

Description

The XPX150N06FD uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

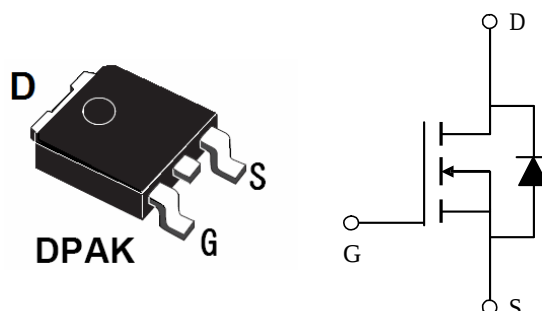
$V_{DS} = 60V$ $I_D = 150A$

$R_{DS(ON)} < 2.4m\Omega$ @ $V_{GS} = 10V$

Application

Battery protection

UPS



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
XPX150N06FD	TO252-3L	XPX150N06FD XXX YYYY	2500

Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current ^{1,6}	150	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current ^{1,6}	90	A
IDM	Pulsed Drain Current ²	354	A
EAS	Single Pulse Avalanche Energy ³	338	mJ
IAS	Avalanche Current	47	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation ⁴	114	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	25	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.3	$^\circ C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	65	-	-	V
IGSS	Gate-body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T _J =25°C	V _{DS} = 65V, V _{GS} = 0V	-	-	1	μA
	Zero Gate Voltage Drain Current T _J =100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.2	1.7	2.5	V
RDS(on)	Drain-Source On-Resistance ⁴	V _{GS} = 10V, I _D = 20A	-	2.4	3.5	mΩ
		V _{GS} = 4.5V, I _D = 15A	-	3.4	4.5	
gfs	Forward Transconductance ⁴	V _{DS} = 10V, I _D = 20A	-	77	-	S
Ciss	Input Capacitance	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz	-	4470	-	pF
Coss	Output Capacitance		-	872	-	
Crss	Reverse Transfer Capacitance		-	39	-	
R _g	Gate Resistance	f = 1MHz	-	1.5	-	Ω
Q _g	Total Gate Charge	V _{GS} = 10V, V _{DS} = 30V, I _D = 20A	-	51	-	nC
Q _{gs}	Gate-Source Charge		-	10.1	-	
Q _{gd}	Gate-Drain Charge		-	9.5	-	
td(on)	Turn-On Delay Time	V _{GS} = 10V, V _{DD} = 30V, R _G = 6Ω, I _D = 20A	-	15.9	-	ns
t _r	Rise Time		-	67	-	
td(off)	Turn-Off Delay Time		-	64	-	
t _f	Fall Time		-	108	-	
trr	Body Diode Reverse Recovery Time	I _F = 20A, dI/dt = 100A/μs	-	49	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	52	-	nC
VSD	Diode Forward Voltage ⁴	I _S = 20A, V _{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current	T _C = 25°C	-	-	145	A

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z copper.
- 2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、The power dissipation is limited by 175°C junction temperature
- 4、EAS condition: T_J=25°C, V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=47A
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

