XPX7403RX

-30V P-Channe Enhancement Mode Power MOSFET

RoHS COMPLIANT

Description

The XPX7403RX uses advanced trench technology to provide excellent $R_{DS(ON)}$, This device is suitable for use as a load switch or power management.

V_{DS} = -30V,I_D = -32A

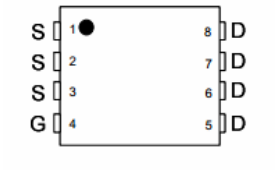
$R_{DS(ON)}$ =15mΩ @ V_{GS}=-10V

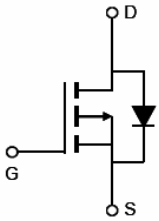
$R_{DS(ON)}$ =24mΩ @ V_{GS}=-4.5V

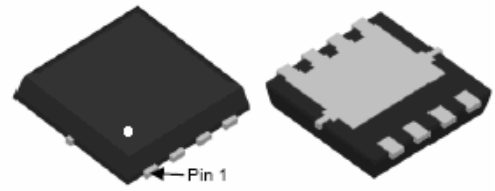
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

- Power management
- Load switch







Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
7403	XPX7403RX	DFN3X3-8			

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±25	V
Drain Current-Continuous	I_D	-32	A
Drain Current-Pulsed (Note 1)	I_{DM}	-60	A
Maximum Power Dissipation	P_D	40	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃
Thermal Resistance,Junction-to-Case(Note 2)	$R_{\theta JC}$	2.2	℃/W

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±25	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_C=25°C	-16	A
I_D	Continuous Drain Current	T_C=25°C	-32	
		T_C=100°C	-20	
I_{DM}	Pulsed Drain Current	T_C=25°C	-60 *	
P_D	Maximum Power Dissipation	T_C=25°C	29.8	W
		T_C=100°C	11.9	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	4.2	°C/W
I_D	Continuous Drain Current	T_A=25°C	-10.5 [b]	A
		T_A=70°C	-8.4 [b]	
P_D	Maximum Power Dissipation	T_A=25°C	3.1	W
		T_A=70°C	2	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	t ≤ 10s	40	°C/W
		Steady State	75	
I_{AS} [a]	Avalanche Current, Single pulse	L=0.5mH	14	A
E_{AS} [a]	Avalanche Energy, Single pulse	L=0.5mH	49	mJ

Note *：Current limited by bond wire.

Note a：UIS tested and pulse width are limited by maximum junction temperature 150°C (initial temperature T_J = 25°C).

Note b：t＜10s.

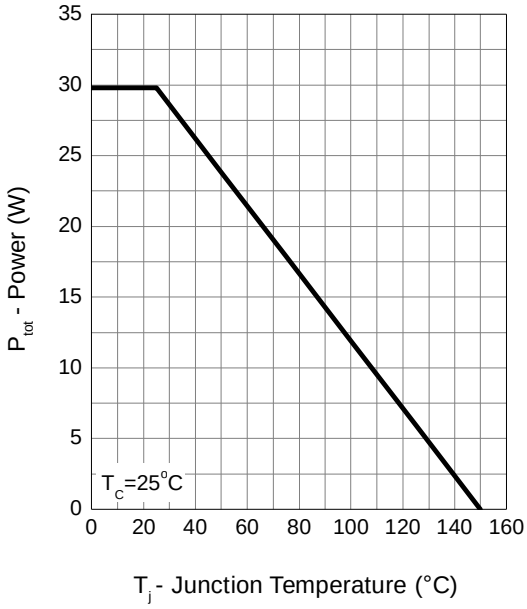
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1.3	-1.8	-2.3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	-	-	±10	μA
$R_{DS(ON)}$ [c]	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-16A	-	15	19	mΩ
		V_{GS}=-4.5V, I_{DS}=-8A	-	24	32	
Diode Characteristics						
V_{SD} [c]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1	V
t_{rr} [d]	Reverse Recovery Time	I_{SD}=-16A, dI_{SD}/dt=100A/μs	-	18	-	ns
Q_{rr} [d]	Reverse Recovery Charge		-	9	-	nC
Dynamic Characteristics [d]						
R_g	Gate Resistance	V_{GS}=0V, V_{DS}=0V,F=1MHz	-	4	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz	-	1000	-	pF
C_{oss}	Output Capacitance		-	220	-	
C_{rss}	Reverse Transfer Capacitance		-	170	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-15V, R_L=15Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	11.2	-	ns
t_r	Turn-on Rise Time		-	10.6	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	37	-	
t_f	Turn-off Fall Time		-	50	-	
Gate Charge Characteristics [d]						
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V, I_{DS}=-16A	-	20	-	nC
Q_{gs}	Gate-Source Charge		-	1.1	-	
Q_{gd}	Gate-Drain Charge		-	7.7	-	

