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XPX150N3AS

150V N-Channel Enhancement Mode MOSFET

Description

The XPX150N3AS uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 6V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

V_{DS} = 150V I_D =4A

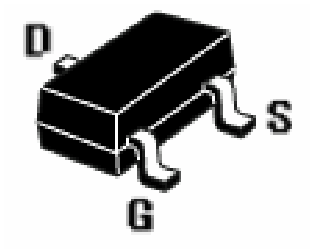
$R_{DS(ON)}$ < 300mΩ @ V_{GS}=10V

Application

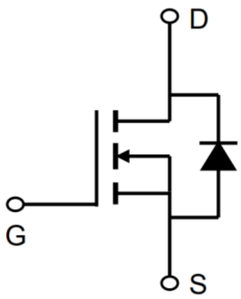
Battery protection

Load switch

Uninterruptible power supply



SOT-23



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
XPX150N3AS	SOT-23-3L	MAB5	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25˚C	Continuous Drain Current, V_{GS} @ 10V[1]	4	A
I_D@T_A=100˚C	Continuous Drain Current, V_{GS} @ 10V[1]	1.5	A
I_{DM}	Pulsed Drain Current[2]	9	A
P_D@T_A=25˚C	Total Power Dissipation[3]	2	W
T_{STG}	Storage Temperature Range	-55 to 150	˚C
T_J	Operating Junction Temperature Range	-55 to 150	˚C
$R_{θJA}$	Thermal Resistance Junction-ambient [1]	125	˚C/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	80	˚C/W

150V N-Channel Enhancement Mode MOSFET

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

Symbol	Parameter	Condition	Min	Typ	Max	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	150	165	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	1.8	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=1.5A	-	220	280	mΩ
		V_{GS}=4.5V, I_D=1.5A		230	300	mΩ
G_{fs}	Forward Transconductance	V_{DS}=15V,I_D=1.5A	-	3	-	S
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	-	235	-	PF
C_{oss}	Output Capacitance		-	36	-	PF
C_{rss}	Reverse Transfer Capacitance		-	20	-	PF
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=75V,I_D=1A,R_L=75Ω V_{GS}=10V,R_G=6Ω	-	8	-	nS
t_r	Turn-on Rise Time		-	10	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	20	-	nS
t_f	Turn-Off Fall Time		-	15	-	nS
Q_g	Total Gate Charge	V_{DS}=75V,I_D=1.5A, V_{GS}=10V	-	8		nC
Q_{gs}	Gate-Source Charge		-	1.4	-	nC
Q_{gd}	Gate-Drain Charge		-	2.1	-	nC
V_{SD}	Diode Forward Voltage (Note 3)	V_{GS}=0V,I_S=2A	-	-	1.2	V
I_S	Diode Forward Current (Note 2)		-	-	2	A

Note :

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The power dissipation is limited by 150℃ junction temperature

