

PM053N100CG

100V 35A 53mΩ Si Single N-ch trench MOSFET with Normal Diode

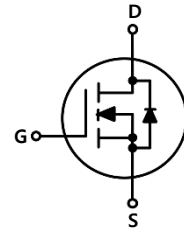
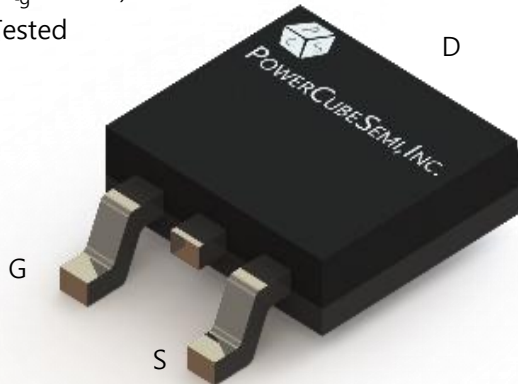
Features

Si N-Ch Enhancement Mode trench MOSFET

- Rated to 100V at 35Amps @ $T_J = 25^{\circ}\text{C}$
- Max $R_{DS(on)} = 53\text{ m}\Omega$
- Typ $R_{DS(on)} = 36\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=26\text{ nC}$)
- 100% Avalanche Tested

Application

- Power switch
- DC/DC converters



PKG type : TO-252(DPAK)

Description

The PM053N100CG 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	$T_C=25^{\circ}\text{C}$	35	A
I_{DM}	Drain current	Pulse width limited by junction temperature	140	A
V_{GS}	Gate-source voltage		± 20	V
E_{AS}	Single pulsed avalanche energy	$V_{GS}=10V, R_G=25\Omega$ $V_{DD}=50V, L=0.5mH$	30	mJ
P_d	Power dissipation	$T_C=25^{\circ}\text{C}$	80	W
T_J	Operating junction		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
PM053N100CG	PM053N100	TO-252	REEL	-	2500 ea

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	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.5	2.0	2.5	V
$R_{DS(ON)}$	Static drain-source on state resistance	$V_{GS} = 10V, I_D = 10A$	-	36	53	m Ω
g_{FS}	Forward transconductance	$V_{DS} = 5V, I_D = 10A$	-	18	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 50V, I_D = 10A, R_G = 1.6\Omega$	-	6	-	ns
t_r	Turn-on Rise time		-	2	-	
$t_{d(off)}$	Turn-off Delay time		-	18	-	
t_f	Turn-off Fall time		-	2	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		1.56	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input capacitance	$V_{DS} = 50\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	2161	-	pF
C_{oss}	Output capacitance		54	-	
C_{rss}	Reverse transfer capacitance		53	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DD} = 50\text{V}, I_D = 10\text{A}$ $V_{GS} = 10\text{V}$	26	-	nC
Q_{gs}	Gate to source gate charge		7.4	-	
Q_{gd}	Gate to drain "Miller" charge		3.8	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current	$T_c = 25^{\circ}\text{C}$	-	35	A
V_{SD}	Drain to source diode forward voltage	$I_{SD} = 10\text{A}, V_{GS} = 0\text{V}$	-	1.2	V
T_{rr}	Reverse recovery time	$I_F = 10\text{A}, V_{GS} = 0\text{V},$ $di_F/dt = 500\text{A}/\mu\text{s}$	26	-	ns
Q_{rr}	Reverse recovery charge		98	-	nC

