PTL4105

-40V/-5.3A P-Channel Enhancement Mode Power MOSFET

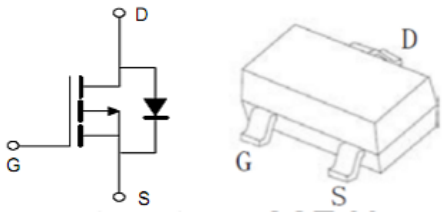
Features

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

BVDSS	-40	V
ID	-5.3	A
RDSON@VGS=-10V	66	mΩ
RDSON@VGS=-4.5V	109	mΩ

Applications

- Battery applications
- Load switch



SOT-23-3L

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTL4105	SOT-23-3L	4105	7inch	3000PCS	180000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-40	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	TA =25°C	-5.3	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested (Sillicon Limit) (Note1)	TA =25°C	-20	A
I_D	Continuous Drain current	TA =25°C	-5.3	A
P_D	Maximum Power Dissipation	TA =25°C	2	W
$R_{\theta JA}$	Thermal Resistance Junction−to−Ambient (Note2)		62.5	°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	-40	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	VDS=-40V,VGS=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1	--	-3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note3)	VGS=-10V, ID=-5A	--	66	85	mΩ
		VGS=-4.5V, ID=-4A	--	109	120	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS= -20V, VGS=0V, F=1MHz	--	650	--	pF
C_{oss}	Output Capacitance		--	90	--	pF
C_{rss}	Reverse Transfer Capacitance		--	70	--	pF
Q_g	Total Gate Charge	VDS= -20V, ID= -5A, VGS= -10V	--	14	--	nC
Q_{gs}	Gate-Source Charge		--	2.9	--	nC
Q_{gd}	Gate-Drain Charge		--	3.8	--	nC
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDD=-20V, RL=2Ω, RG=3Ω, VGS=-10V	--	9	--	nS
t_r	Turn-on Rise Time		--	8	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	28	--	nS
t_f	Turn-off Fall Time		--	10	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage (Note3)	IS=-2.5A,VGS=0V	--	--	-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

