

-30V/-30A P-Channel MOSFET

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
-30V	15mΩ@-10V	-30A
	20mΩ@-5V	

Features

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS

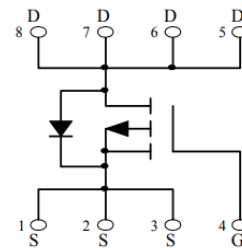
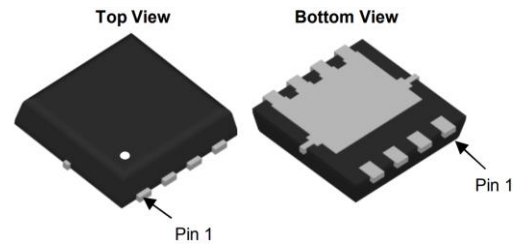
Application

- Battery and loading switching
- Excellent package for good heat dissipation

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)
M03P30Q	PDFN3X3-8L	PTN30P03	5,000

PDFN3X3-8L



Schematic diagram

Absolute Maximum Ratings (TA=25°C unless otherwise noted)				
Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{DS}	Drain-Source Breakdown Voltage		-30	V
V _{GS}	Gate-Source Voltage		±25	V
E _{AS}	Single pulse avalanche energy		64	mJ
T _J , T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	Tc=25°C	-30	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested	Tc=25°C	-90	A
I _D	Continuous Drain Current	Tc=25°C	-30	A
P _D	Maximum Power Dissipation	Tc=25°C	32	W
R _{θJA}	Thermal Resistance Junction-Ambient		35	°C/W

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Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
BV(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID=-250μA	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-24V, VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-1.0	-1.5	-2.2	V
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-15A	--	9	15	mΩ
		VGS=-4.5V, ID=-10A	--	13	20	mΩ
Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
CISS	Input Capacitance	VDS=-15V, VGS=0V, f=1MHz	--	2780	--	pF
COSS	Output Capacitance		--	324	--	pF
CRSS	Reverse Transfer Capacitance		--	313	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDD=-15V, ID=-15A, VGS=-10V	--	81	--	nC
Qgs	Gate Source Charge		--	12	--	nC
Qgd	Gate Drain Charge		--	9.7	--	nC
td(on)	Turn-on Delay Time	VDD=-15V, ID=-15A, VGS=-10V, RG=3Ω	--	17	--	nS
tr	Turn-on Rise Time		--	21	--	nS
td(off)	Turn-Off Delay Time		--	36	--	nS
tf	Turn-Off Fall Time		--	15	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	Tj=25℃, Is=-30A,	--	--	-1.2	V

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Typical Electrical and Thermal Characteristics

