XPX06NP10XS

N and P-Channel Enhancement Mode Power MOSFET

RoHS COMPLIANT

Description

The XPX06NP10XS uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

V_{DS} =100V,I_D =6A

$R_{DS(ON)}$=130mΩ (typ) @ V_{GS}=10V

$R_{DS(ON)}$=150mΩ (typ) @ V_{GS}=4.5V

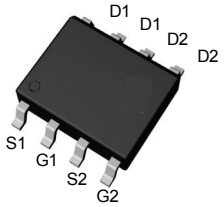
V_{DS} =-100V,I_D =-6A

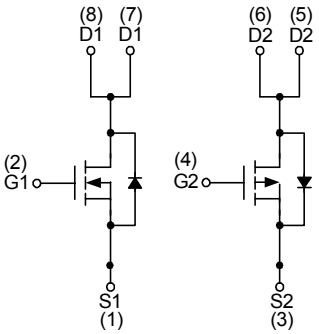
$R_{DS(ON)}$=135mΩ (typ) @ V_{GS}=10V

$R_{DS(ON)}$=165mΩ (typ) @ V_{GS}=4.5V

General Features

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





N-Channel MOSFET P-Channel MOSFET

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
XPX06NP10XS	XPX06NP10XS	SOP-8	Ø330mm	12mm	3000

Absolute Maximum Ratings (T_A= 25°C unless otherwise noted)

Symbol	Parameter	N Chan	P Chan	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage	100	-100	V
V_{GSS}	Gate-Source Voltage	±20	±20	
T_j	Maximum Junction Temperature	150		°C
T_{STG}	Storage Temperature Range	-55 to 150		
I_D	Continuous Drain Current	6	-6	A
I_{DM}	Pulsed Drain Current	12	-12	A
P_D	Power Dissipation	1.4		
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	89.3		°C/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	3.8	3.8	°C/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

N-Channl Electrical Characteristics (T_A= 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	N-Channl			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =80V, V_{GS}=0V	-	-	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=250μA	1		3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=3A	-	130	150	mΩ
		V_{GS}=4.5V, I_{DS}=3A	-	150	185	
V_{SD}	Diode Forward Voltage	I_{SD}=6A, V_{GS}=0V	-	-	1.3	V
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =25V, Frequency=1.0MHz	-	923	-	pF
C_{oss}	Output Capacitance		-	54	-	
C_{rss}	Reverse transfer capacitance		-	43	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GEN}=10V ,V_{DD}=50V R_G=25Ω, I_{DS}=6A	-	3.5	-	nS
t_r	Turn-on rise Time		-	17	-	
$t_{d(OFF)}$	Turn-off delay Time		-	22	-	
t_f	Turn-off rise Time		-	17	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS} =50V, V_{GS}=10V, I_{DS}=6A	-	23	-	nC
Q_{gs}	Gate-Source Charge		-	3.4	-	
Q_{gd}	Gate-Drain Charge		-	4.7	-	

Notes: 1. Pulse Test: Pulse width limited by Max. junction temperature.
2. N-CH, P-CH are same, mounted on 2oz FR4 board t≦10s.

P-Channl Electrical Characteristics (T_A= 25°C unless otherwise noted)

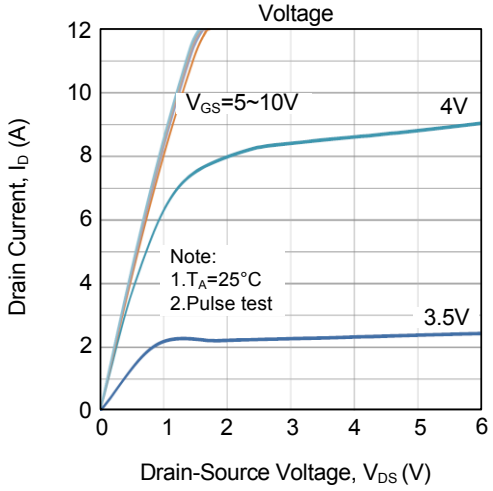
Symbol	Parameter	Test Conditions	P-Channl			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250A	-100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =-80V, V_{GS}=0V	-1	-	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=-250A	-1		-3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=-10V, I_{DS}=-3A	-	135	155	mΩ
		V_{GS}=-4.5V, I_{DS}=-3A	-	165	210	
V_{SD} [d]	Diode Forward Voltage	I_{SD}=-6A, V_{GS}=0V	-	-	-1.3	V
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-25V, Frequency=1.0MHz	-	1350	-	pF
C_{oss}	Output Capacitance		-	90	-	
C_{rss}	Reverse transfer capacitance		-	62	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GEN}=-10V ,V_{DD}=-50V R_G=3.3Ω, I_{DS}=-6A	-	6.5	-	nS
t_r	Turn-on rise Time		-	17	-	
$t_{d(OFF)}$	Turn-off delay Time		-	37	-	
t_f	Turn-off rise Time		-	19	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS}=-50V, V_{GS}=-10V, I_{DS}=-6A	-	34	-	nC
Q_{gs}	Gate-Source Charge		-	5.2	-	
Q_{gd}	Gate-Drain Charge		-	5.5	-	

