rr}	Reverse recovery charge		333	-	nC

Typical Characteristics

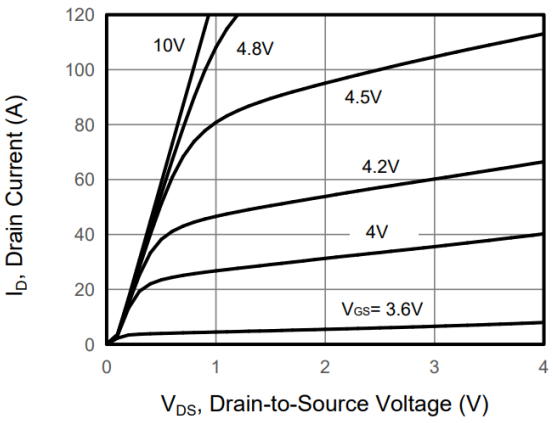


Figure 1. Output Characteristics

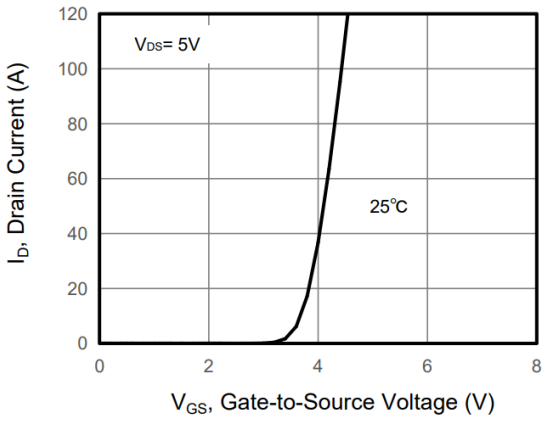


Figure 2. Transfer Characteristics

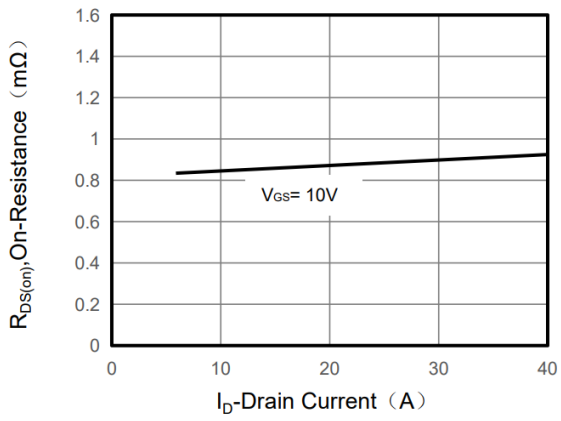


Figure 3. Drain to Source On-Resistance