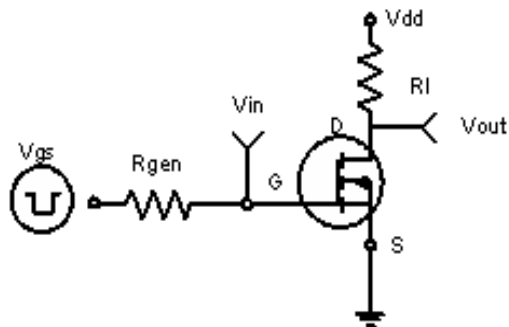


Figure 1 Switching Test Circuit

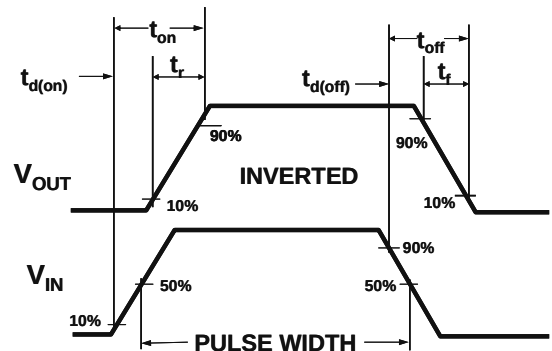


Figure 2 Switching Waveforms

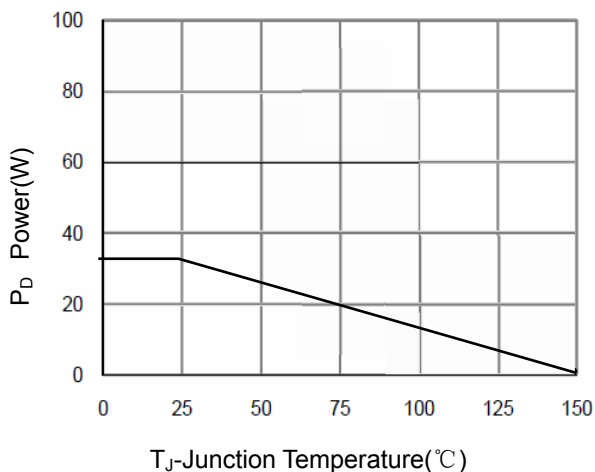


Figure 3 Power Dissipation

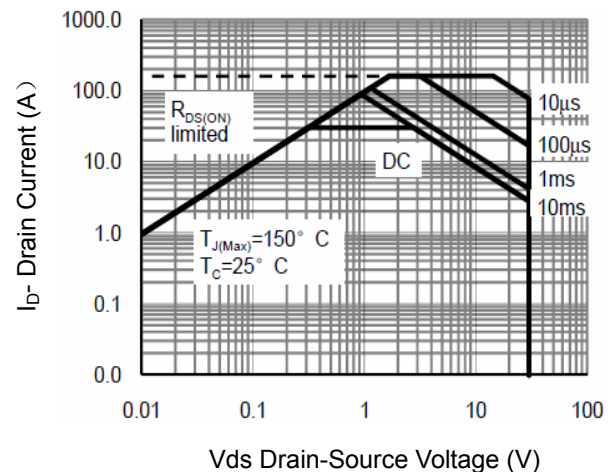


Figure 4 Safe Operation Area

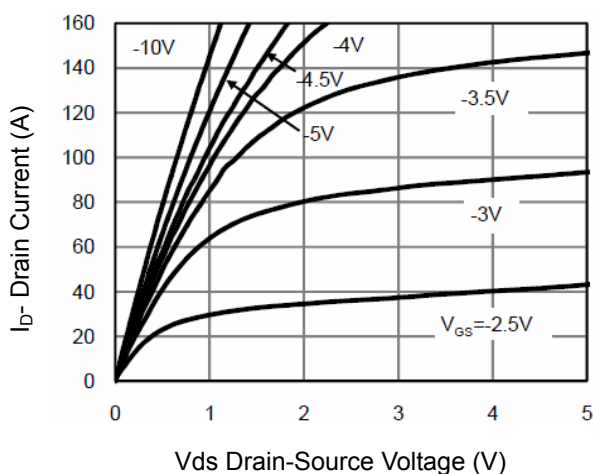


Figure 5 Output Characteristics

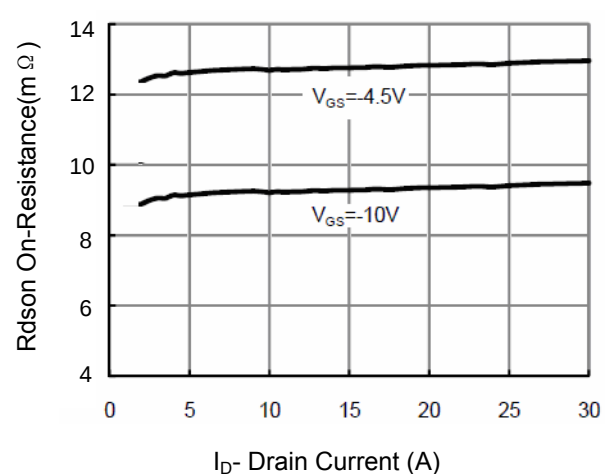


Figure 6 Drain-Source On-Resistance

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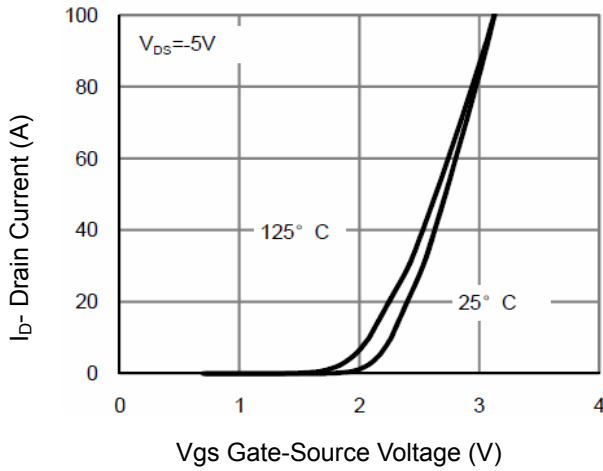