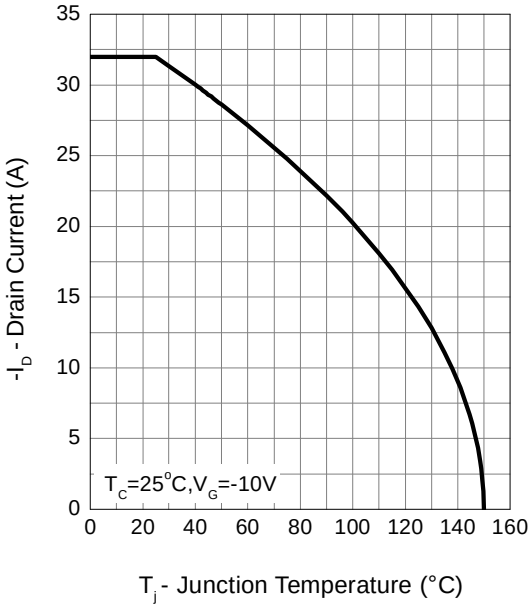
Note c：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note d：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

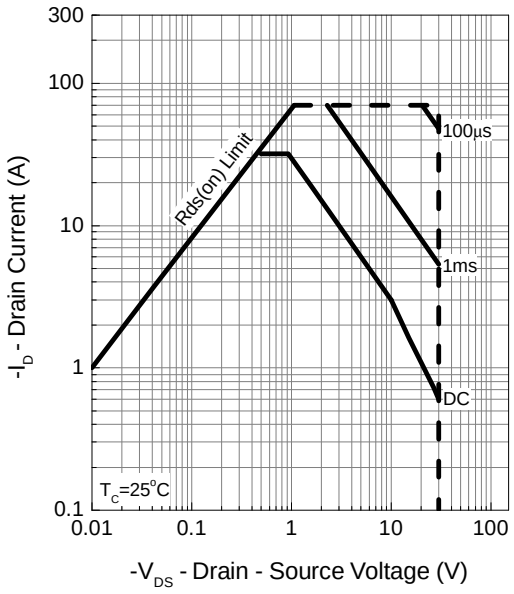
Power Dissipation



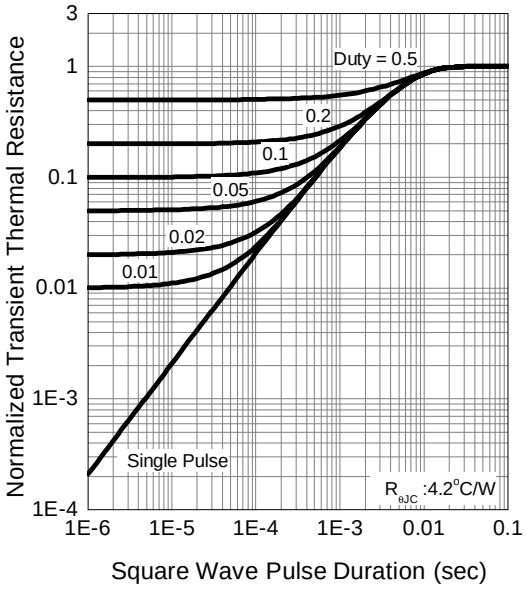
Drain Current



Safe Operation Area

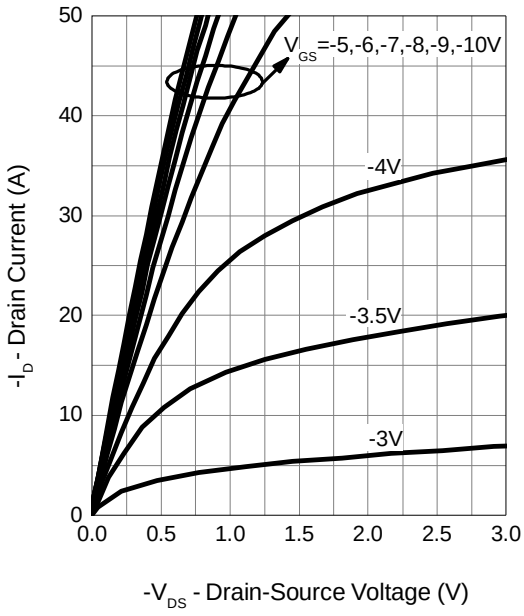


Thermal Transient Impedance

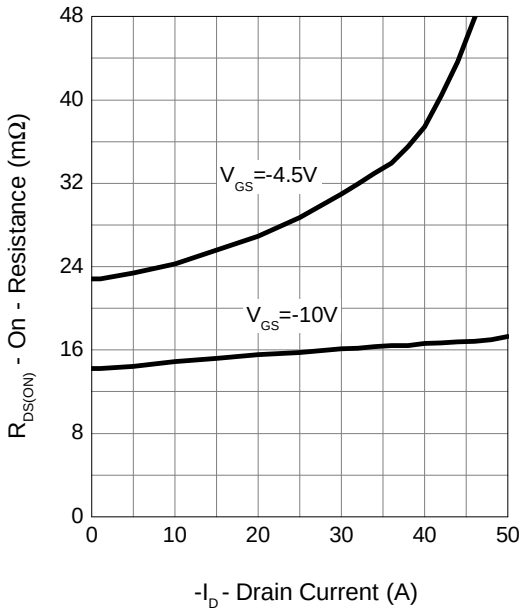


Typical Operating Characteristics (Cont.)