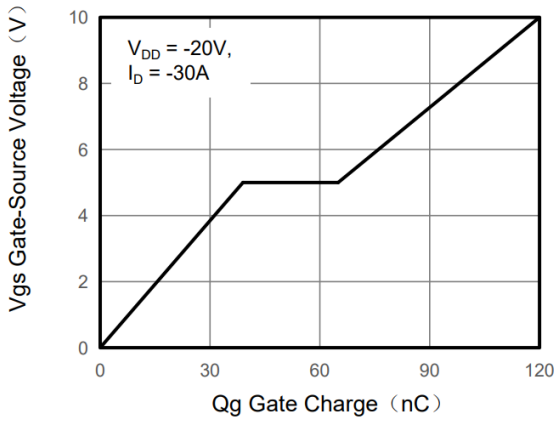


Figure 4. Gate Charge

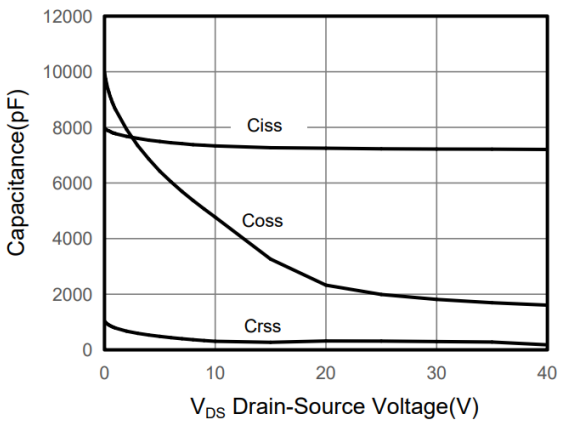


Figure 5. Capacitance Characteristics

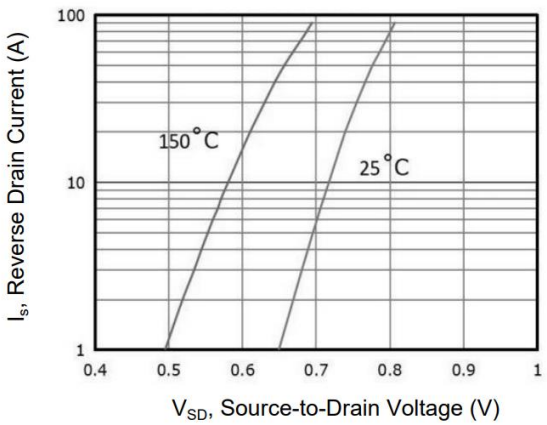


Figure 6. Source to Drain Diode Forward

Typical Characteristics

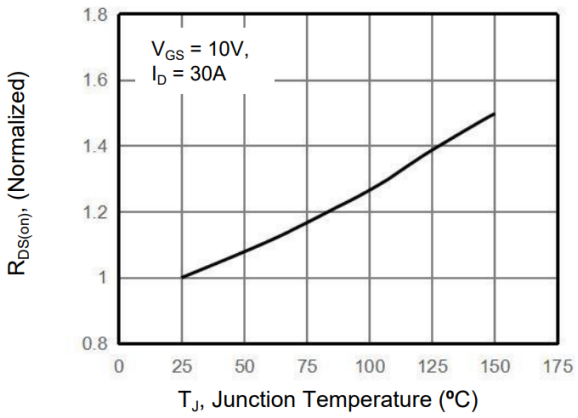


