XPX403FD

-30V P-Channel Enhancement Mode MOSFET

RoHS COMPLIANT

Description

The XPX403FD uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

V_{DS} =-30V,I_D =-90A

$R_{DS(ON)}$=5.0mΩ (typ) @ V_{GS}=-10V

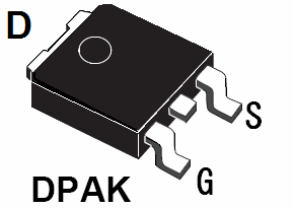
$R_{DS(ON)}$=6.0mΩ (typ) @ V_{GS}=-4.5V

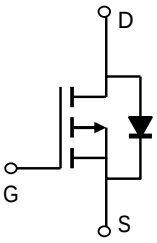
Application

Lithium battery protection

Wireless impact

Mobile phone fast charging





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
XPX403FD	TO-252-3L	XPX403FD XXX YYYY	2500

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

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	-30	V
VGSS	Gate-Source Voltage	±25	V
ID	Continuous Drain Current T_C = 25℃	-100	A
ID	Continuous Drain Current T_C = 100℃	-59	A
IDM	Pulsed Drain Current note1	-280	A
EAS	Single Pulsed Avalanche Energy note2	180	mJ
PD	Power Dissipation T_C = 25℃	96	W
RθJC	Thermal Resistance, Junction to Case	1.2	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +175	℃

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID= -250μA	-30	-33	-	V
IDSS	Zero Gate Voltage Drain Current	VDS= -30V, VGS=0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	VDS=0V, VGS= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID= -250μA	-1.0	-1.6	-2.5	V
RDS(on)	Static Drain-Source on-Resistance	VGS= -10V, ID= -30A	-	5.0	6.0	mΩ
		VGS= -4.5V, ID= -20A	-	6.0	8.0	
Ciss	Input Capacitance	VDS= -15V, VGS=0V, f=1.0MHz	-	2890	-	pF
Coss	Output Capacitance		-	660	-	pF
Crss	Reverse Transfer Capacitance		-	726	-	pF
Qg	Total Gate Charge	VDS= -15V, ID= -30A, VGS= -10V	-	30	-	nC
Qgs	Gate-Source Charge		-	6	-	nC
Qgd	Gate-Drain(“Miller”) Charge		-	8	-	nC
td(on)	Turn-on Delay Time	VDD= -15V, ID= -30A, VGS= -10V, RGEN=2.5Ω	-	18	-	ns
tr	Turn-on Rise Time		-	15	-	ns
td(off)	Turn-off Delay Time		-	52	-	ns
tf	Turn-off Fall Time		-	21	-	ns
IS	Maximum Continuous Drain to Source DiodeForward Current		-	-	-90	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-360	A
VSD	Drain to Source Diode Forward Voltage	VGS=0V, IS= -30 A		-0.8	-1.2	V

Notes:

1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2、E AS condition: T J =25℃, V DD = -15V, V G = -10V, R G =25Ω, L=0.5mH, I AS = -29A