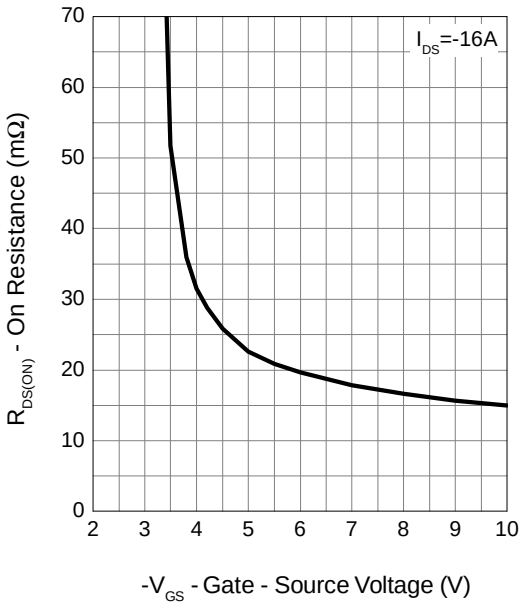
Output Characteristics



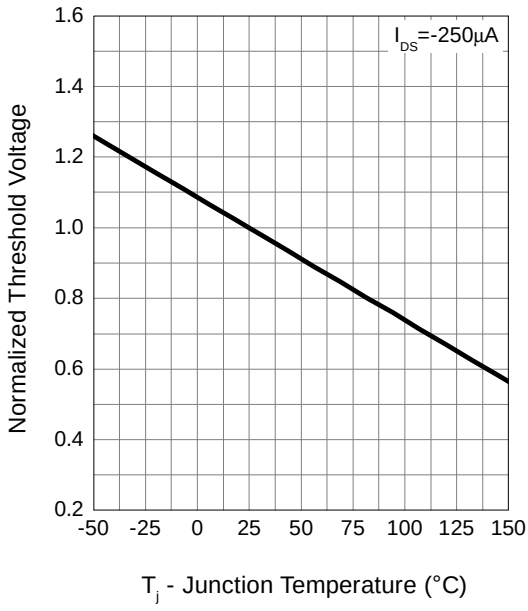
Drain-Source On Resistance



Gate-Source On Resistance

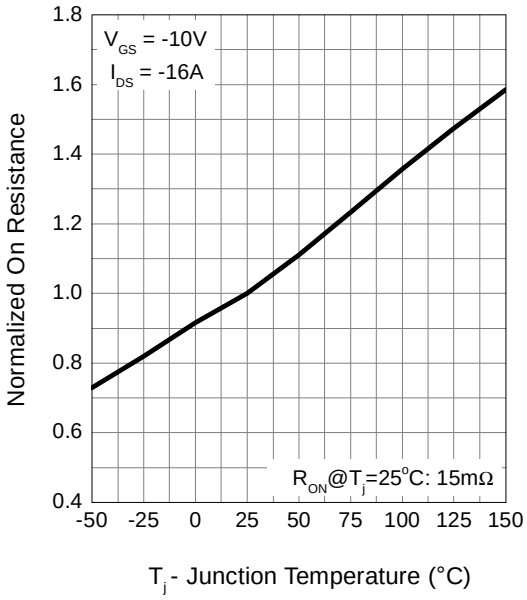


Gate Threshold Voltage

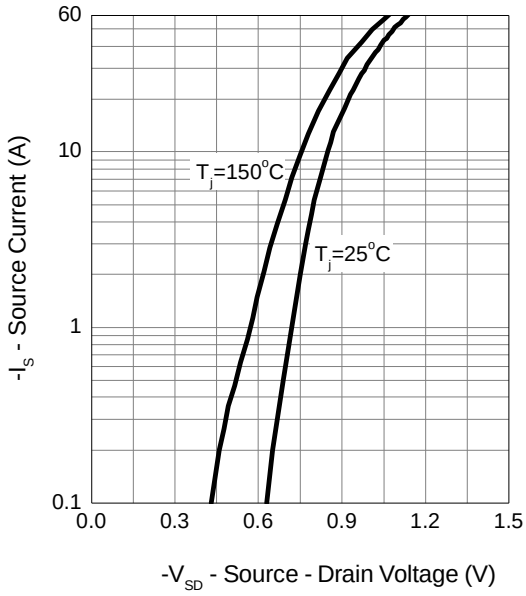


Typical Operating Characteristics (Cont.)

