PTQ20P03

-30V/-20A P-Channel Junction Power MOSFET

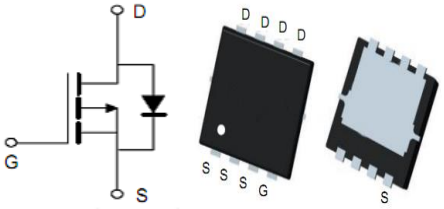
Features

- New technology for high voltage device·
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements

BVDSS	-30	V
ID	-20	A
RDSON@VGS=-10V	18	mΩ
RDSON@VGS=-4.5V	25	mΩ

Applications

- High Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as Aeromodelling, Power bank, Brushless motor, Main board , and Others



PDFN3333

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTQ20P03	PDFN3333	PTQ20P03	13inch	5000PCS	50000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-30	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	TC =25°C	-20	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested (Sillicon Limit) (Note1)	TC =25°C	-60	A
I_D	Continuous Drain current	TC =25°C	-20	A
P_D	Maximum Power Dissipation	TA =25°C	2.5	W
$R_{\theta Ja}$	Thermal Resistance Junction−to−Ambient (Note2)		50	°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	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	VDS=-24V,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	-1.4	-3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note3)	VGS=-10V, ID=-10.5A	--	18	22	mΩ
		VGS=-4.5V, ID=-6A	--	25	33	
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS=-15V, VGS=0V, F=1MHz	--	1500	--	pF
C_{oss}	Output Capacitance		--	327	--	pF
C_{rss}	Reverse Transfer Capacitance		--	276	--	pF
Q_g	Total Gate Charge	VDS=-15V, ID=-9.1A, VGS=10V	--	30	--	nC
Q_{gs}	Gate-Source Charge		--	5.3	--	nC
Q_{gd}	Gate-Drain Charge		--	7.52	--	nC
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDD=-15V, ID=-1A, V_{GEN}=-10V RG=6Ω	--	14	--	nS
t_r	Turn-on Rise Time		--	16	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	95	--	nS
t_f	Turn-off Fall Time		--	65	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	IS=-10A,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. Guranteed by design, not subject to production testing.

