XPX4294XS

100V N-Channel Enhancement Mode Power MOSFET

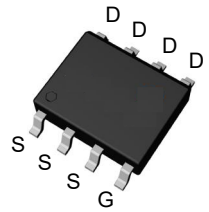
Features

- 100V/16A,
  $R_{DS(ON)}$= 8.7mΩ(typ.) @ V_{GS} = 10V
  $R_{DS(ON)}$= 10.2mΩ(typ.) @ V_{GS} = 4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

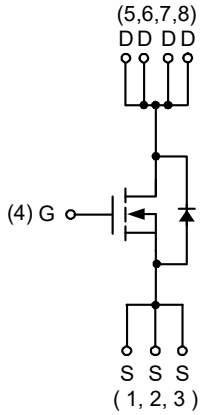
Applications

- Power Management for SMPS.
- DC-DC Converter.

Pin Description



Top View of SOP-8



N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S [c]	Diode Continuous Forward Current	T_A=25°C	6	A
I_D [c]	Continuous Drain Current	T_A=25°C	16	A
		T_A=70°C	12	
I_{DM} [a]	Pulsed Drain Current	T_A=25°C	34	
P_D [c]	Maximum Power Dissipation	T_A=25°C	3.1	W
		T_A=70°C	2.0	
$R_{\theta JA}$ [c]	Thermal Resistance-Junction to Ambient	t ≤ 10s	40	°C/W
		Steady State	80	°C/W
I_{AS} [b]	Avalanche Current, Single pulse	L=0.5mH	25	A
E_{AS} [b]	Avalanche Energy, Single pulse	L=0.5mH	156	mJ

Note a : Pulse width limited by maximum junction temperature.
Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).
Note c : Surface Mounted on 1in^2 pad area, 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	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1	2	3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=9A	-	8.7	10.5	mΩ
		V_{GS}=4.5V, I_{DS}=6A	-	10.2	13.3	mΩ
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=2A, V_{GS}=0V	-	0.8	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=9A, dI_{SD}/dt=100A/μs	-	52	-	ns
Q_{rr}	Reverse Recovery Charge		-	82	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,f=1MHz	-	1.0	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	2310	3010	pF
C_{oss}	Output Capacitance		-	690	-	
C_{rss}	Reverse Transfer Capacitance		-	50	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	15	27	ns
t_r	Turn-on Rise Time		-	9	17	
$t_{d(OFF)}$	Turn-off Delay Time		-	51	92	
t_f	Turn-off Fall Time		-	65	117	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=50V, V_{GS}=4.5V, I_{DS}=9A	-	22	-	nC
Q_g	Total Gate Charge	V_{DS}=50V, V_{GS}=10V, I_{DS}=9A	-	44	62	
Q_{gs}	Gate-Source Charge		-	8	-	
Q_{gd}	Gate-Drain Charge		-	9	-	

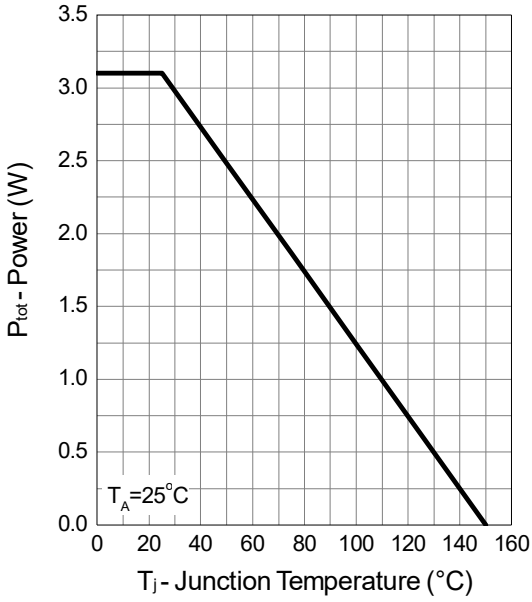
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Package Marking and Ordering Information