Figure 7 Transfer Characteristics

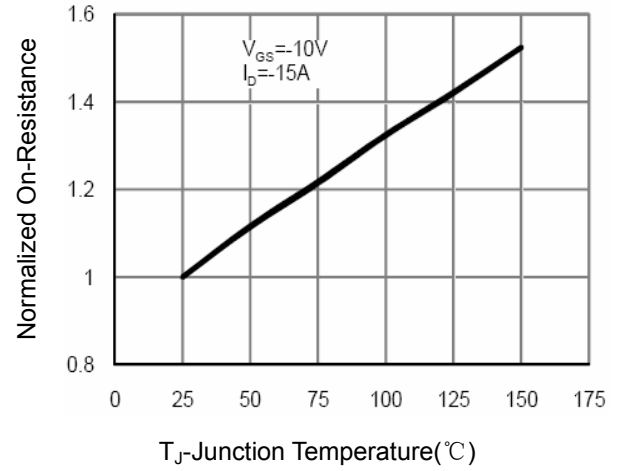


Figure 8 Drain-Source On-Resistance

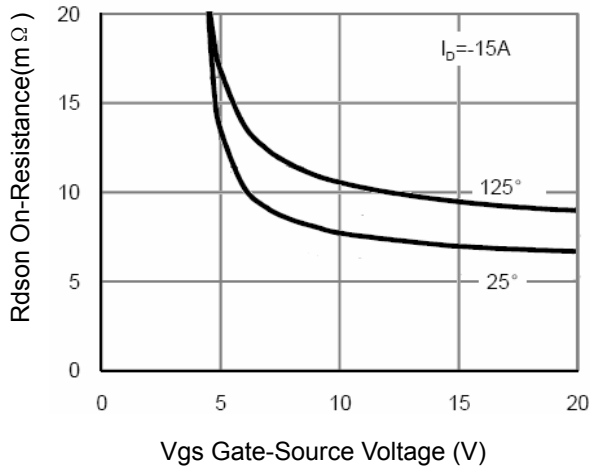


Figure 9 Rdson vs Vgs

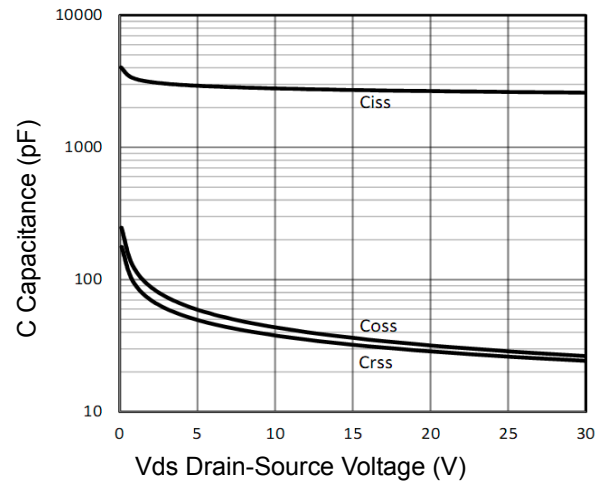


Figure 10 Capacitance vs Vds

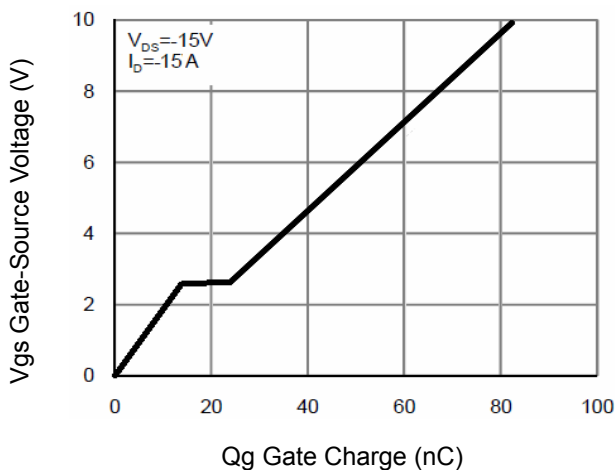


Figure 11 Gate Charge

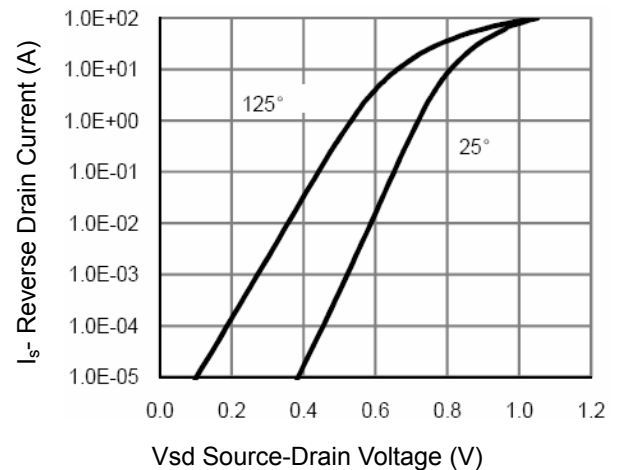
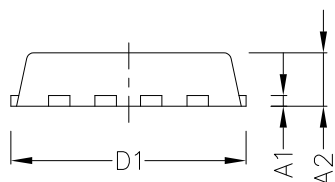