4 .The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

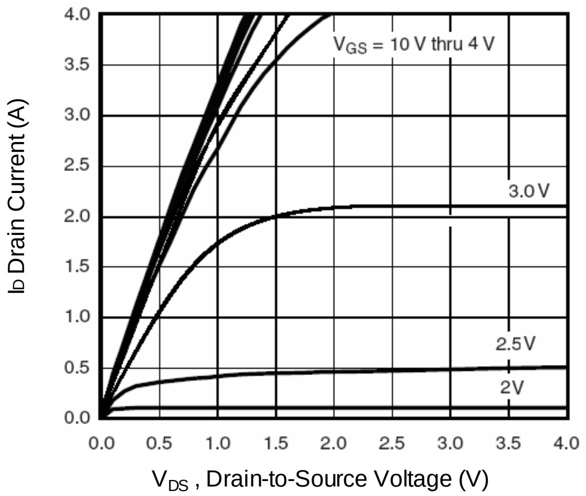


Fig.1 Typical Output Characteristics

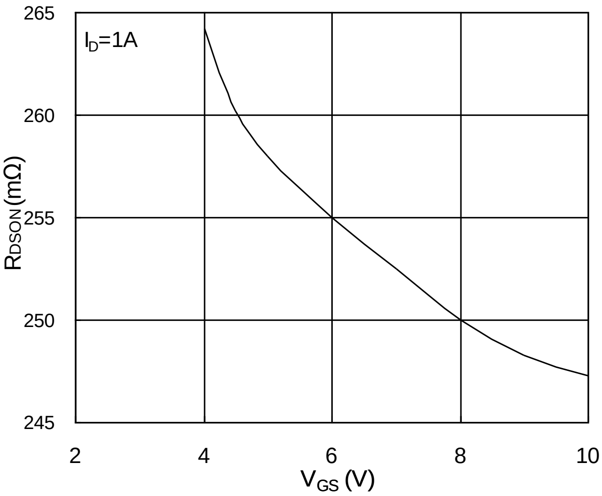


Fig.2 On-Resistance vs. Gate-Source

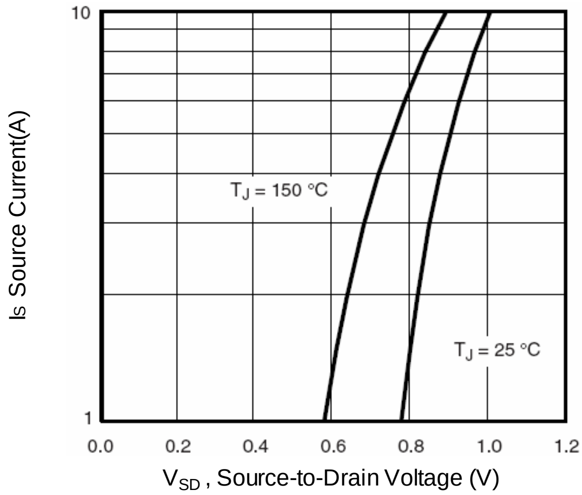


Fig.3 Forward Characteristics of Reverse

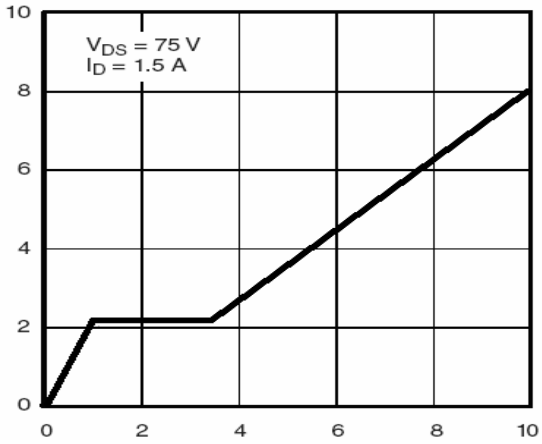


Fig.4 Gate-Charge Characteristics

