PTM2106E

-20V/-6A P-Channel Advanced Power MOSFET

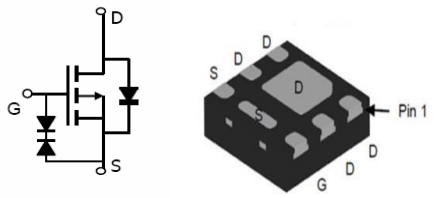
Features

- Improved dv/dt Capability, High Ruggedness·
- Maximum Junction Temperature Range (150°C)

BVDSS	-20	V
ID	-6	A
RDSON@VGS=-4.5V	27	mΩ
RDSON@VGS=-2.5V	35	mΩ
RDSON@VGS=-1.8V	50	mΩ

Applications

- Battery protection
- Load switch
- Power management



DFN2X2-6L

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTM2106E	DFN2X2-6L	PTM2106	7inch	3000PCS	120000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-20	V
V_{GS}	Gate-Source Voltage		±10	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	TC =25°C	-6	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested (Sillicon Limit) (Note1)	TC =25°C	-15	A
I_D	Continuous Drain current	TC =25°C	-6	A
P_D	Maximum Power Dissipation	TA =25°C	1.3	W
$R_{\theta JA}$	Thermal Resistance Junction−to−Ambient (Note2)		96	°C/W

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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain- Source Breakdown Voltage	VGS=0V ID=-250μA	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	VDS=-20V,VGS=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±10V,VDS=0V	--	--	±10	μA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-0.4	-0.62	-1	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note3)	VGS=-4.5V, ID=-4A	--	27	35	mΩ
		VGS=-2.5V, ID=-3A	--	35	50	mΩ
		VGS=-1.8V, ID=-1A	--	50	100	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS= -10V, VGS=0V, F=1MHz	--	902	--	pF
C_{oss}	Output Capacitance		--	156	--	pF
C_{rss}	Reverse Transfer Capacitance		--	114	--	pF
Q_g	Total Gate Charge	VDS= -10V, ID= -4A, VGS= -4.5V	--	9	--	nC
Q_{gs}	Gate-Source Charge		--	1.2	--	nC
Q_{gd}	Gate-Drain Charge		--	1	--	nC
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDD=-10V, ID=-4A, RG=2.5Ω, VGS=-4.5V	--	7	--	nS
t_r	Turn-on Rise Time		--	15	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	35	--	nS
t_f	Turn-off Fall Time		--	18	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage (Note3)	IS=-4A,VGS=0V	--	-0.8	-1.2	V