Typical Characteristics

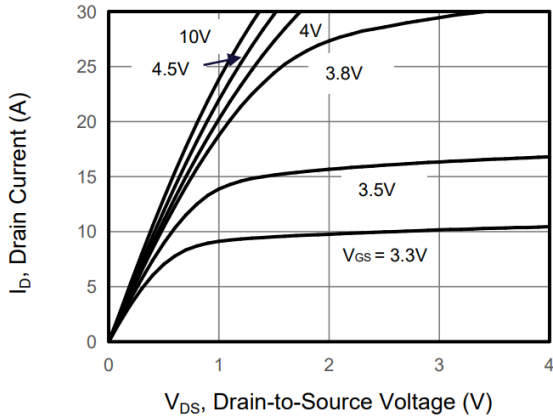


Figure 1. Output Characteristics

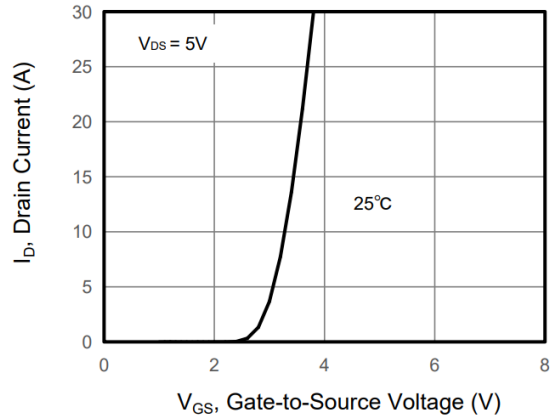


Figure 2. Transfer Characteristics

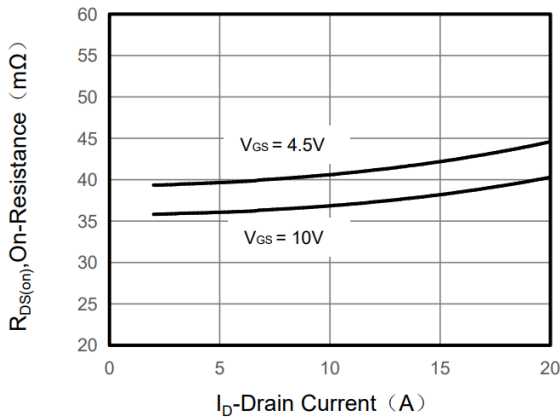


Figure 3. Drain to Source On-Resistance

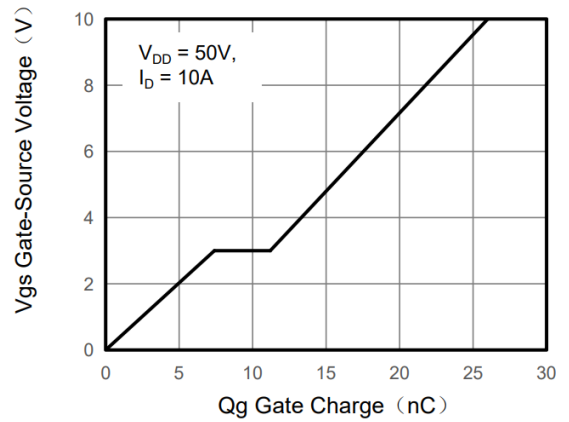


Figure 4. Gate Charge

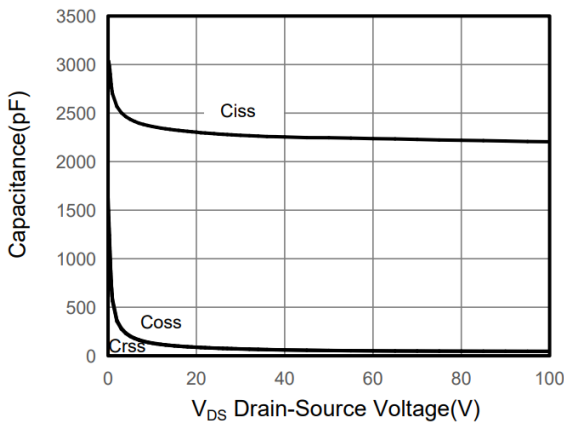


Figure 5. Capacitance Characteristics

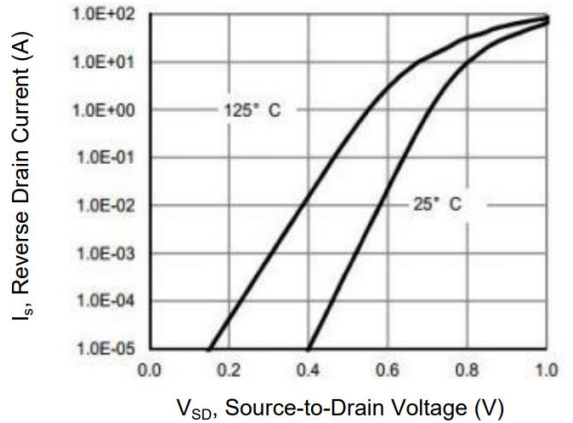