Figure 7. Drain to Source On-Resistance

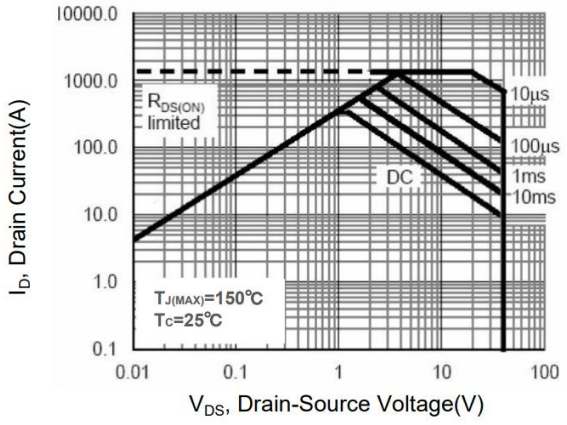


Figure 8. Safe Operation Area

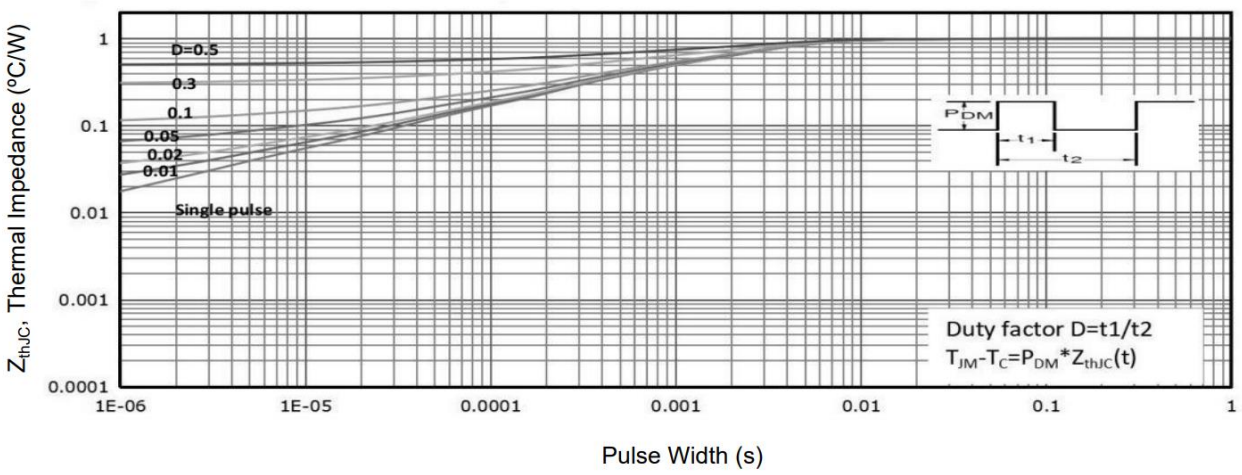
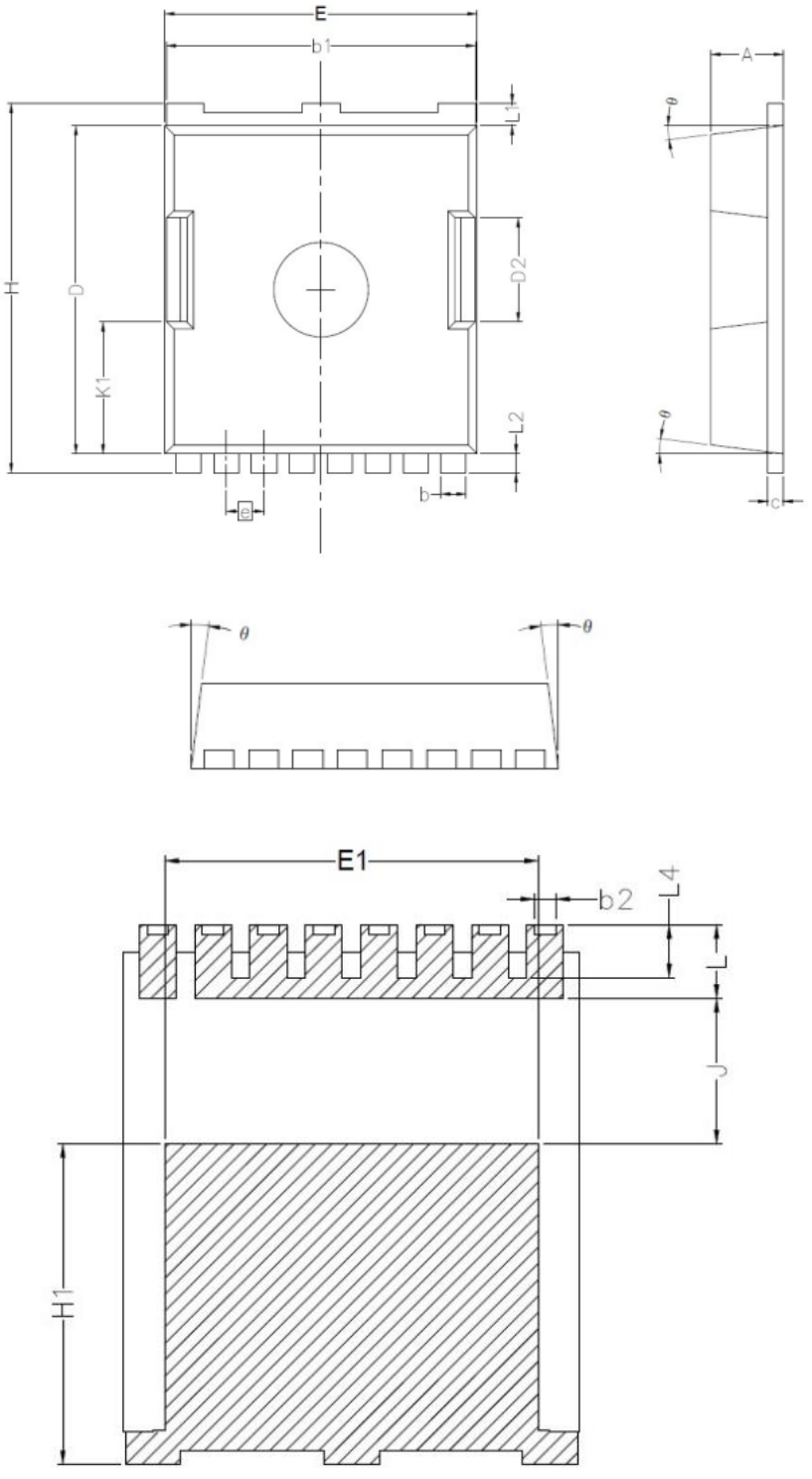


Figure 9. Normalized Maximum Transient Thermal Impedance

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°**