Notes: 1. Pulse Test: Pulse width limited by Max. junction temperature.
2. N-CH, P-CH are same, mounted on 2oz FR4 board t≦10s.

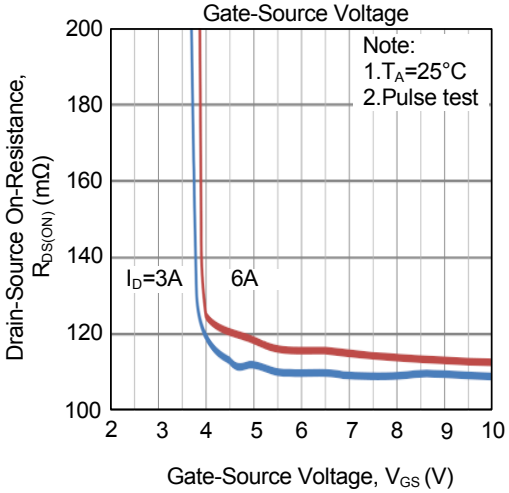
■ TYPICAL CHARACTERISTICS

N-CHANNEL

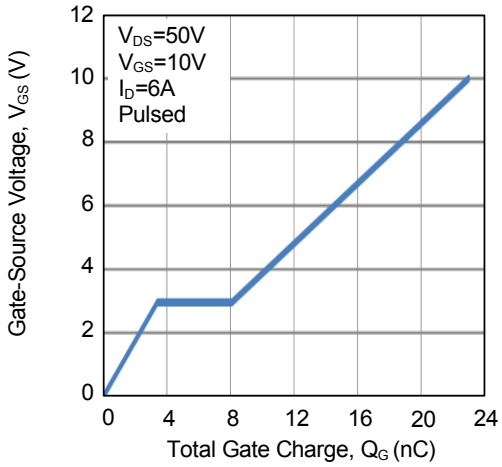
Drain Current vs. Drain-Source Voltage



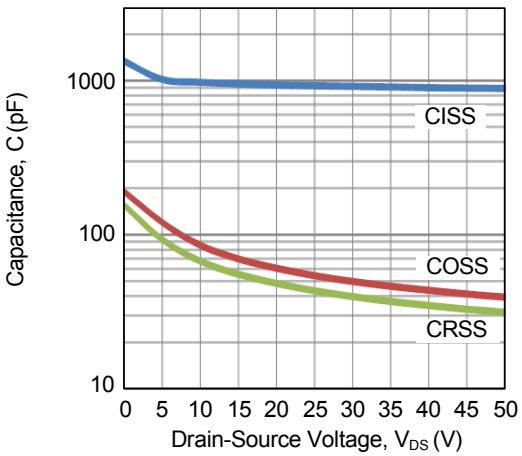
Drain-Source On-Resistance vs. Gate-Source Voltage