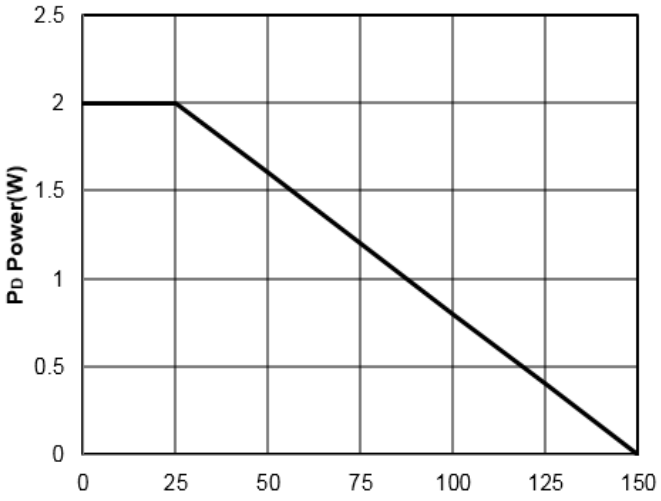

Figure1：TJ Junction Temperature（°C）

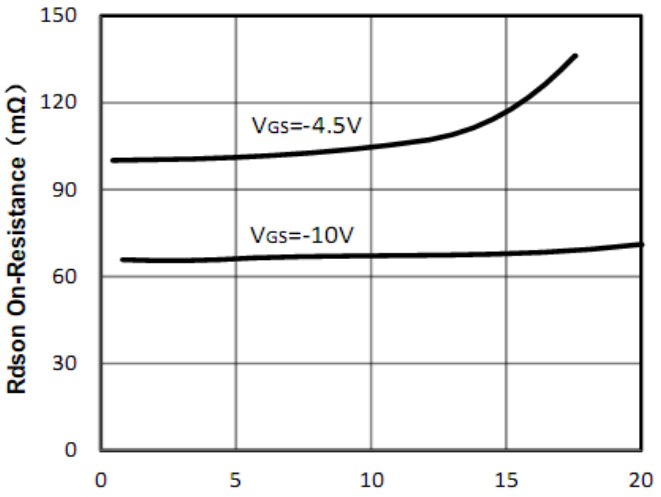

Figure2：-ID Drain Current（A）

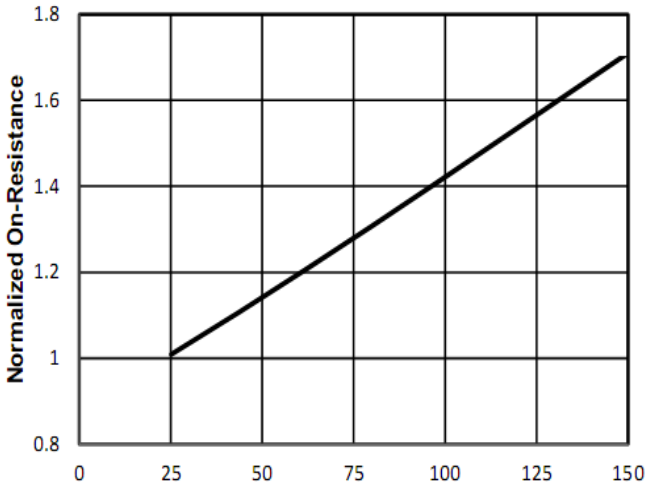

Figure3：TJ Junction Temperature（°C）

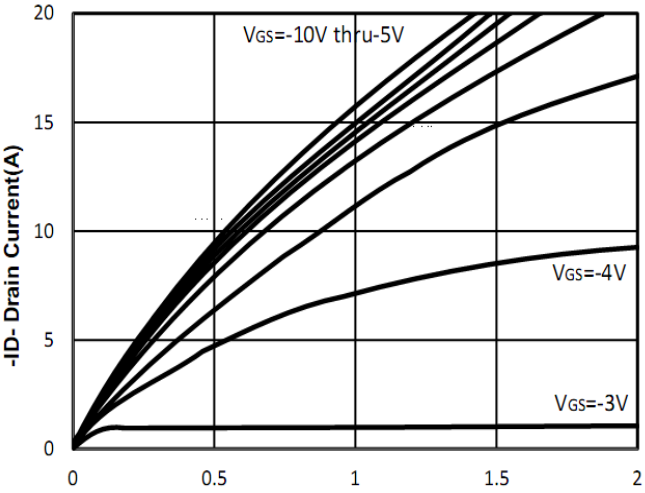