3、Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

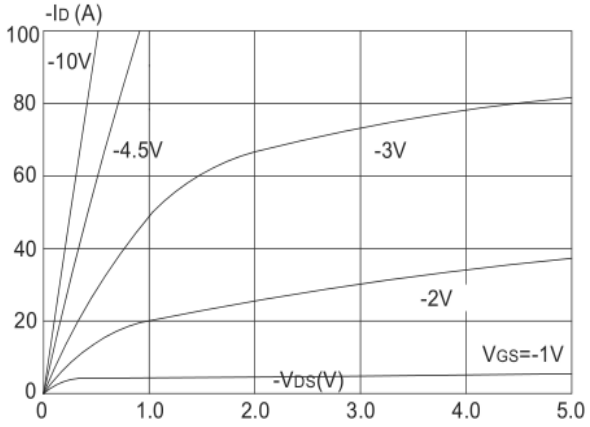


Figure1: Output Characteristics

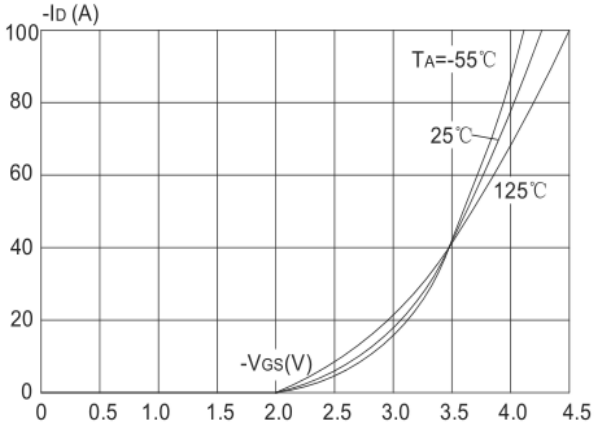


Figure 2: Typical Transfer Characteristics

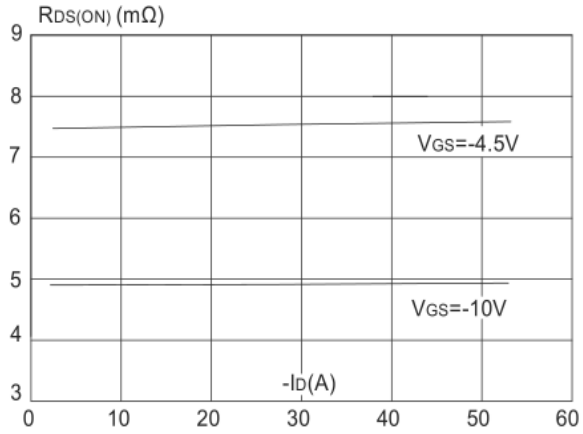


Figure 3:On-resistance vs. Drain Current

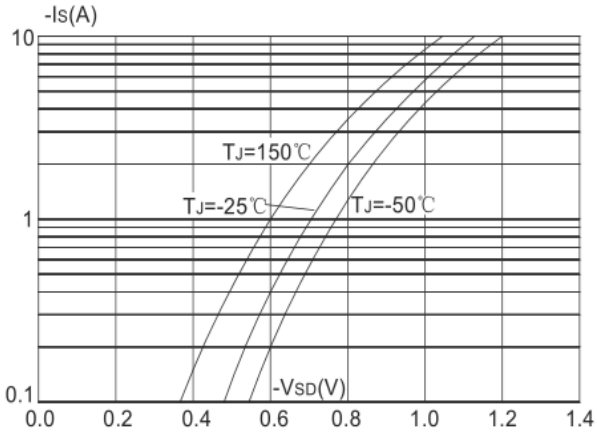


Figure 4: Body Diode Characteristics

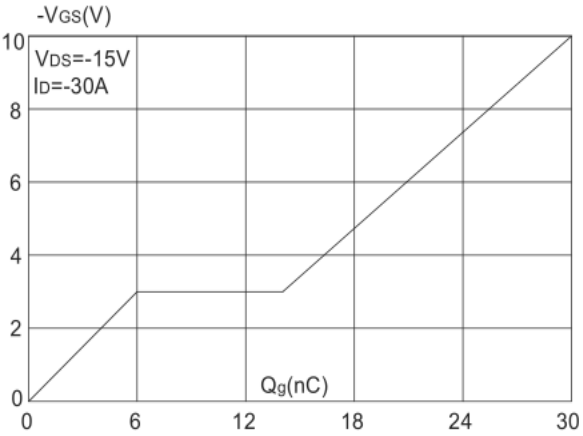