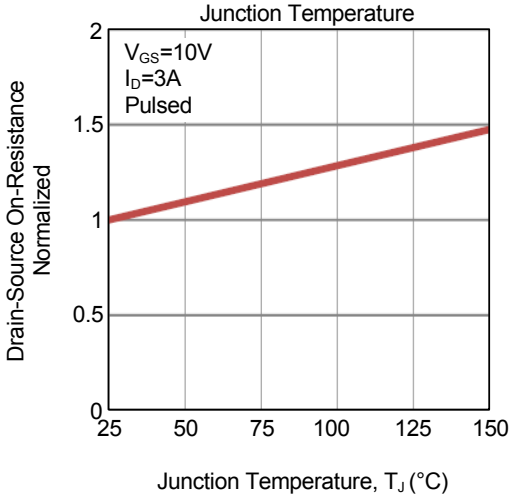
Gate Charge Characteristics



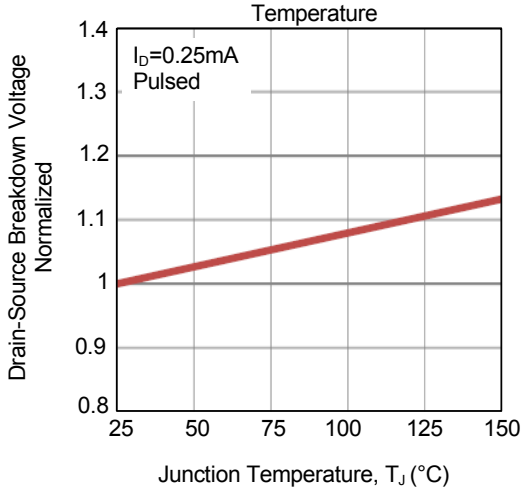
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature



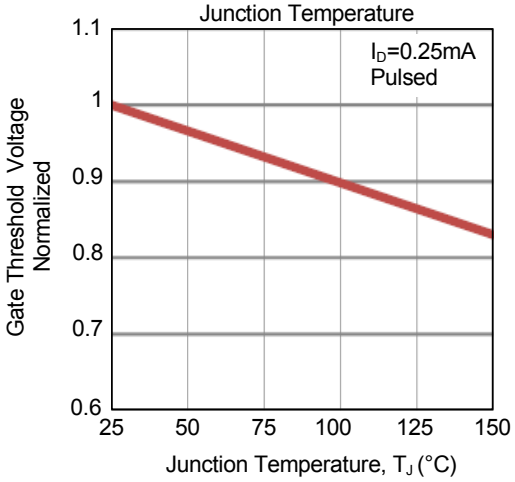
Breakdown Voltage vs. Junction Temperature



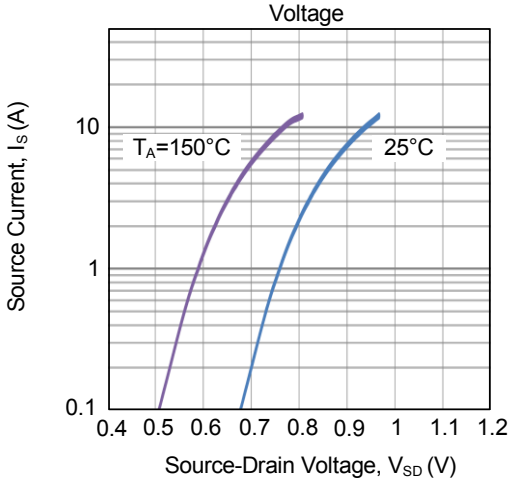
■ TYPICAL CHARACTERISTICS (Cont.)

N-CHANNEL

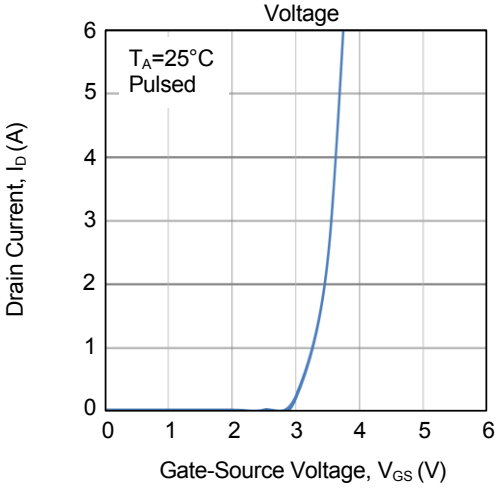
Gate Threshold Voltage vs. Junction Temperature