Figure4：-VDS Drain-Source Voltage（V）

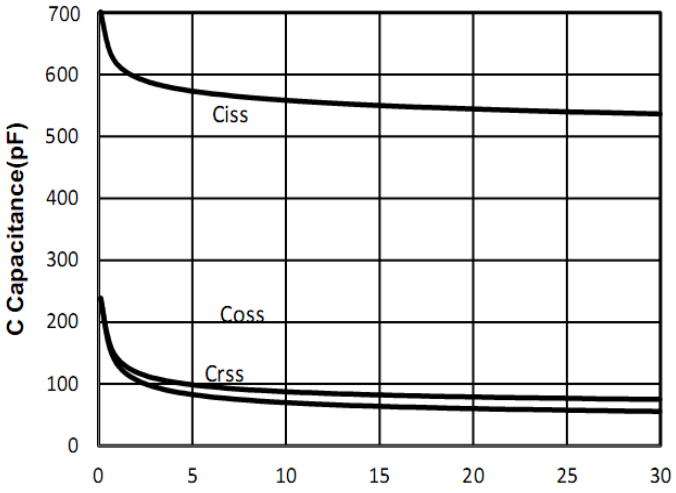

Figure5：-VDS Drain-Source Voltage（V）

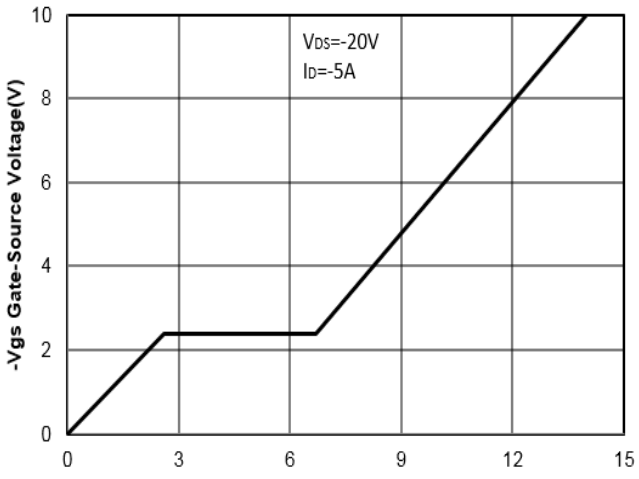

Figure6：Qg Gate Charge（nC）

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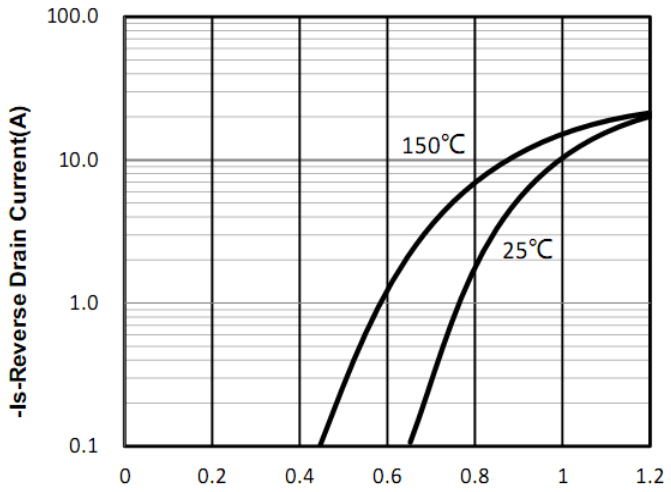