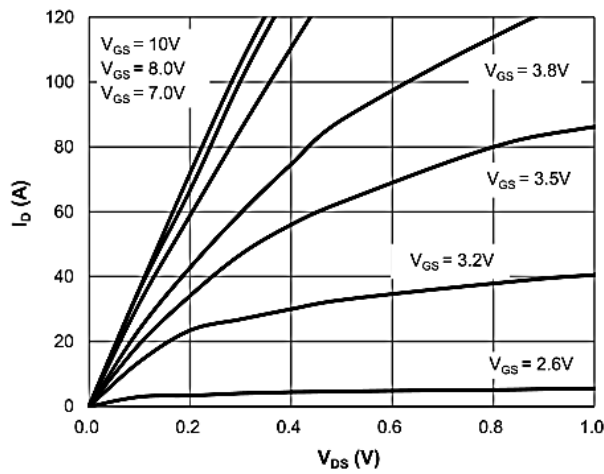


Figure 1: Saturation Characteristics

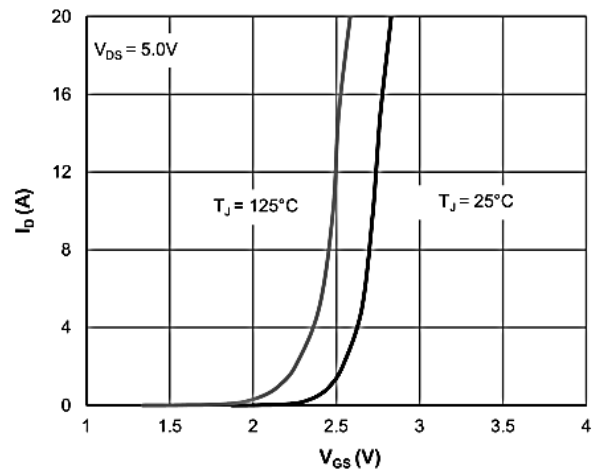


Figure 2: Transfer Characteristics

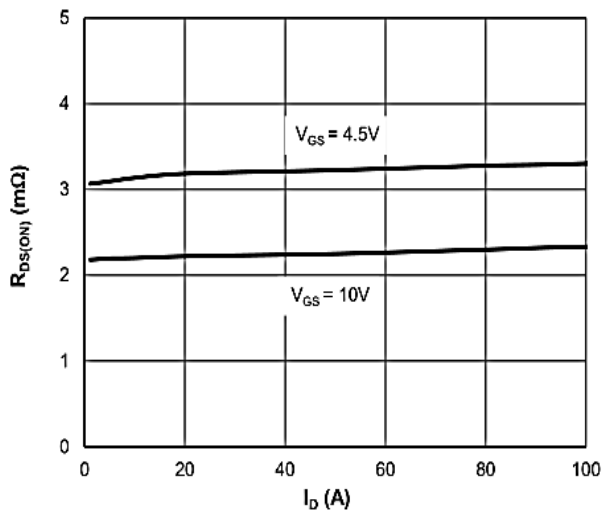


Figure 3: $R_{DS(ON)}$ vs. Drain Current

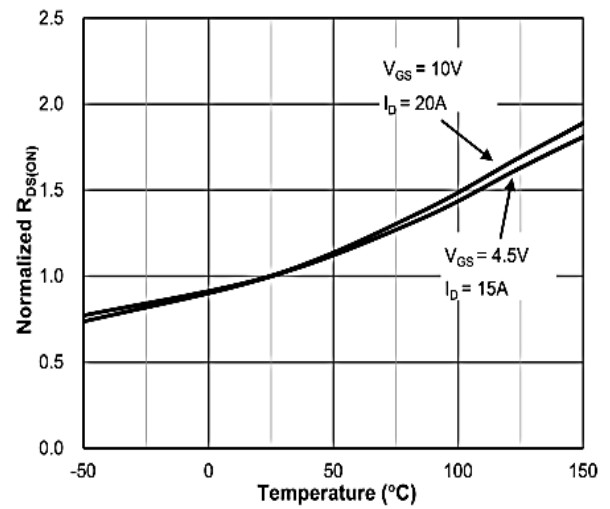


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

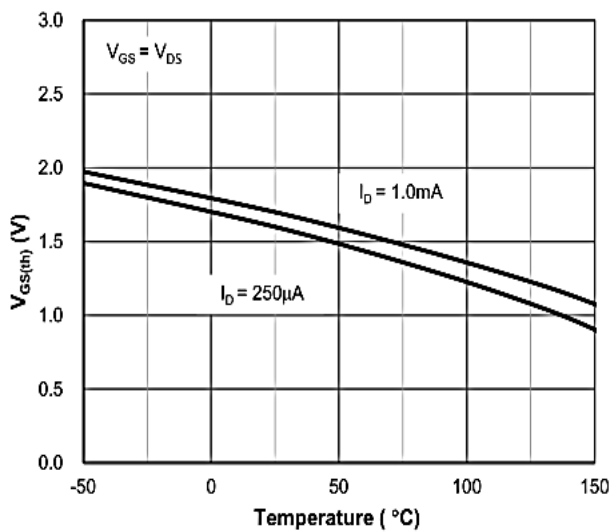


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

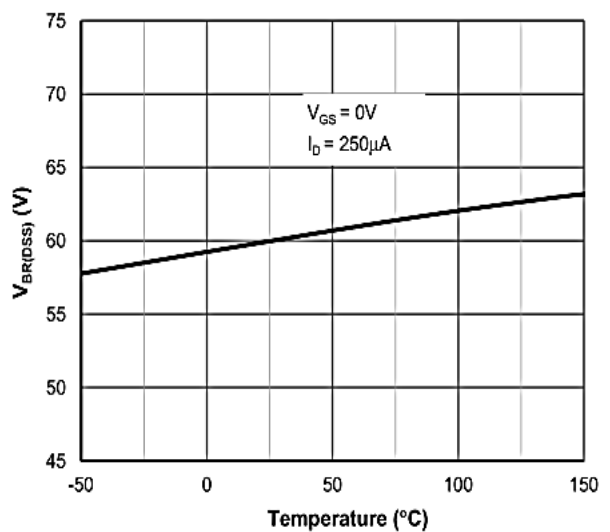


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