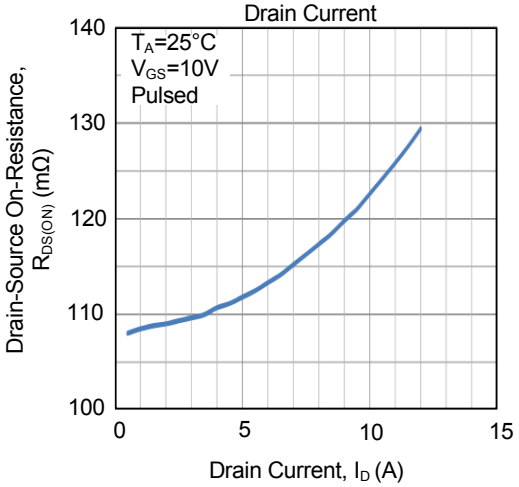
Source Current vs. Source-Drain Voltage



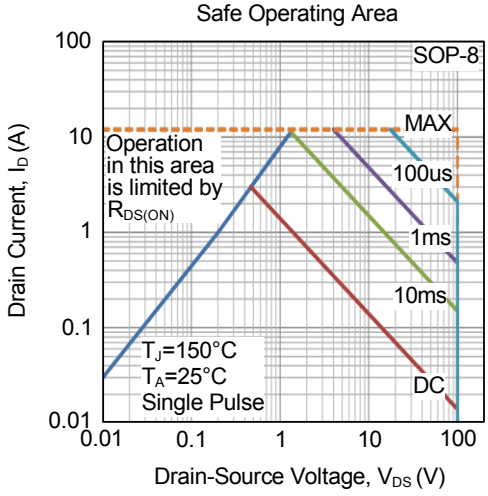
Drain Current vs. Gate-Source Voltage



Drain-Source On-Resistance vs. Drain Current



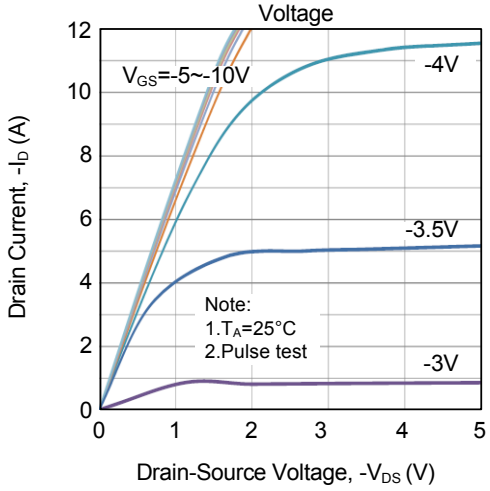
Safe Operating Area



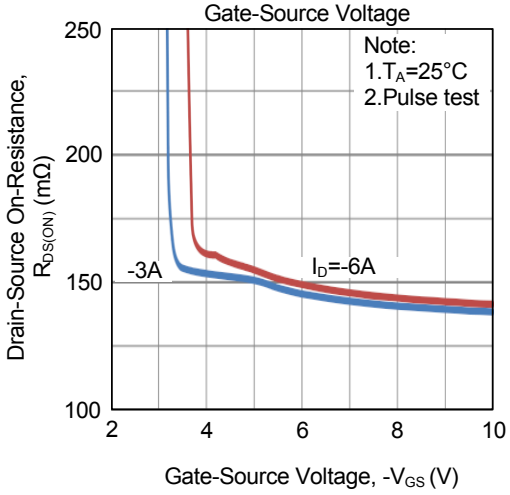
■ TYPICAL CHARACTERISTICS (Cont.)