Figure7：-Vsd Source-Drain Voltage（V）

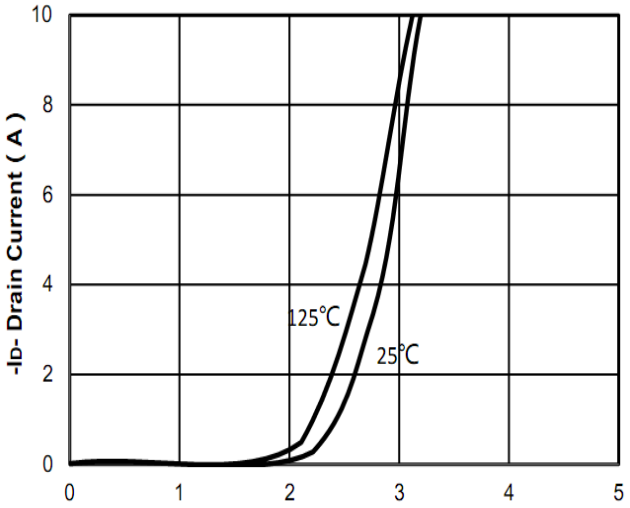

Figure8：-Vgs Gate-Source Voltage（V）

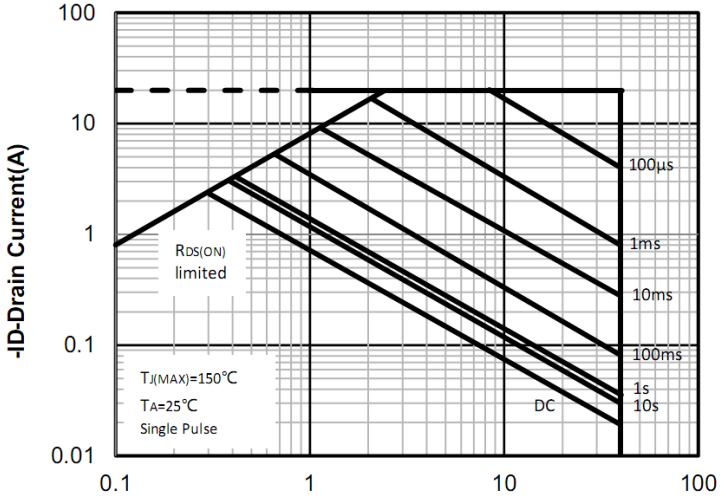

Figure9：-Vds Drain -Source Voltage（V）

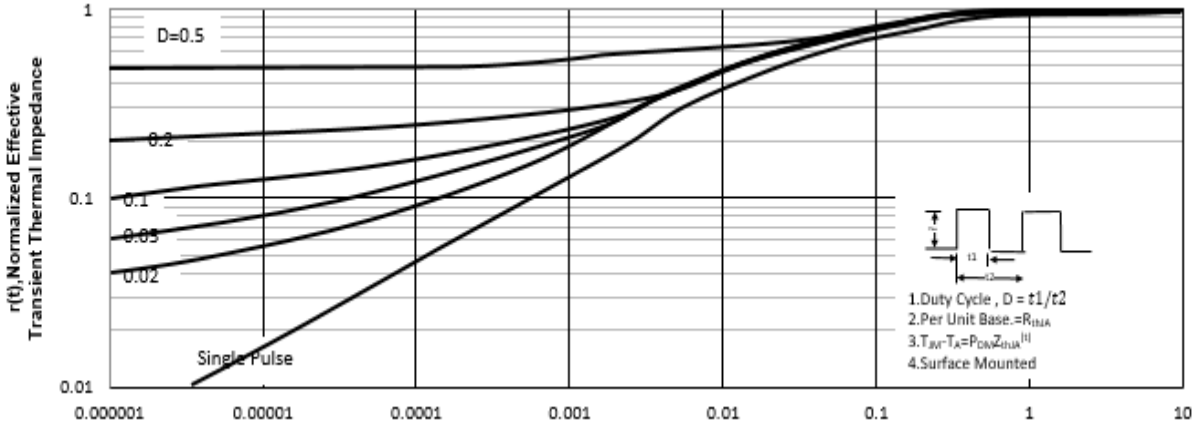

Figure10：Square Wave Pulse Duration（sec）

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Test Circuit and Waveform:

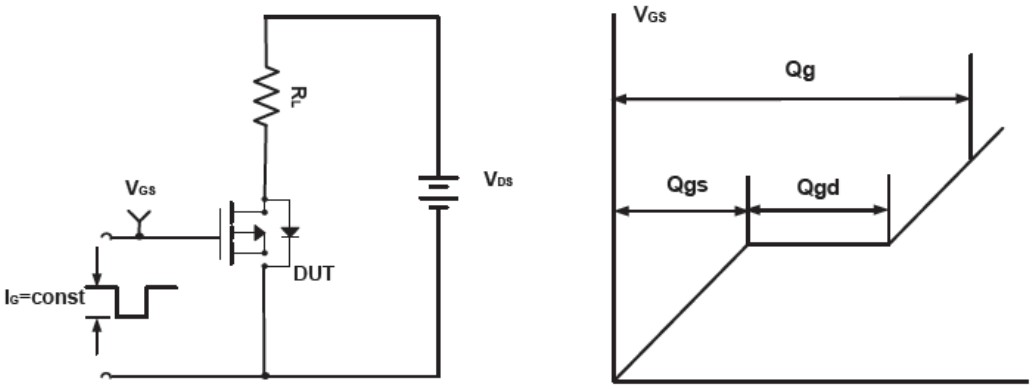

Figure A Gate Charge Test Circuit &Waveforms

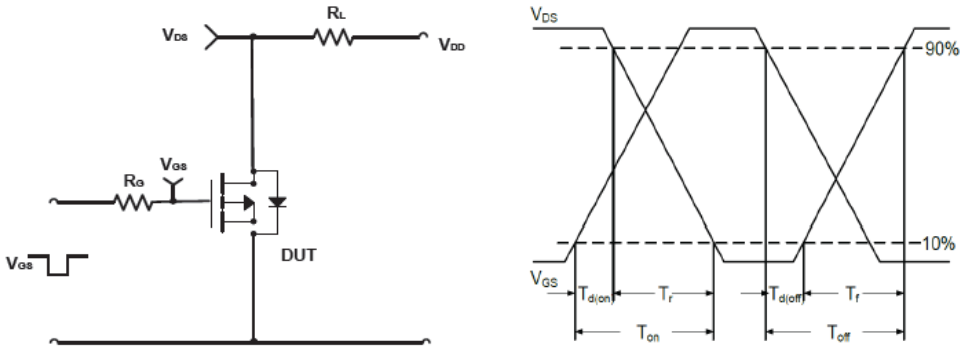

Figure B Switching Test Circuit & Waveforms

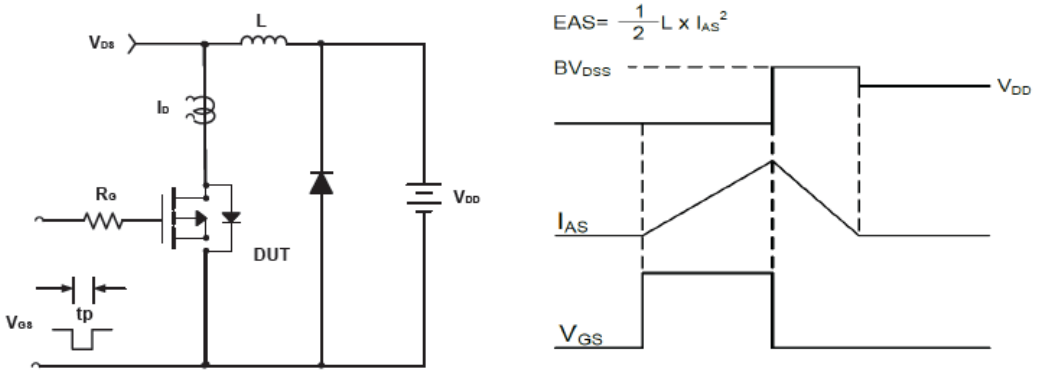

Figure C Unclamped Inductive Switching Circuit & Waveforms

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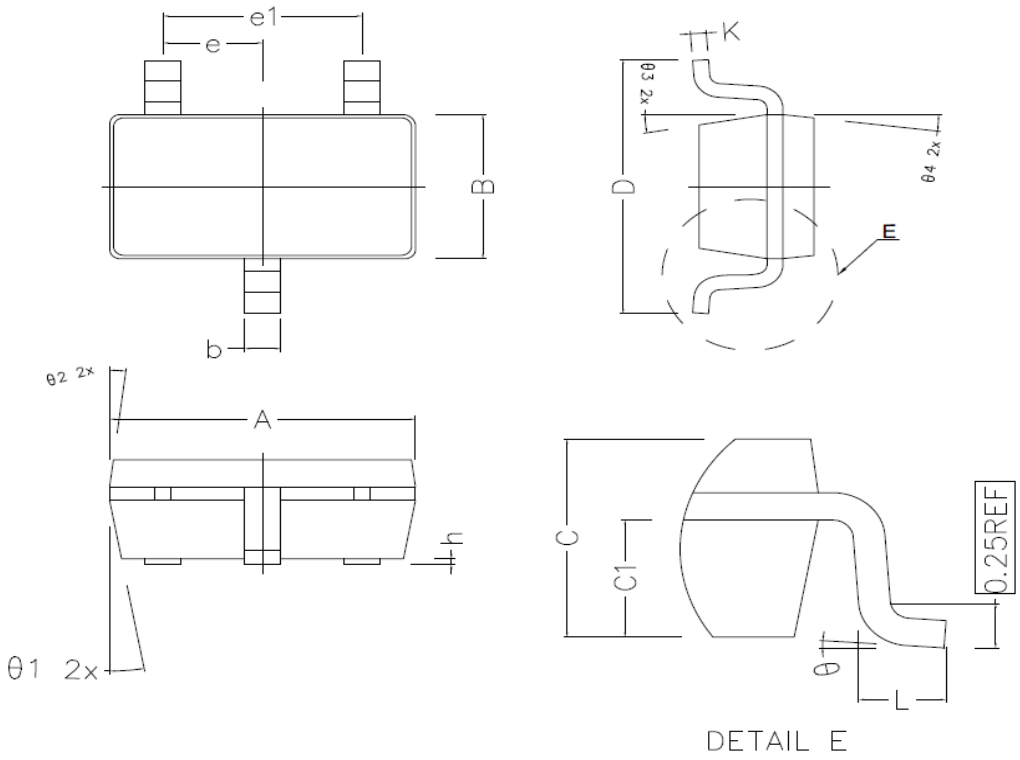
SOT-23-3L Package Outline Dimensions (Units: mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.820	2.920	3.020
B	1.500	1.600	1.700
C	1.050	1.100	1.150
C1	0.600	0.650	0.700
D	2.650	2.800	2.950
L	0.300	0.450	0.600
b	0.280	0.350	0.420
h	0.020	0.050	0.100
K	0.120	—	0.230
e	0.950TYPE		
e1	1.900TYPE		
θ_1	10° TYPE		
θ_2	7° TYPE		
θ_3	10° TYPE		
θ_4	7° TYPE		
θ	0° ~ 8°		