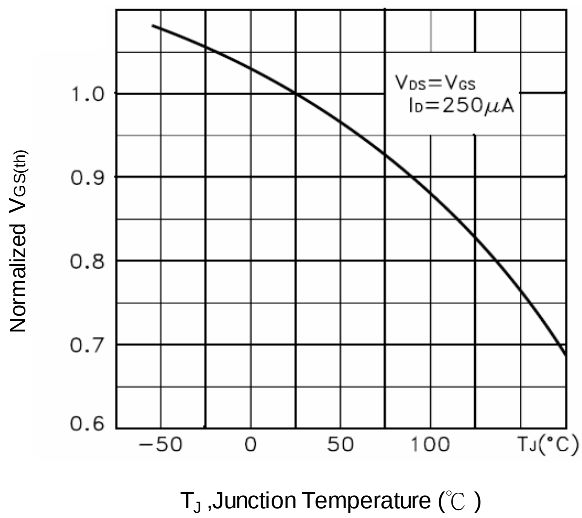


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

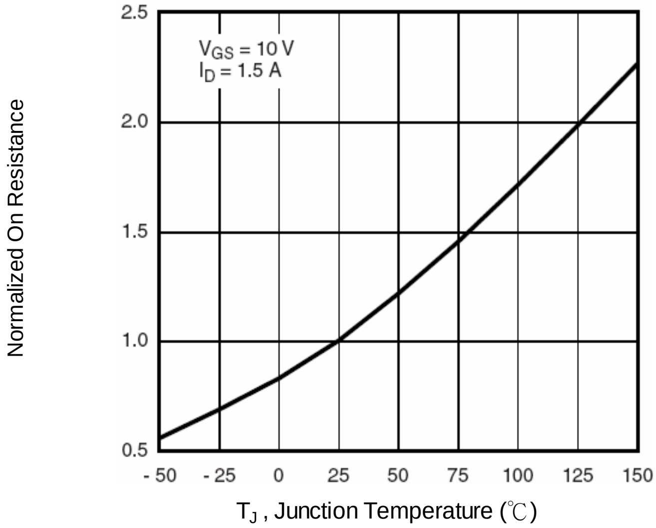


Fig.6 Normalized R_{DSON} vs. T_J

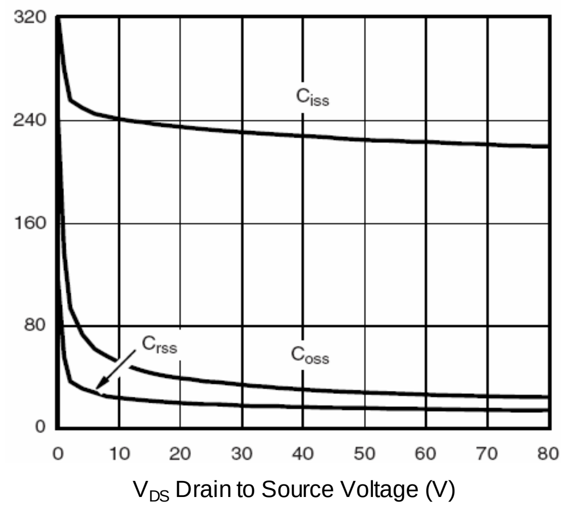


Fig.7 Capacitance

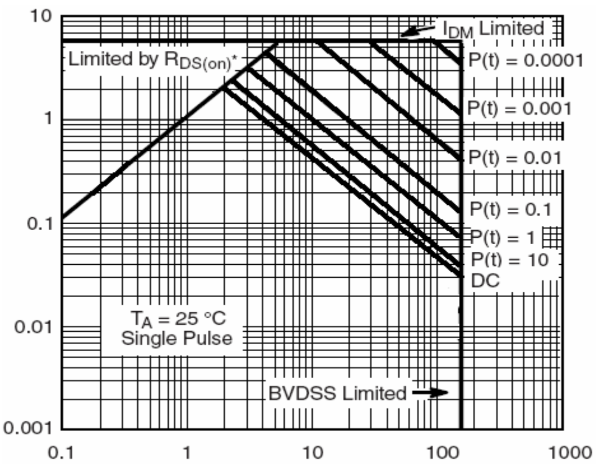


Fig.8 Safe Operating Area

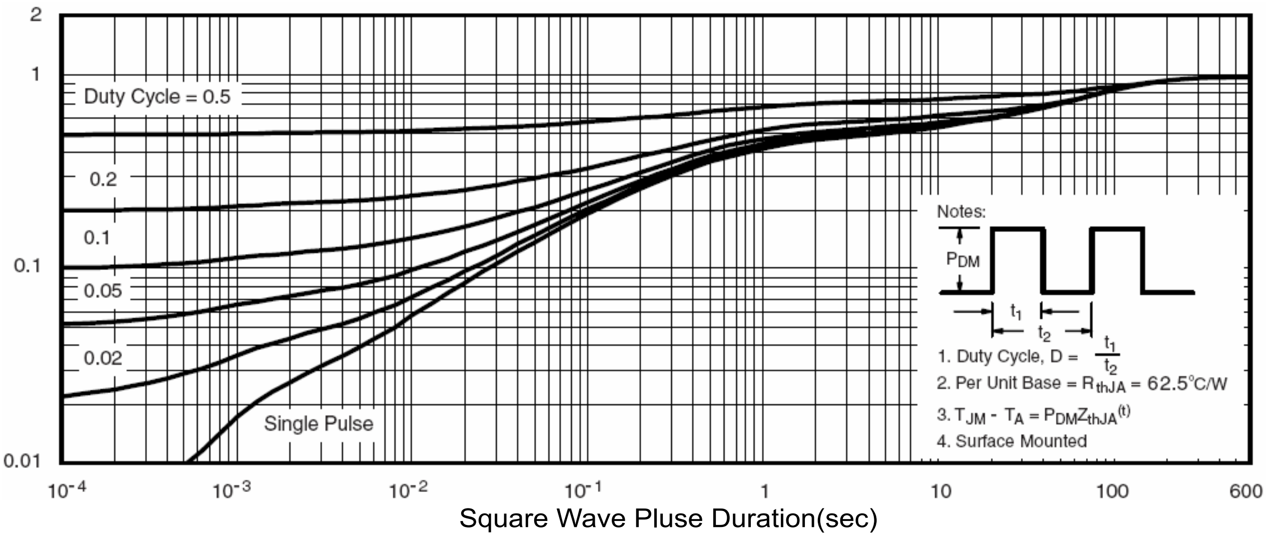


Fig.9 Normalized Maximum Transient Thermal Impedance