P-CHANNEL

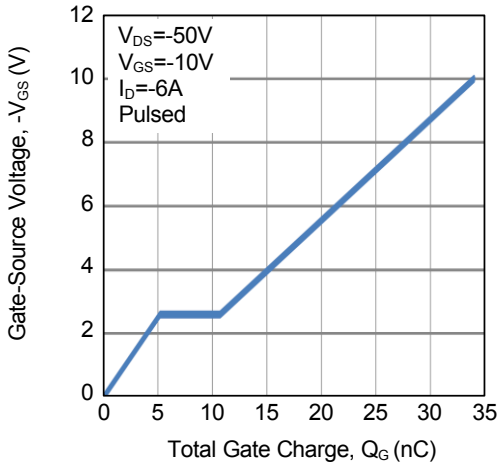
Drain Current vs. Drain-Source Voltage



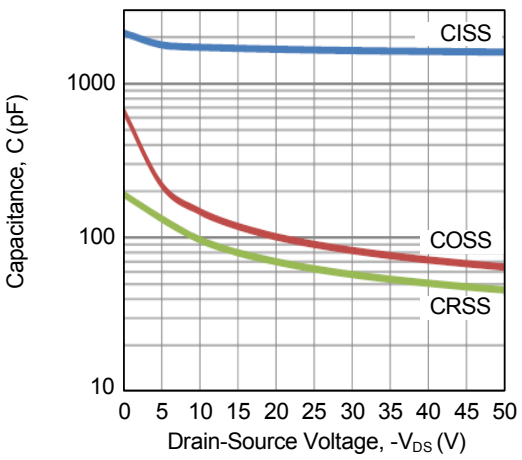
Drain-Source On-Resistance vs. Gate-Source Voltage



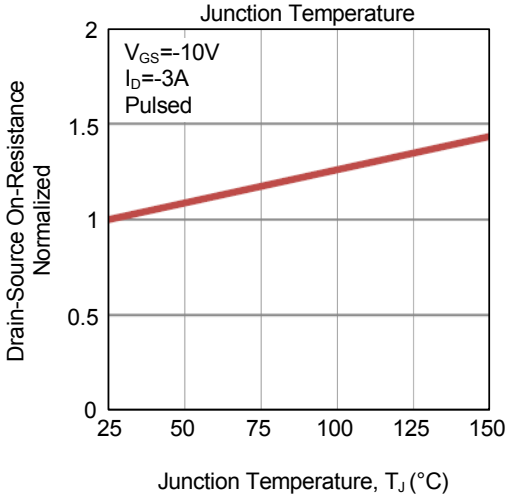
Gate Charge Characteristics



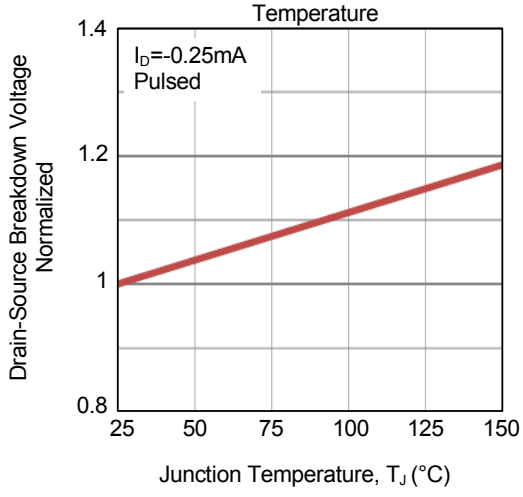
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

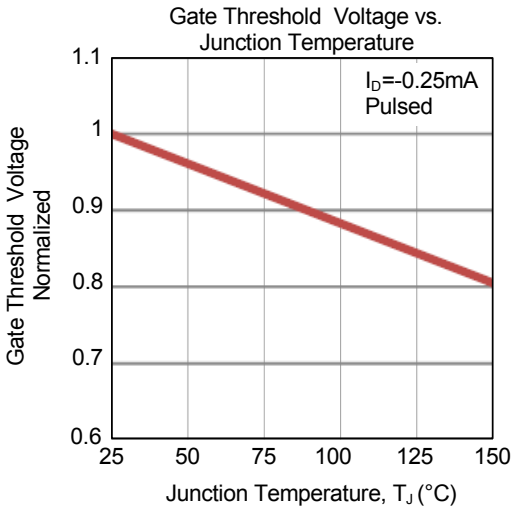


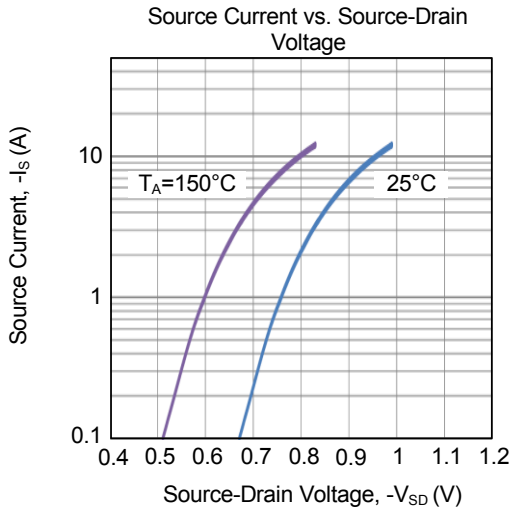
Breakdown Voltage vs. Junction Temperature