Figure 5: Gate Charge Characteristics

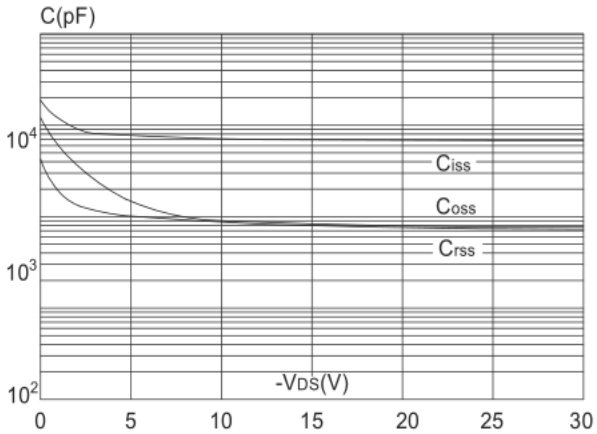


Figure 6: Capacitance Characteristics

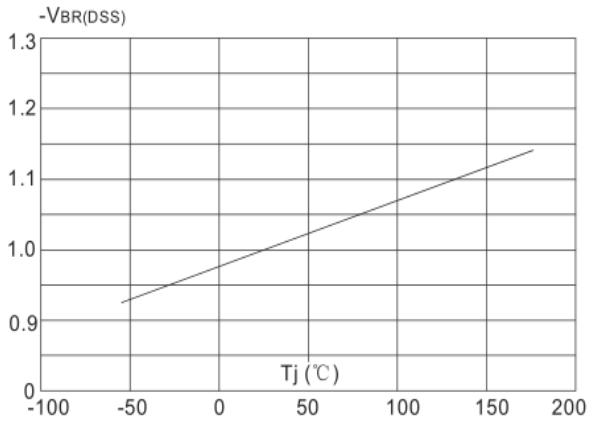


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

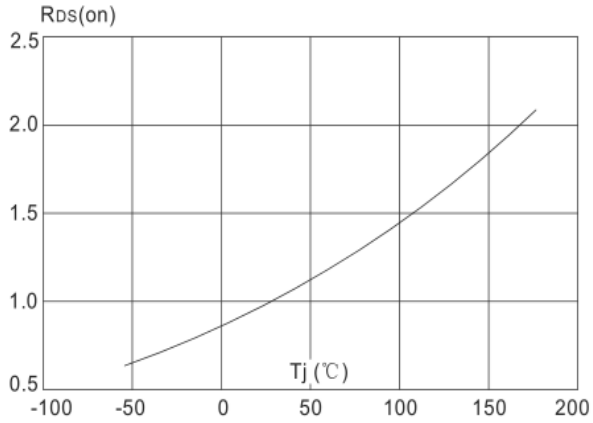


Figure 8: Normalized on Resistance vs. Junction Temperature

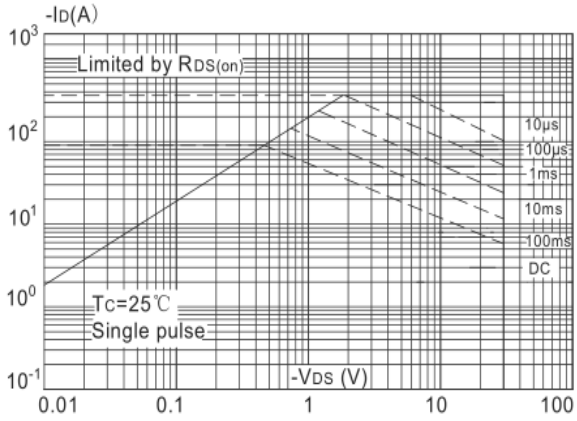


Figure 9: Maximum Safe Operating Area

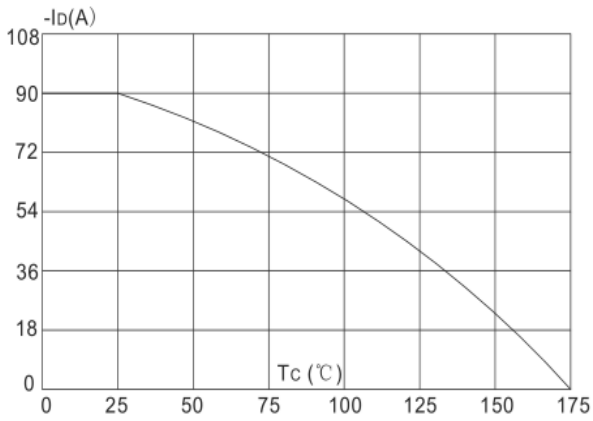