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

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Typical Characteristics

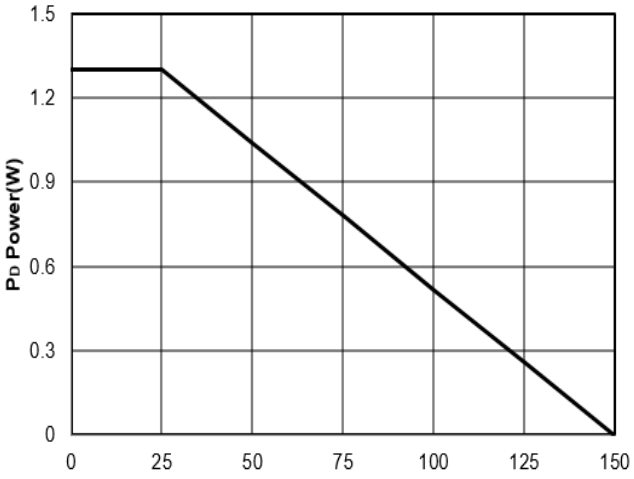

Figure1：T_J Junction Temperature（°C）

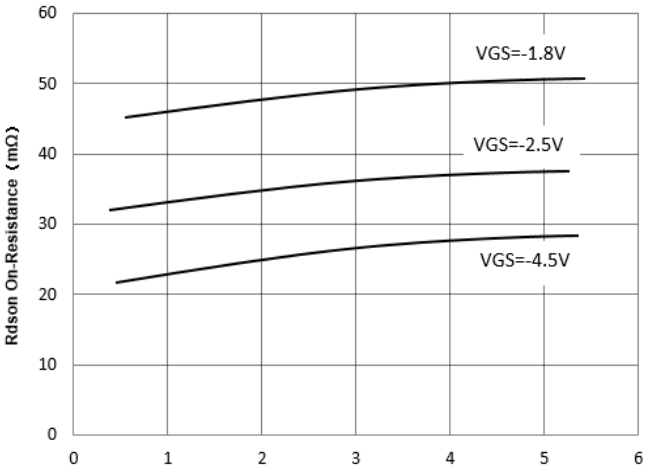

Figure2：$-I_D$ Drain Current（A）

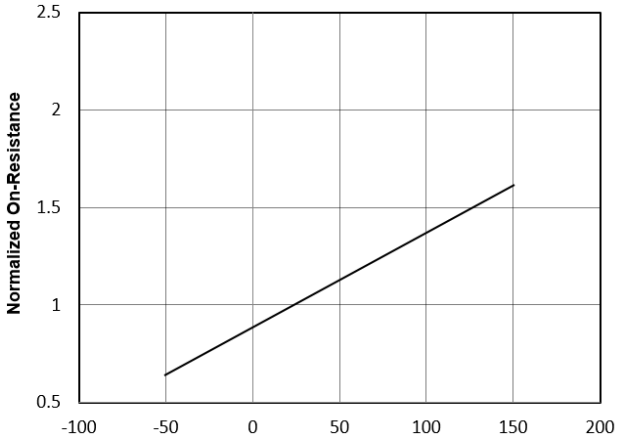

Figure3：T_J Junction Temperature（°C）