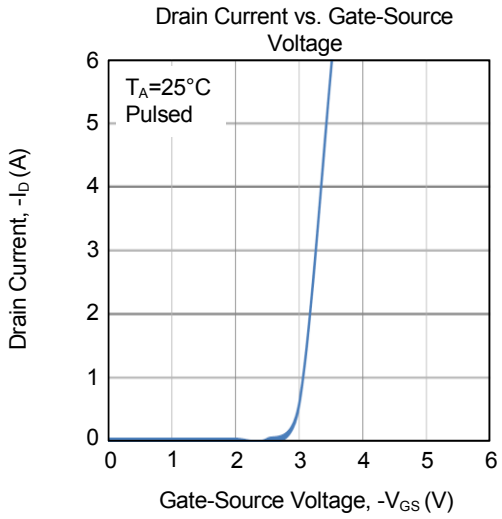


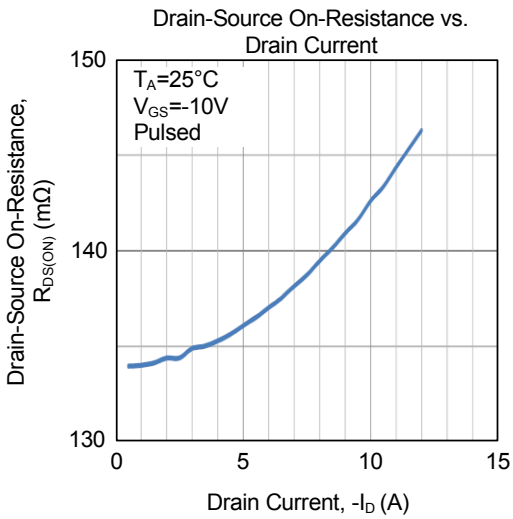
■ TYPICAL CHARACTERISTICS (Cont.)