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Typical Characteristics

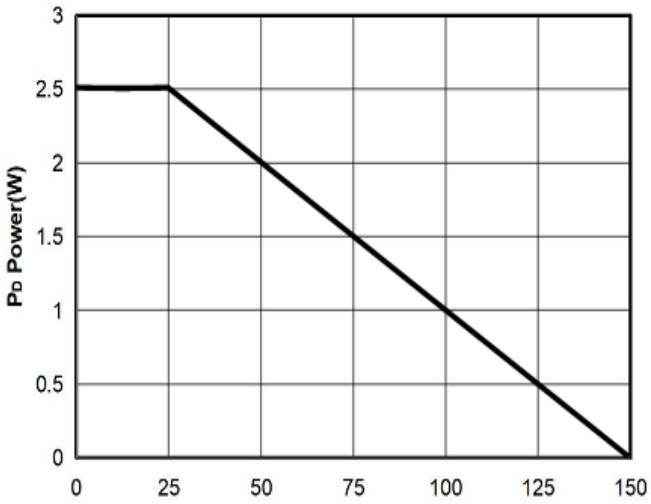

Figure1：T_J Junction Temperature（°C）

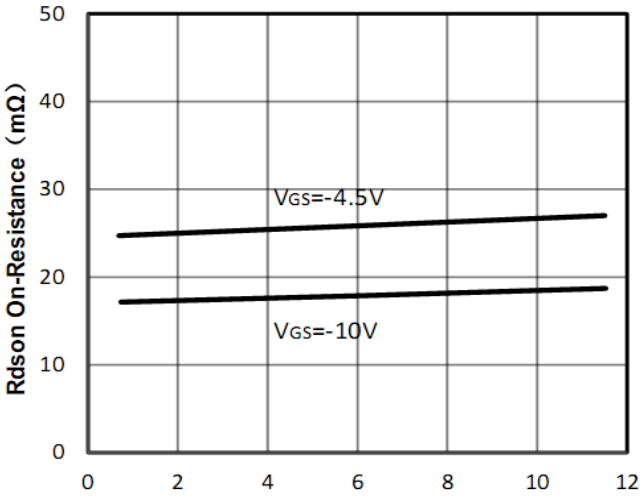

Figure2：$-I_D$ Drain Current（A）

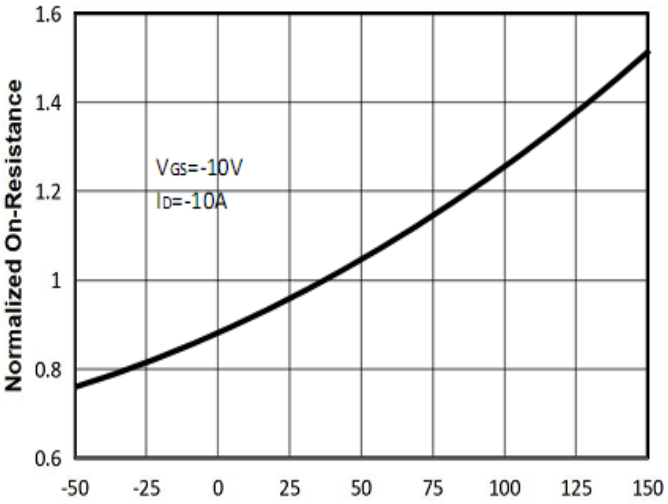

Figure3：T_J Junction Temperature（°C）