Figure 6. Source to Drain Diode Forward

Typical Characteristics

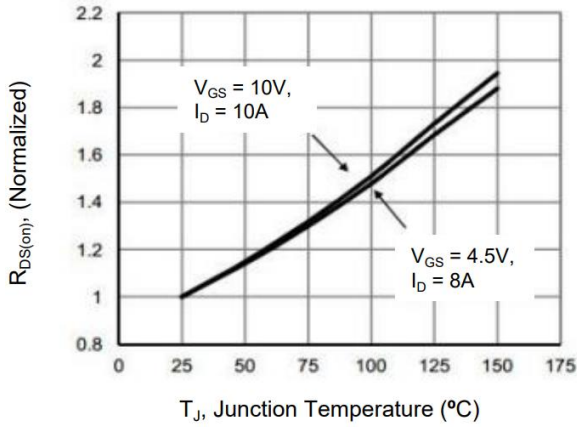


Figure 7. Drain to Source On-Resistance

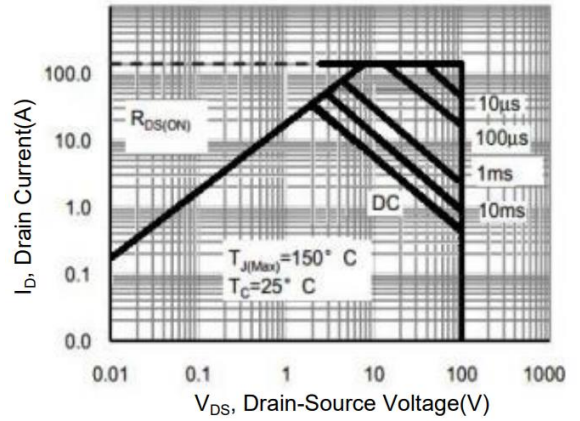


Figure 8. Safe Operation Area

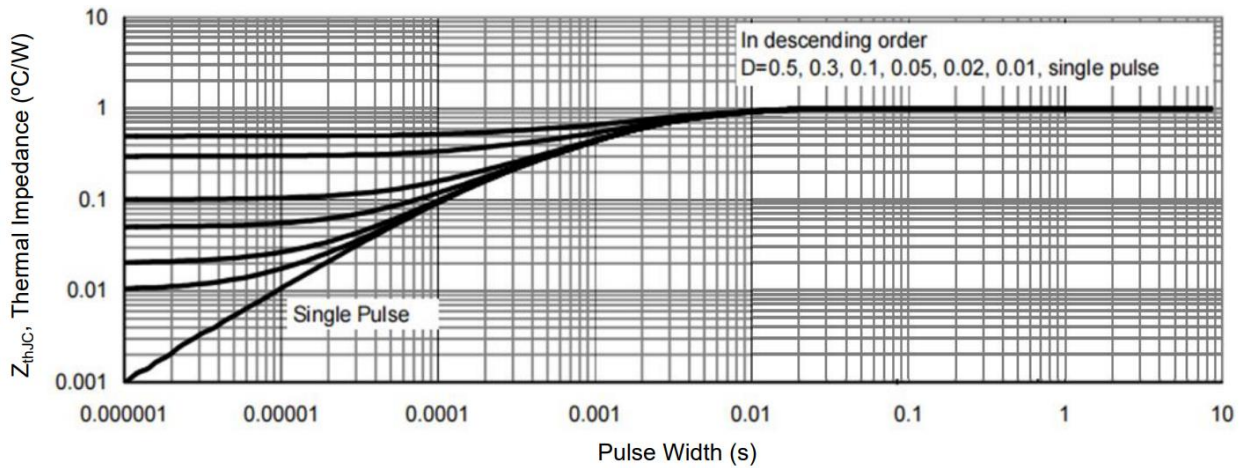
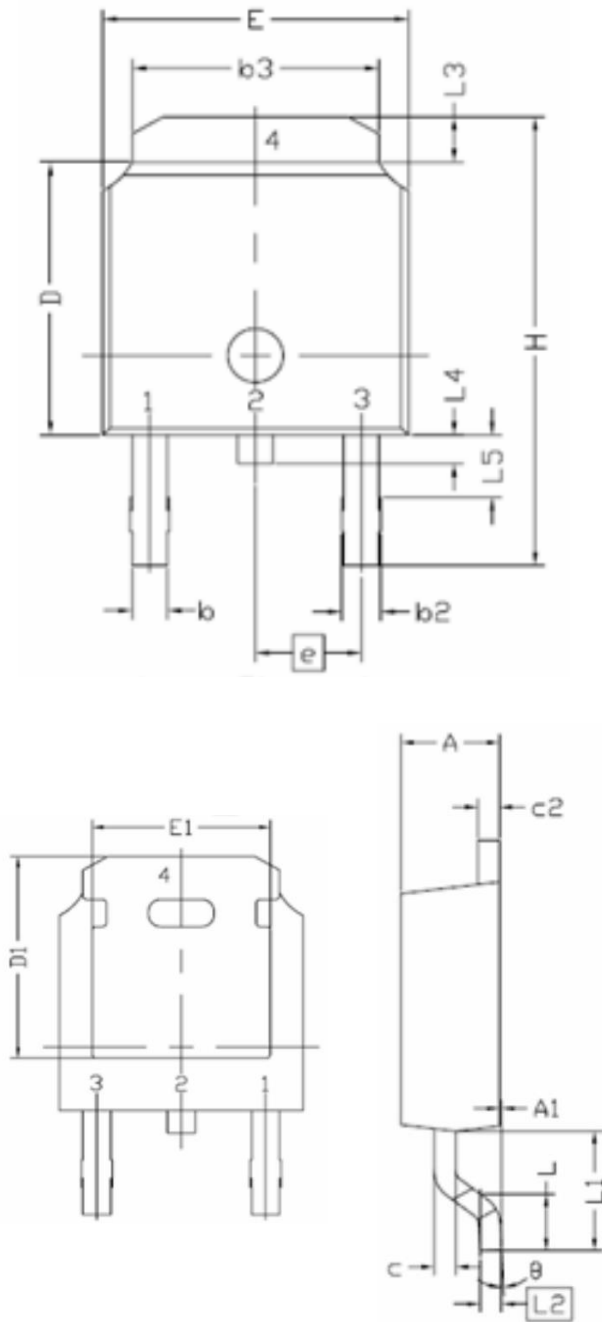


Figure 9. Normalized Maximum Transient Thermal Impedance

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°	