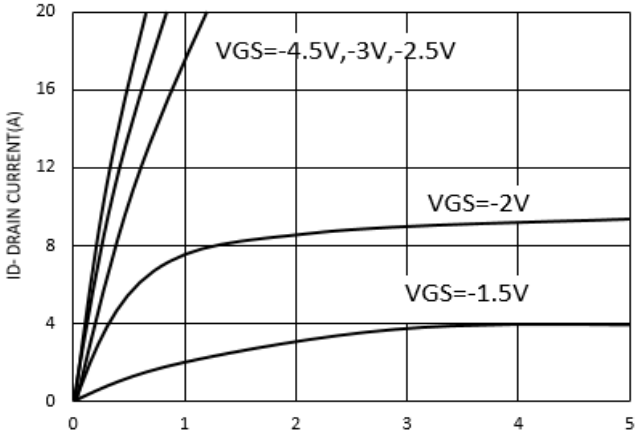

Figure4：$-V_{DS}$ Drain-Source Voltage（V）

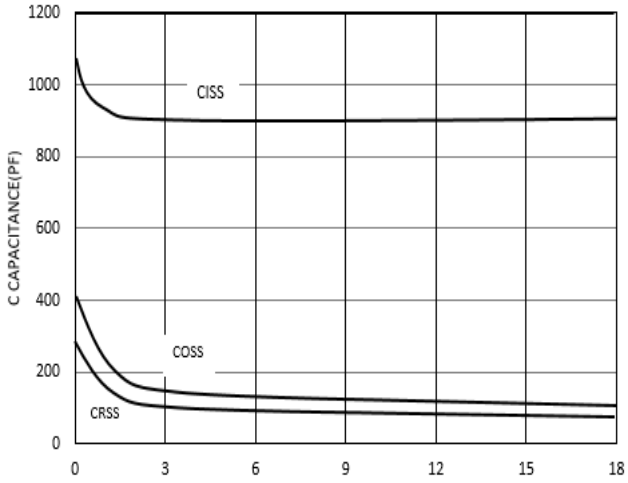

Figure5：$-V_{DS}$ Drain-Source Voltage（V）

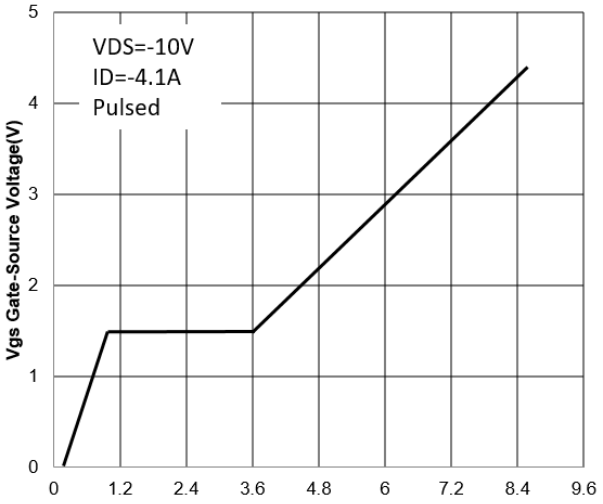

Figure6：Qg Gate Charge（nC）

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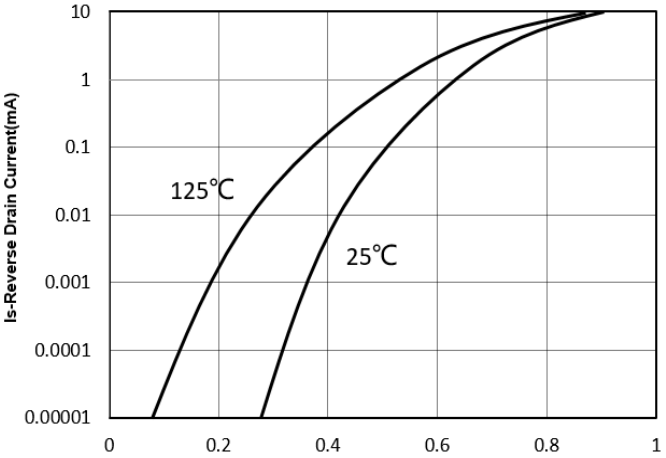