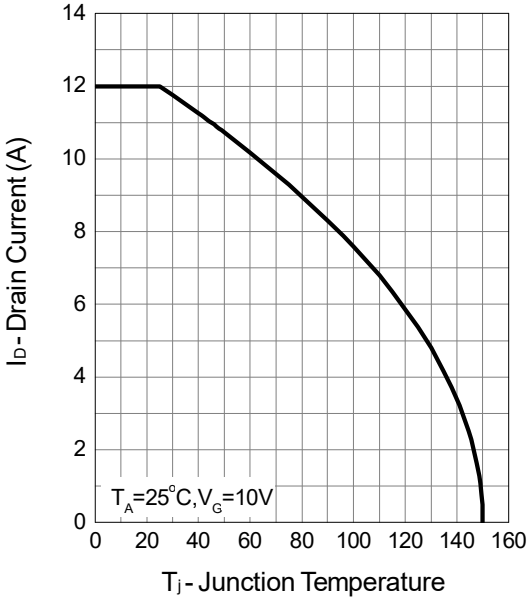
Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
XPX4294XS	XPX4294XS	SOP-8	-	-	3000

Typical Operating Characteristics

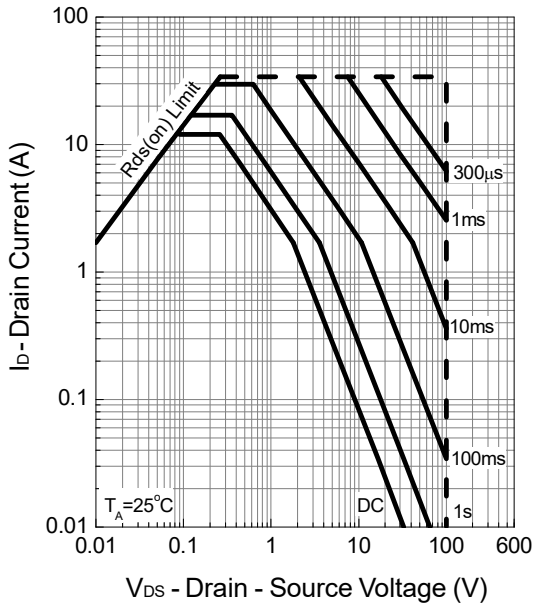
Power Dissipation



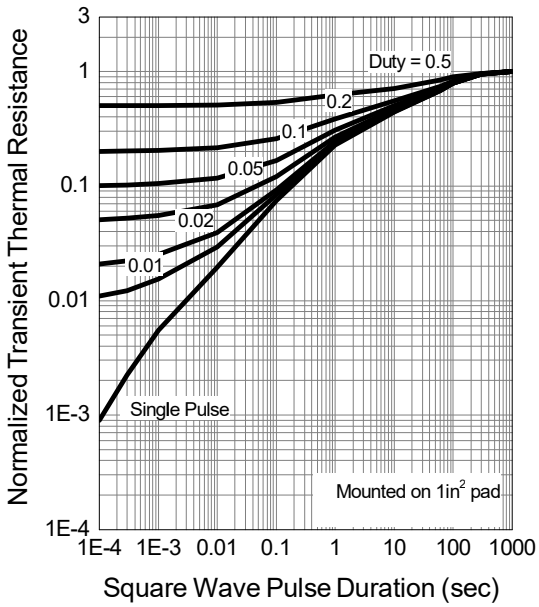
Drain Current



Safe Operation Area