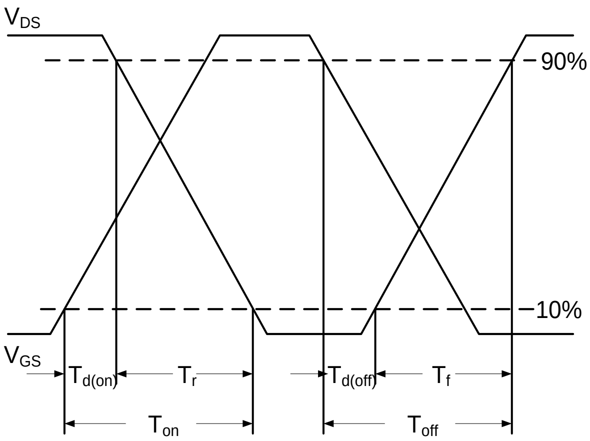


Fig.10 Switching Time Waveform

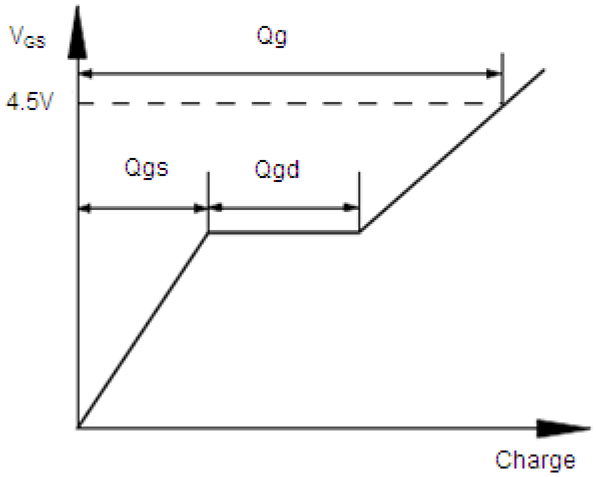
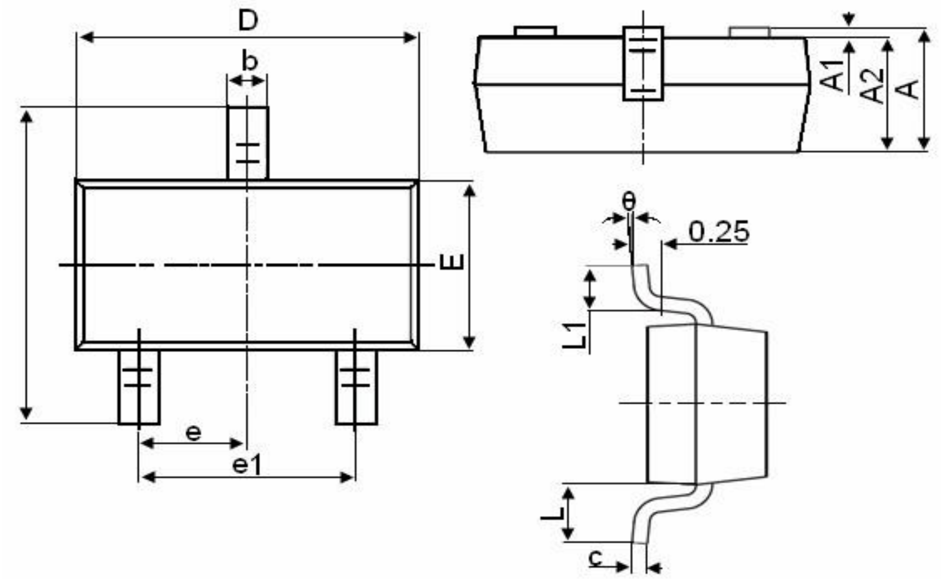


Fig.11 Gate Charge Waveform



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e		0.950TYP
e1	1.800	2.000
L		0.550REF
L1	0.300	0.500
θ	0°	8°

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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