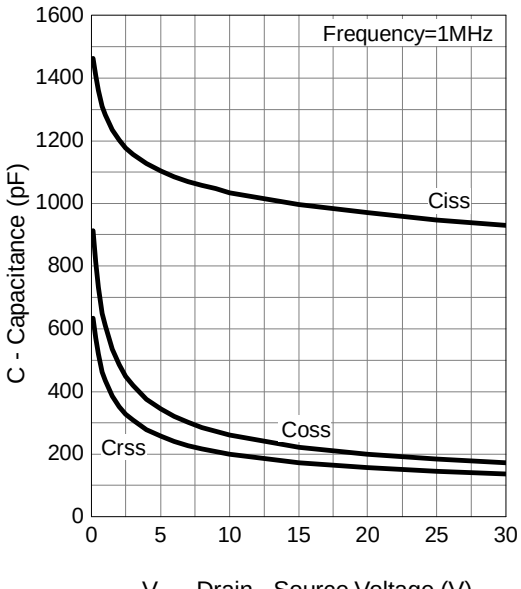
Drain-Source On Resistance



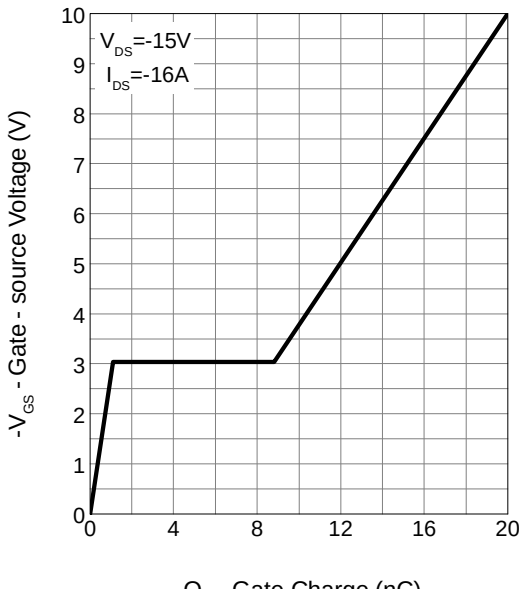
Source-Drain Diode Forward



Capacitance

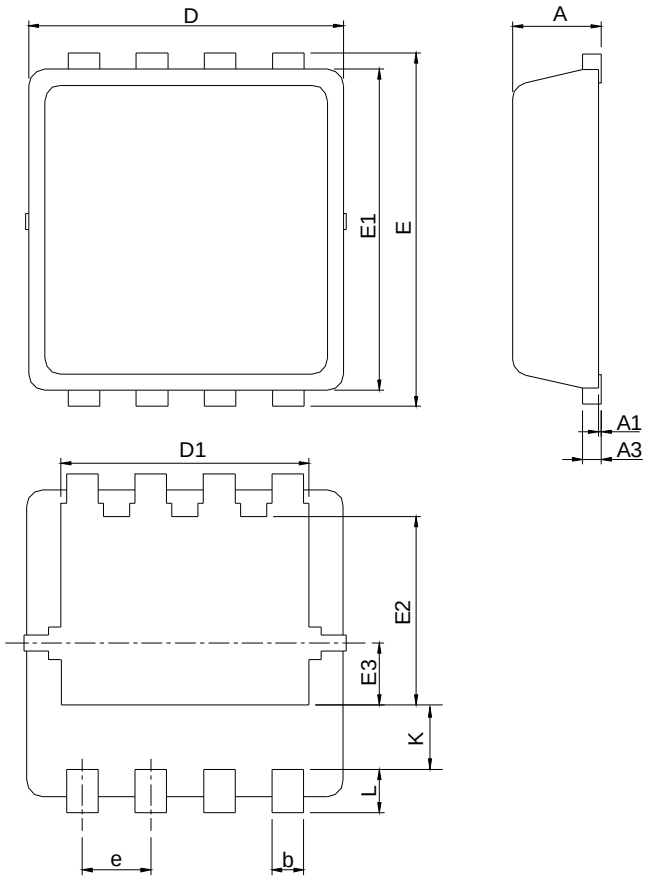


Gate Charge



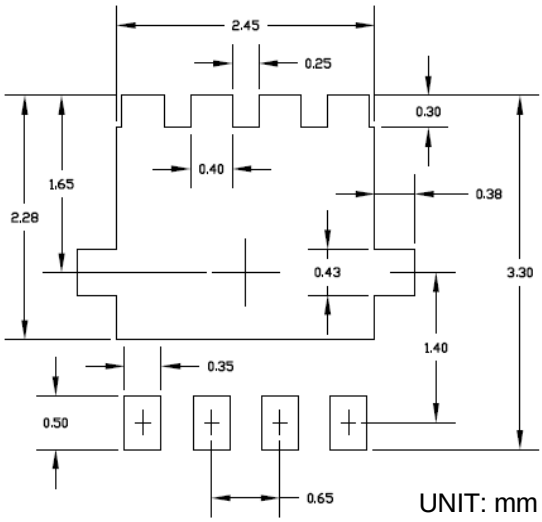
Package Information

DFN3x3-8



SYMBOL	DFN3x3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.002
A3	0.10	0.25	0.004	0.010
b	0.24	0.35	0.009	0.014
D	2.90	3.10	0.114	0.122
D1	2.25	2.45	0.089	0.096
E	3.10	3.30	0.122	0.130
E1	2.90	3.10	0.114	0.122
E2	1.65	1.85	0.065	0.073
E3	0.56	0.58	0.022	0.023
e	0.65 BSC		0.026 BSC	
K	0.475	0.775	0.019	0.031
L	0.30	0.50	0.012	0.020

RECOMMENDED LAND PATTERN



Product	Peak Temperature	Dipping Time
Pb device	245℃±5℃	5sec±1sec
Pb-Free device	260℃+0/-5℃	5sec±1sec

This integrated circuit can be damaged by ESD UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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