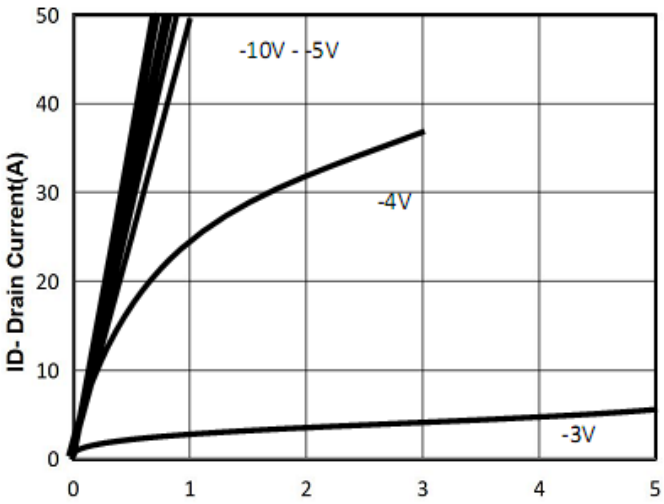

Figure4：$-V_{DS}$ Drain-Source Voltage（V）

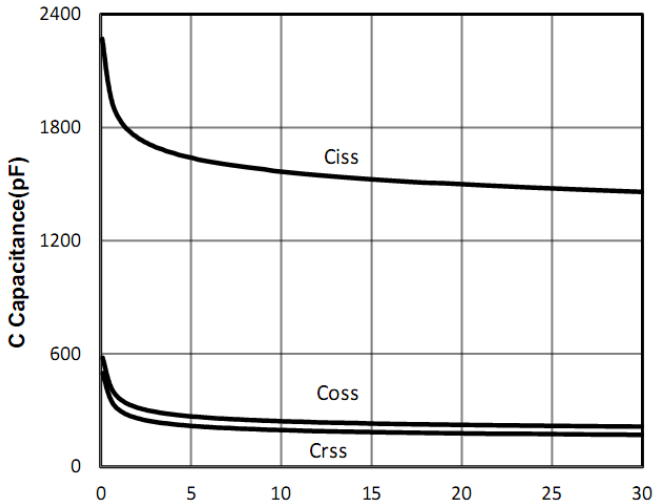

Figure5：$-V_{DS}$ Draun-Source Voltage（V）

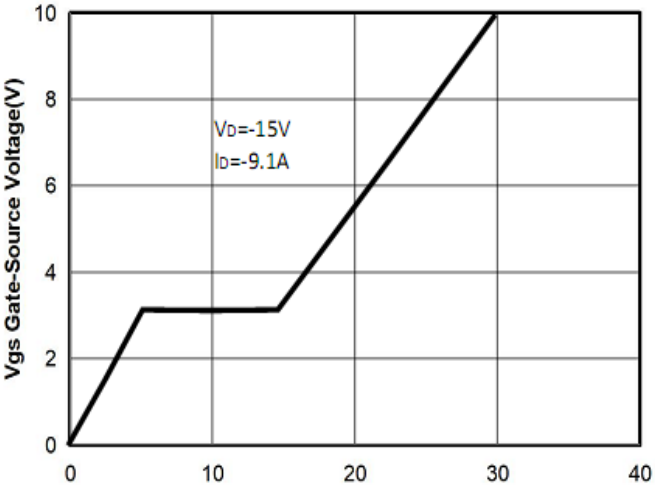

Figure6：Qg Gate Charge（nC）

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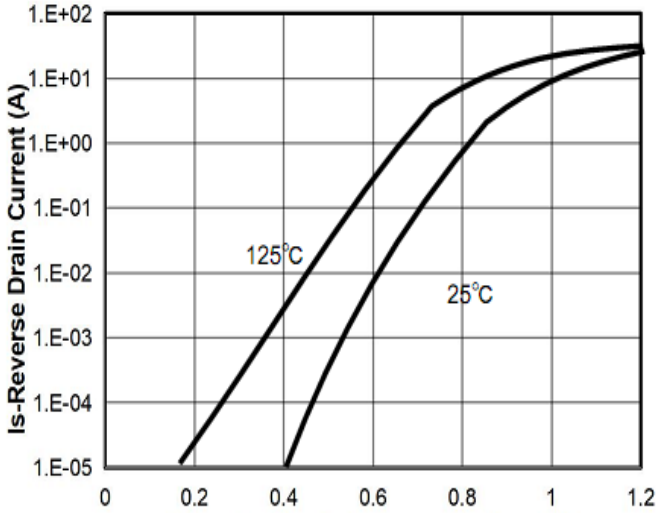