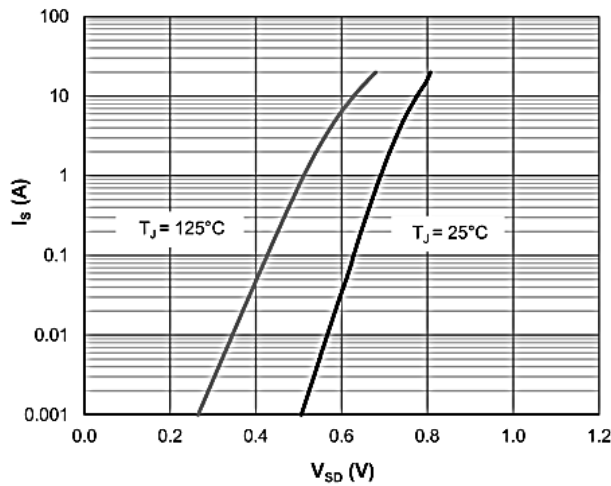


Figure 7: Body-Diode Characteristics

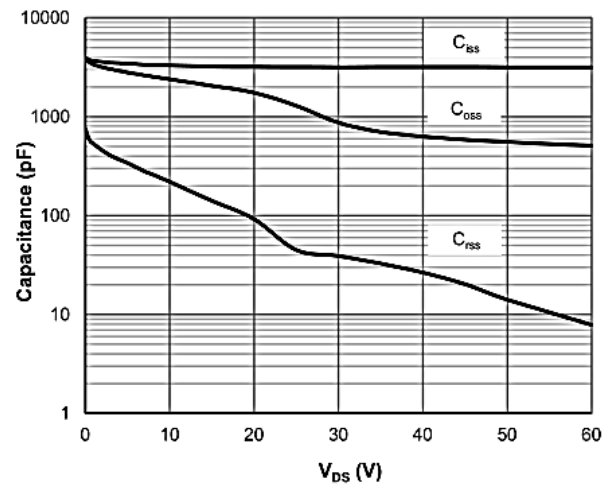


Figure 8: Capacitance Characteristics

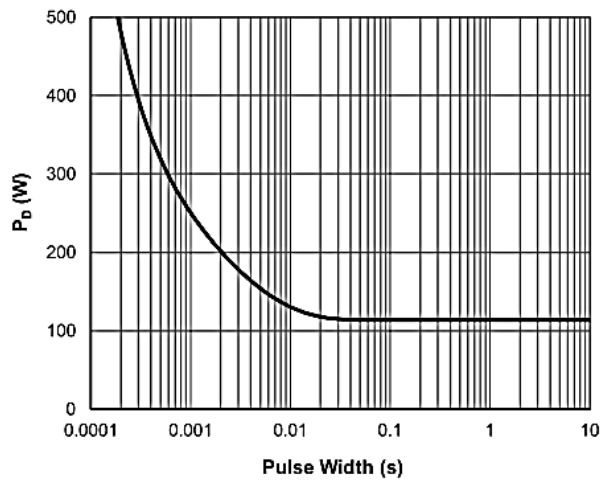


Figure 11: Single Pulse Power Rating, Junction-to-Case

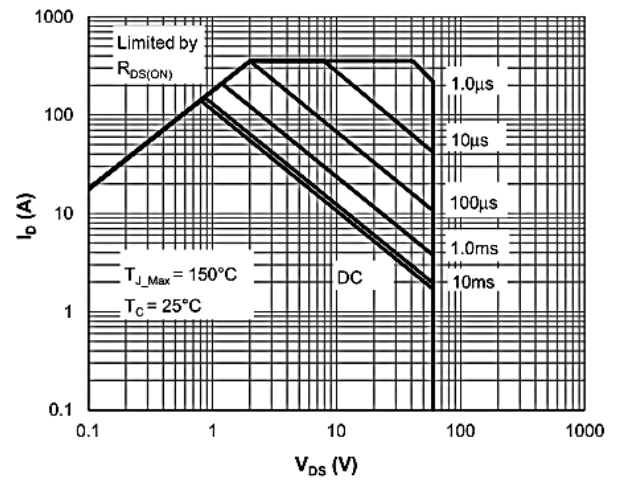


Figure 12: Maximum Safe Operating Area

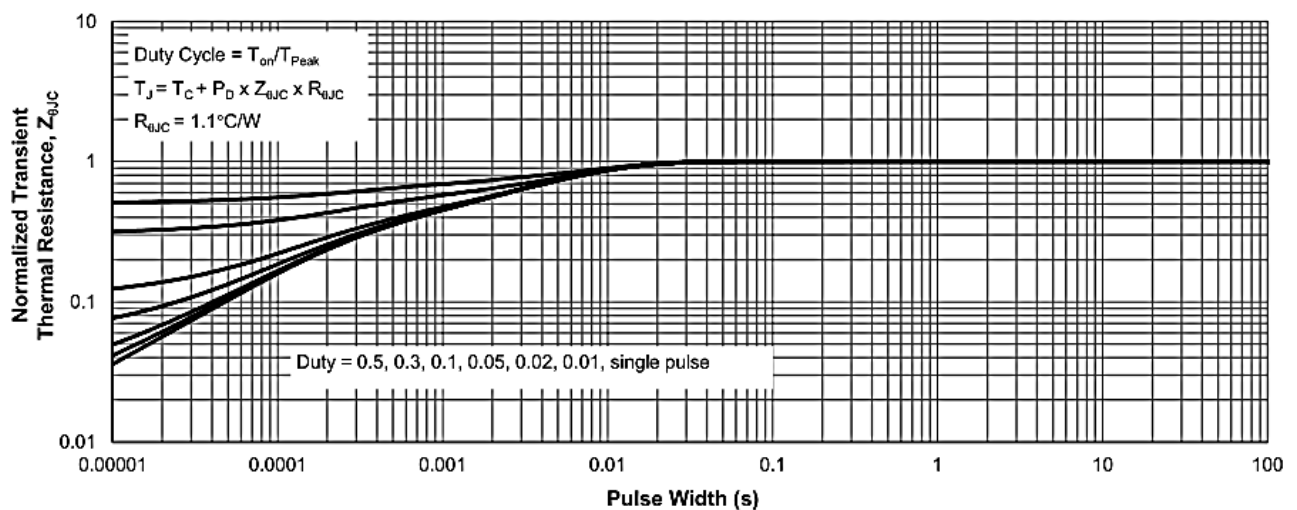
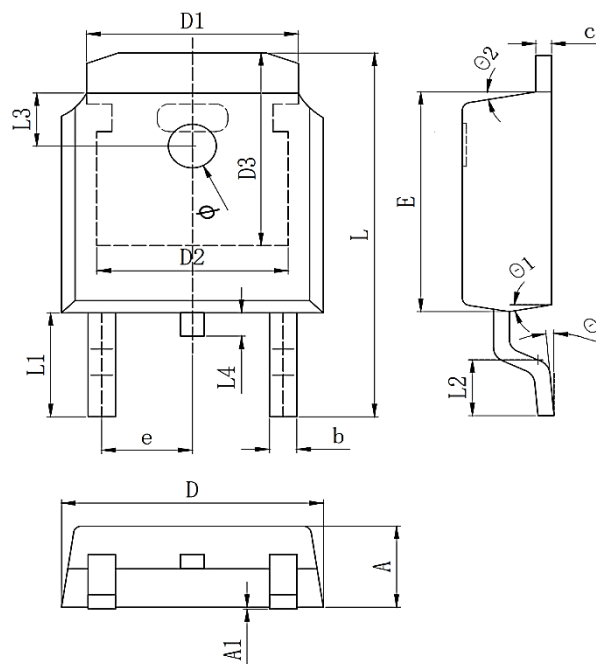


Figure 13: Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-TO-252-3L


Symbol	Dim in mm		
	Min	Typ	Max
A	2.1	2.3	2.5
A1	0	0.064	0.128
b	0.64	0.75	0.86
c	0.45	0.52	0.6
D	6.4	6.6	6.8
D1	5.33REF		
D2	4.83REF		
D3	5.25REF		
E	5.9	6.1	6.3
e	2.286TYP		
L	9.8	10.1	10.4
L1	2.888REF		
L2	1.4	1.5	1.7
L3	1.65REF		
L4	0.6	0.8	1
φ	1.1	1.2	1.3
θ	0°		10°
θ1	5°		10°
θ2	5°		10°

Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245°C $\pm$ 5°C	5sec $\pm$ 1sec
Pb-Free device	260°C $\pm$ 0/-5°C	5sec $\pm$ 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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