Figure7：-Vsd Source-Drain Voltage（V）

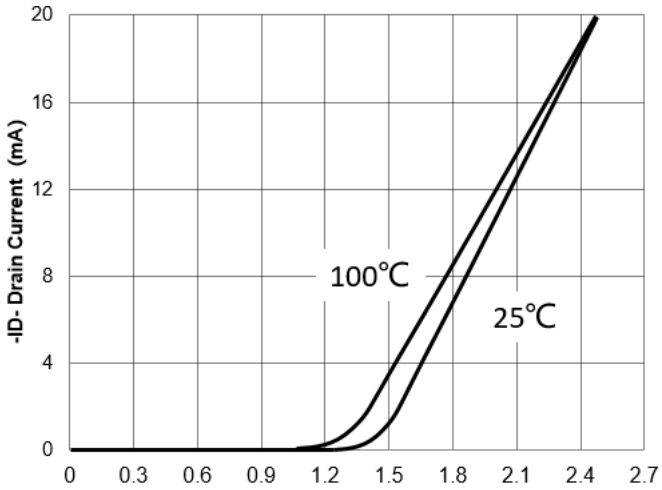

Figure8：-Vgs Gate-Source Voltage（V）

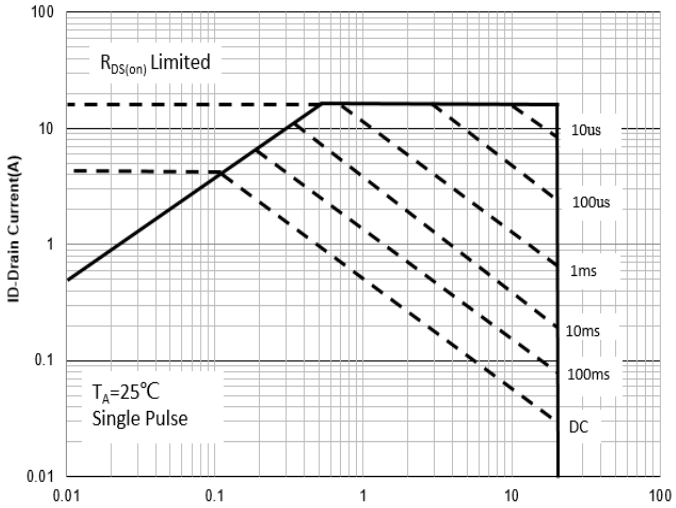

Figure9：-VDS Drain -Source Voltage（V）

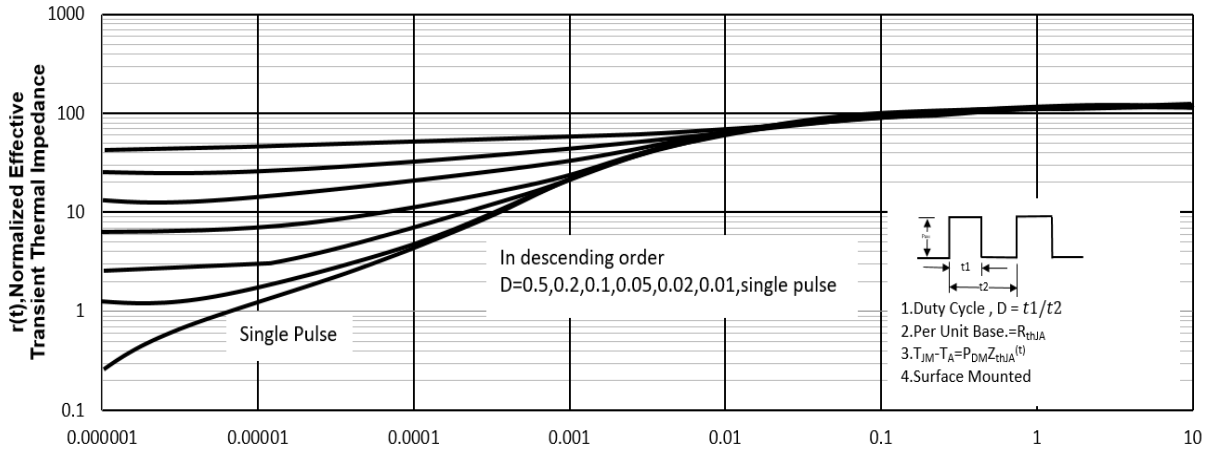

Figure10：Square Wave Pulse Duration（sec）

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Test Circuit and Waveform:

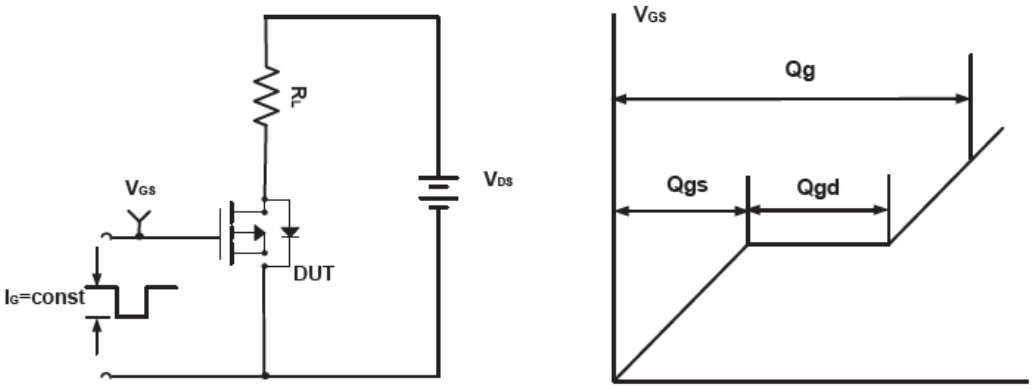

Figure A Gate Charge Test Circuit &Waveforms

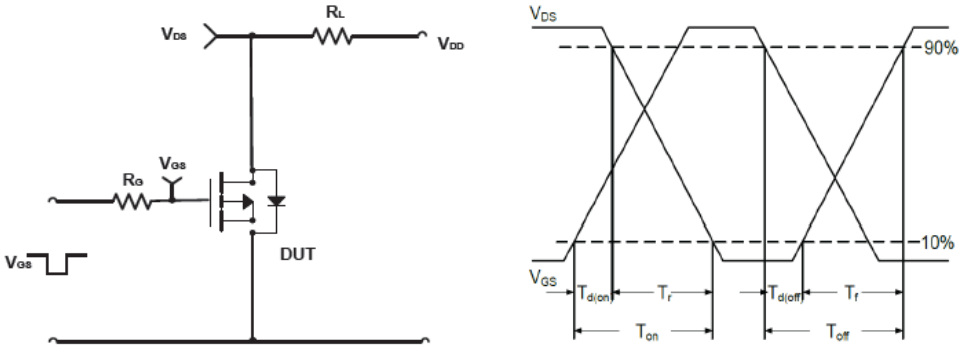

Figure B Switching Test Circuit & Waveforms

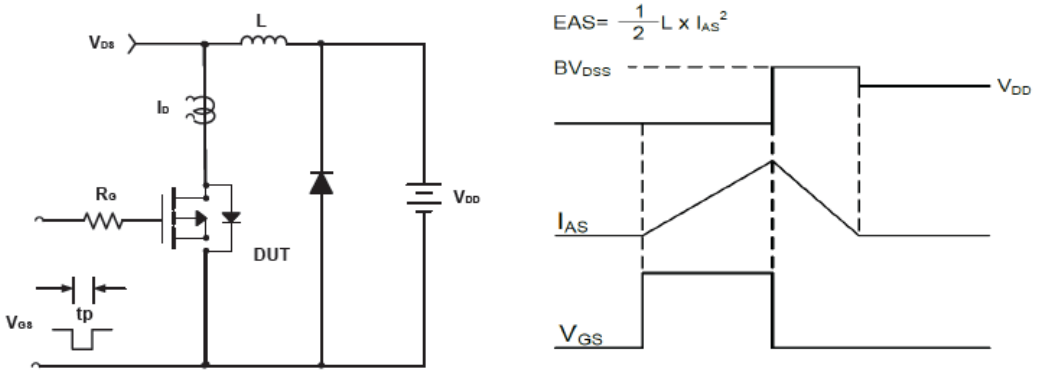

Figure C Unclamped Inductive Switching Circuit & Waveforms

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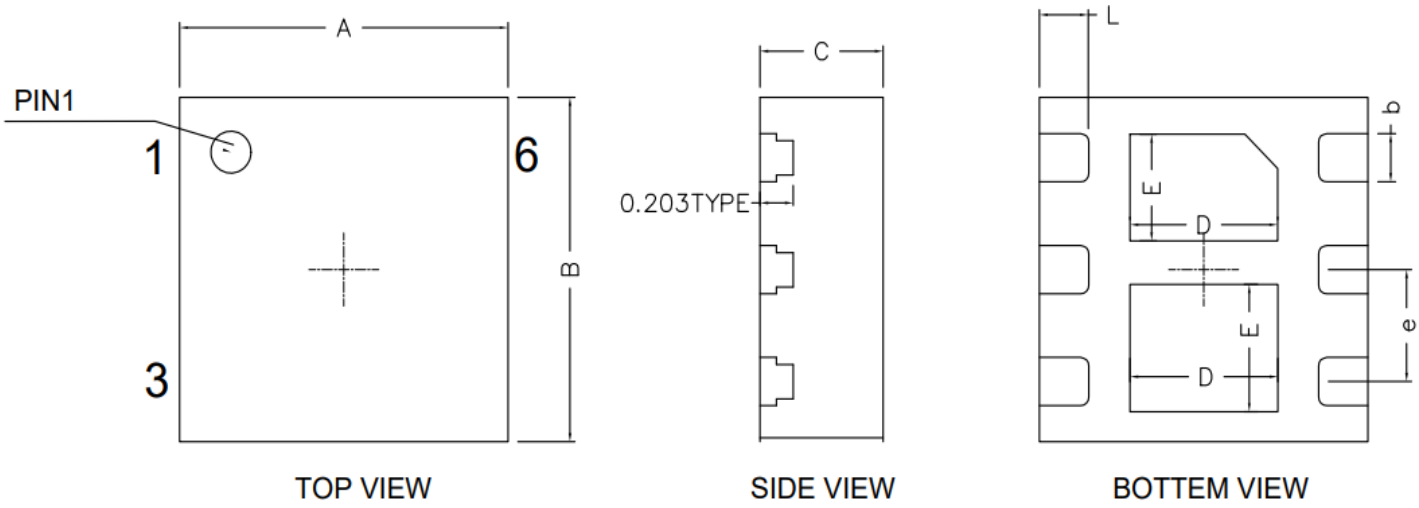
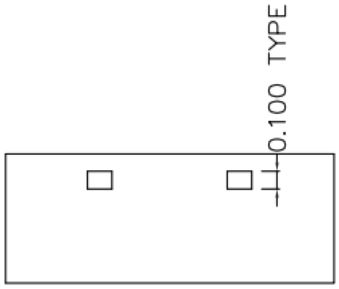
DFN2X2-6L Package Outline Dimensions (Units: mm)



TOP VIEW SIDE VIEW BOTTEM VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE IS mm)

	MIN	NORMAL	MAX
A	1.900	2.000	2.100
B	1.900	2.000	2.100
C	0.700	0.750	0.800
D	0.850	0.900	0.950
E	0.690	0.740	0.790
L	0.250	0.300	0.350
b	0.230	0.280	0.330
e		0.650 TYPE	