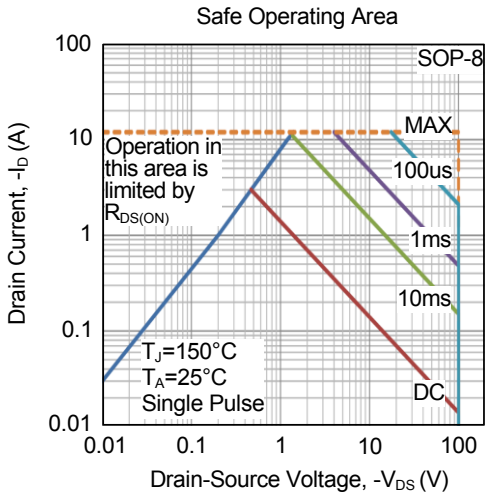
P-CHANNEL



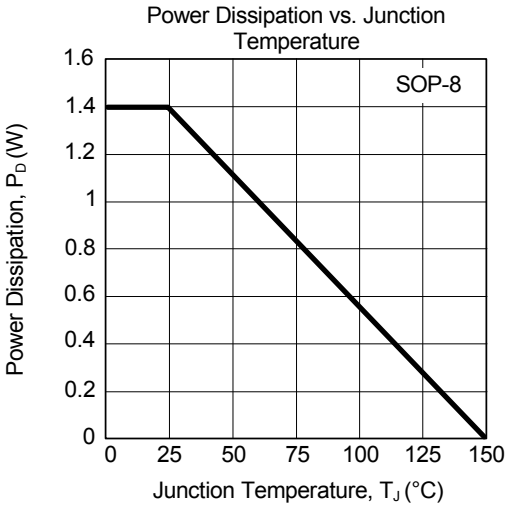


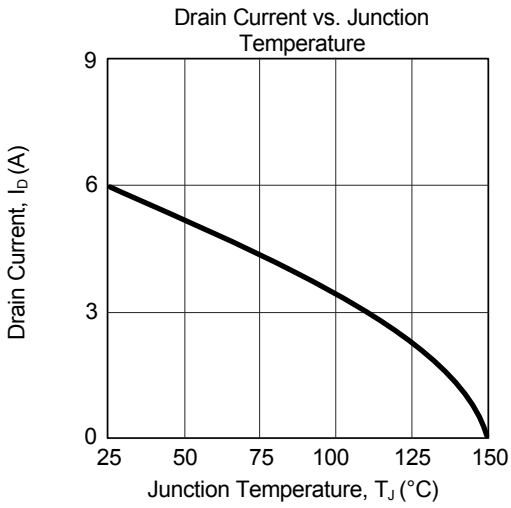






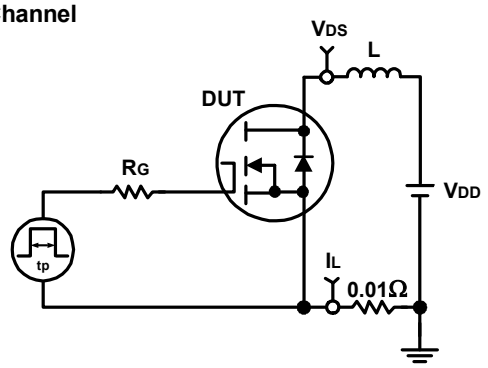
■ TYPICAL CHARACTERISTICS (Cont.)