Figure7：-Vsd Source-Drain Voltage（V）

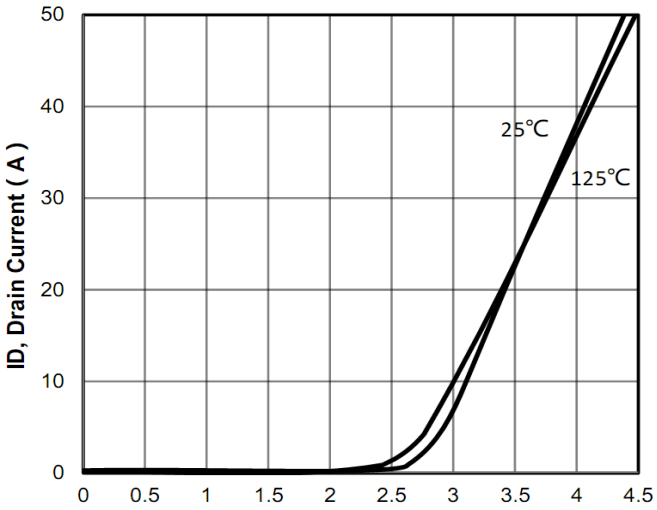

Figure8：-Vgs Gate-Source Voltage（V）

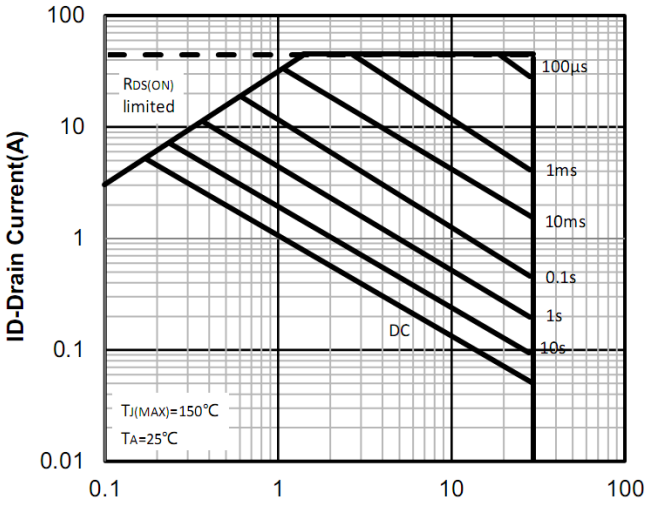

Figure9：-VDS Drain -Source Voltage（V）

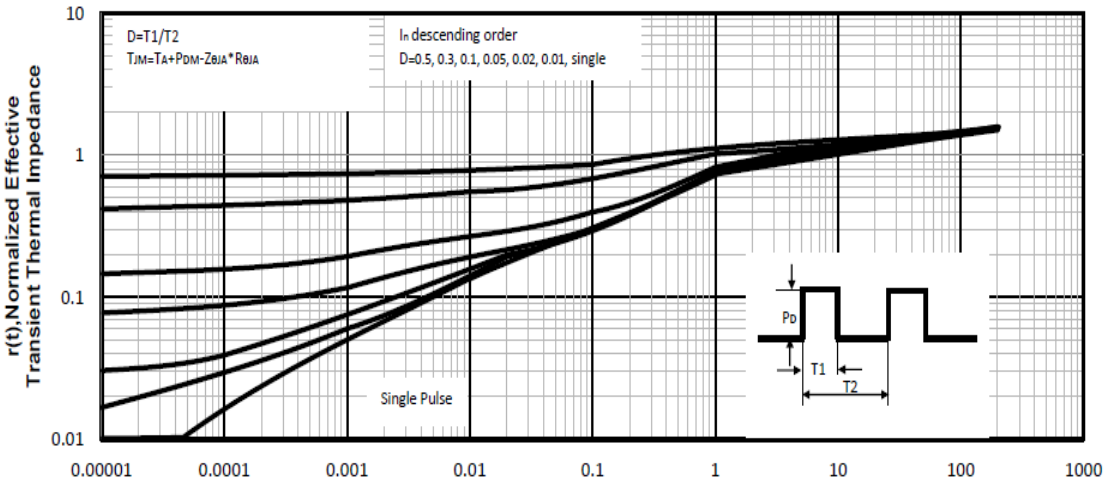

Figure10：Square Wave Pulse Duration（sec）

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Test Circuit and Waveform:

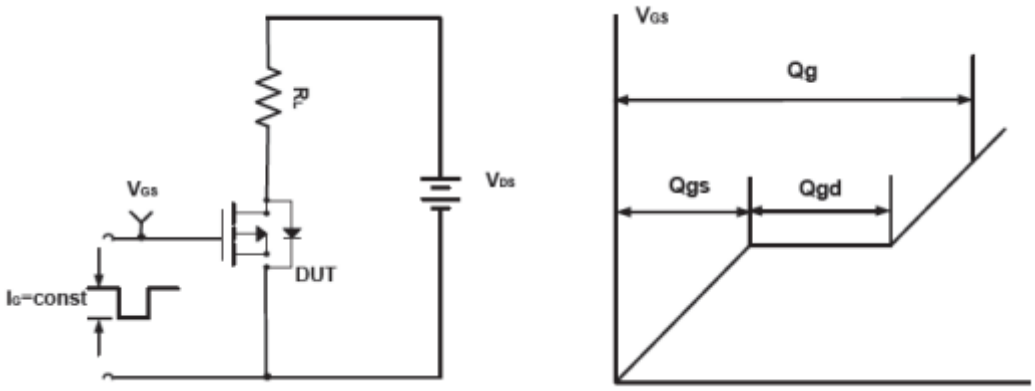

Figure A Gate Charge Test Circuit &Waveforms

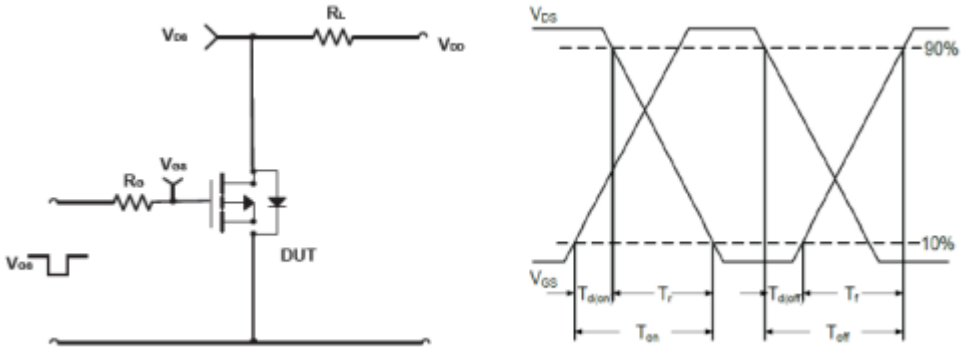

Figure B Switching Test Circuit & Waveforms

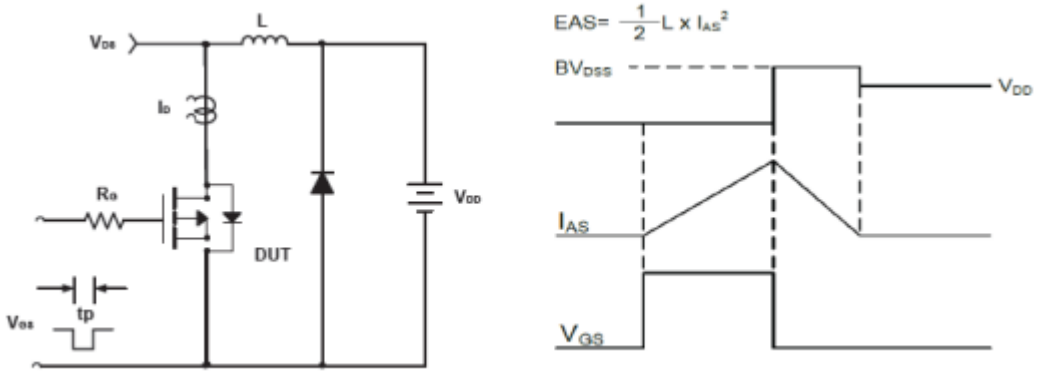

Figure C Unclamped Inductive Switching Circuit & Waveforms

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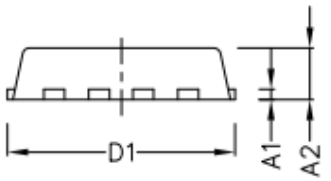
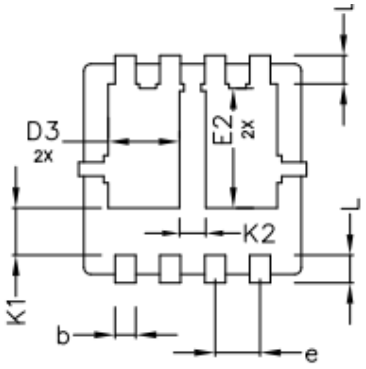
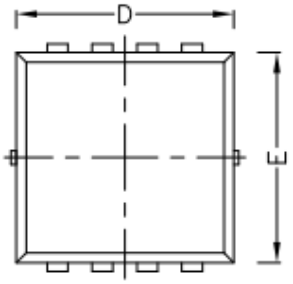
PDFN3333 Package Outline Dimensions (Units: mm)



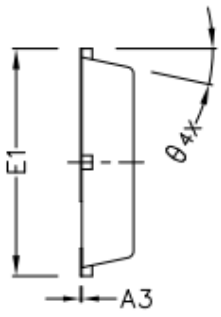
SIDE VIEW



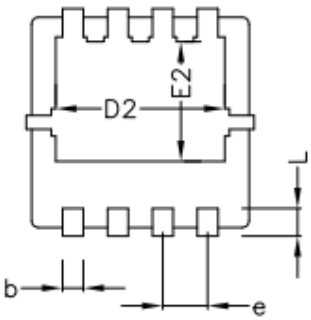
BOTTOM VIEW
OPTION 2



TOP VIEW



SIDE VIEW



BOTTOM VIEW
OPTION 1

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1		0.152 BSC	
A2	0.650	0.750	0.850
A3	0.005	–	0.020
b	0.250	0.300	0.350
D	3.050	3.150	3.250
D1	3.200	3.300	3.400
D2	2.350	2.450	2.550
D3	0.935	1.035	1.135
E1	3.150	3.300	3.450
E	2.950	3.050	3.150
E2	1.635	1.735	1.835
e		0.650 TYPE	
L	0.300	0.400	0.500
θ		12° TYPE	
K1		0.680 REF	
K2		0.380 REF	
L1		0.410 REF	