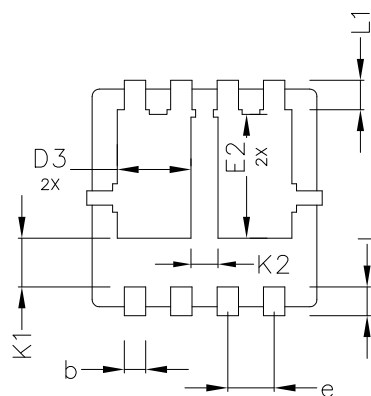
Figure 12 Source- Drain Diode Forward

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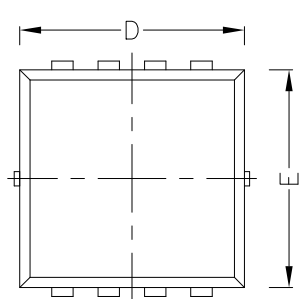
PDFN3333 Package Outline Dimensions (Units: mm)



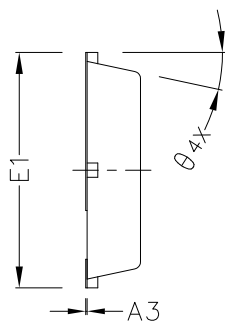
SIDE VIEW



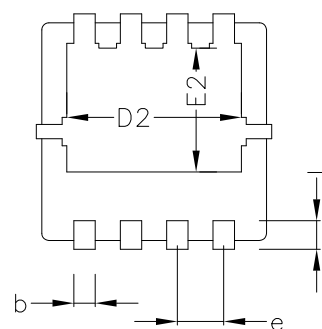
BOTTOM VIEW
OPTION 2



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		