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

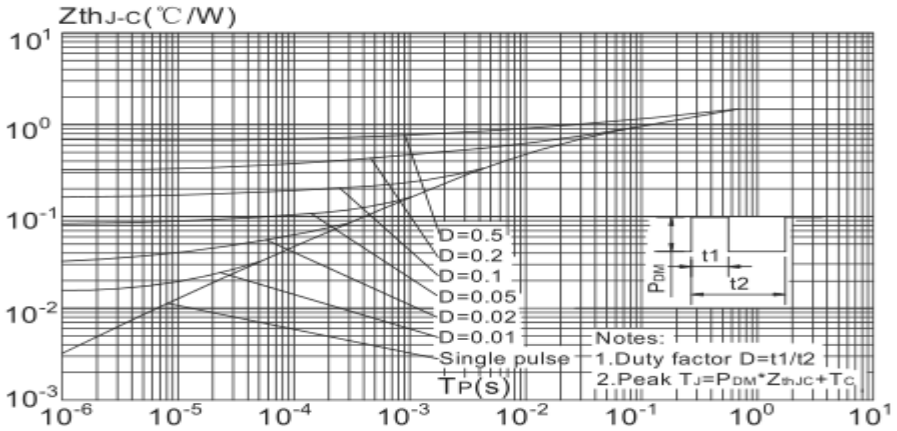
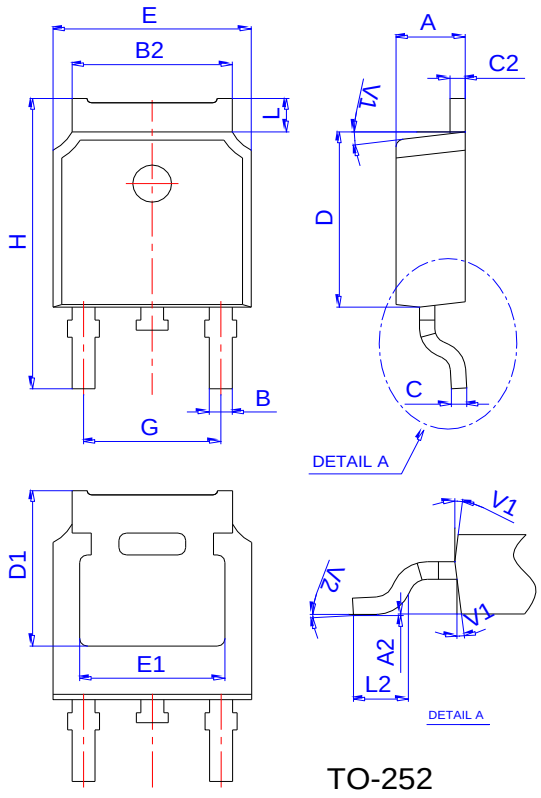


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

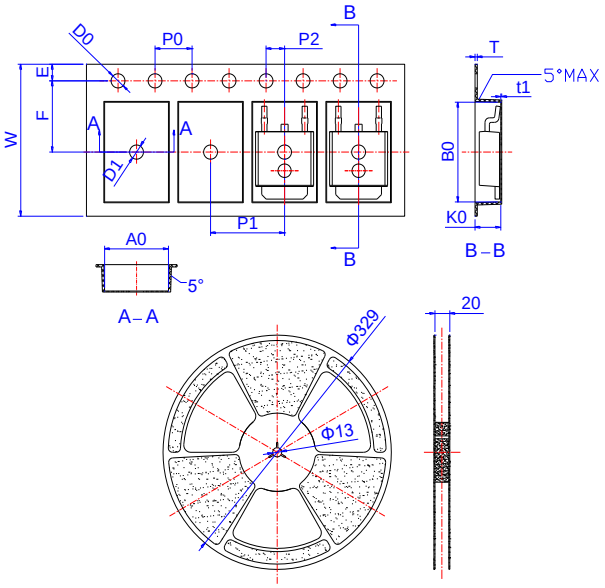
Package Mechanical Data



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

Flow (wave) soldering (solder dipping)

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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