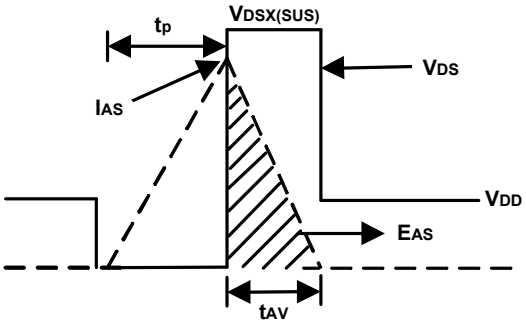




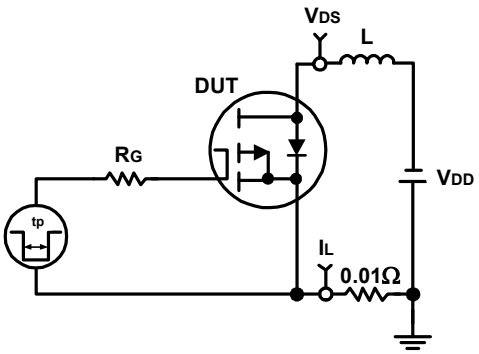
Avalanche Test Circuit and Waveforms

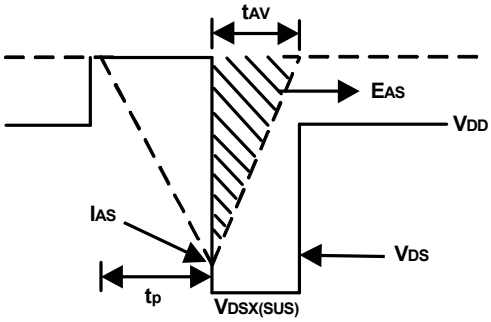
N Channel





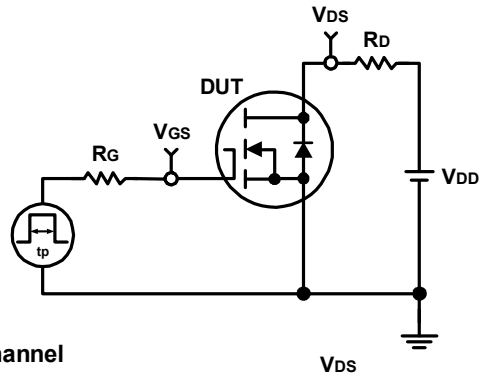
P Channel

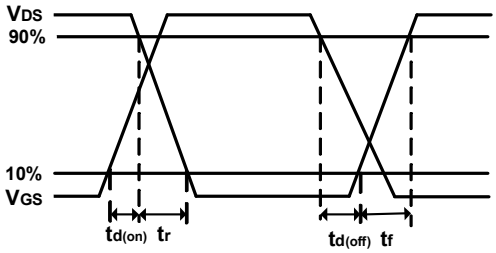




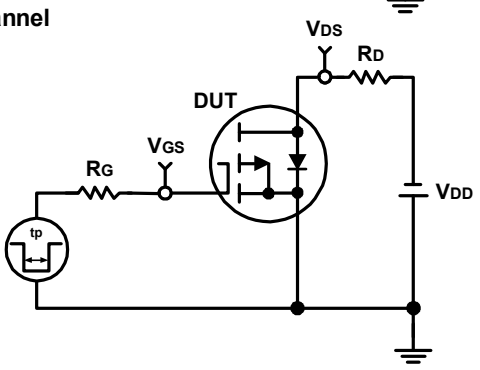
Switching Time Test Circuit and Waveforms

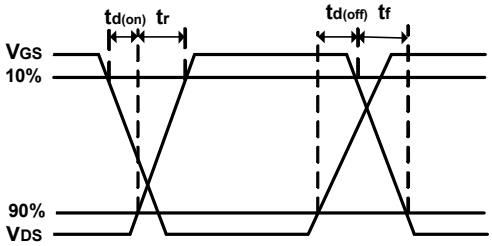
N Channel



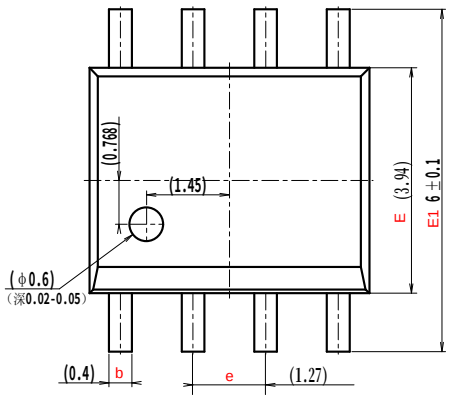


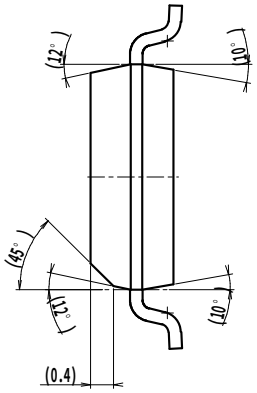
P Channel

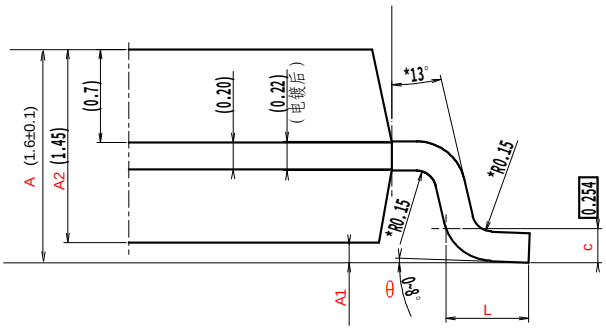


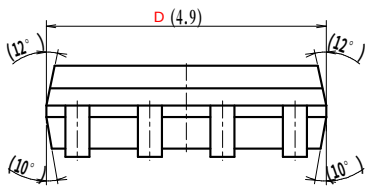


SOP8 PACKAGEE OUTLINE









字符	Dimension millimeters		
	Min	Standard	Max
A	1.39	1.55	1.700
A1	0.04	0.08	0.15
A2	1.350	1.450	1.550
b	0.300	0.400	0.500
c	0.220	0.254	0.280
D	4.800	4.900	5.000
E	3.840	3.940	4.040
E1	5.900	6.000	6.100
e		1.27(BSC)	
L	0.400	0.550	0.700
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.

Attention:

- Any and all XPX power products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your XPX power representative nearest you before using any XPX power products described or contained herein in such applications.

- XPX power assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all XPX power products described or contained herein.

- Specifications of any and all XPX power products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

- XPX power Semiconductor CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

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- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. XPX power believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

- Any and all information described or contained herein are subject to change without notice due to product/ technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the XPX power product that you intend to use.

- This catalog provides information as of Sep.2019. Specifications and information herein are subject to change without notice.