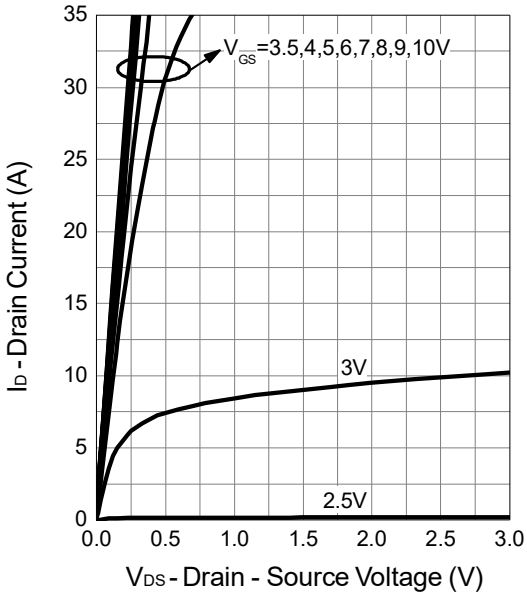


Thermal Transient Impedance

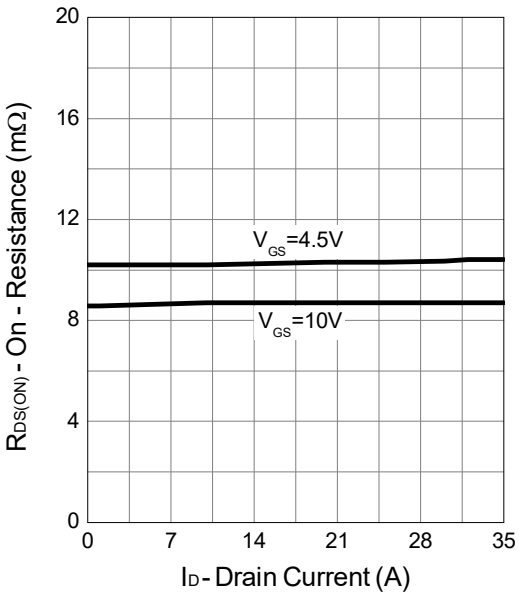


Typical Operating Characteristics (Cont.)

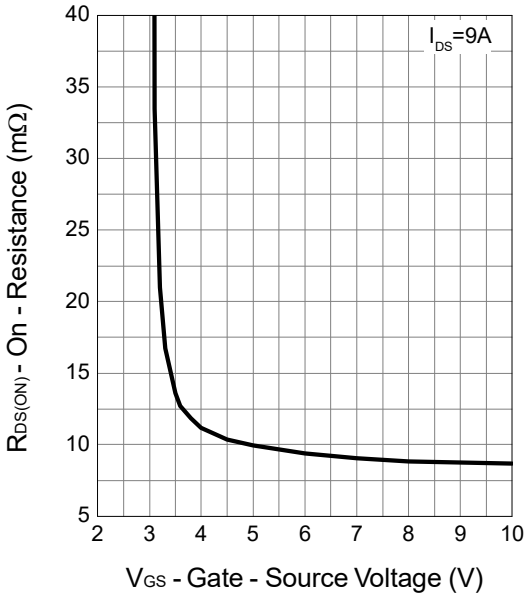
Output Characteristics



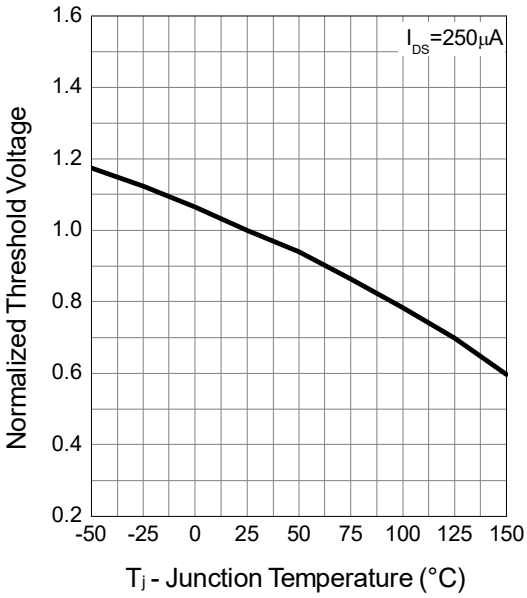
Drain-Source On Resistance



Gate-Source On Resistance

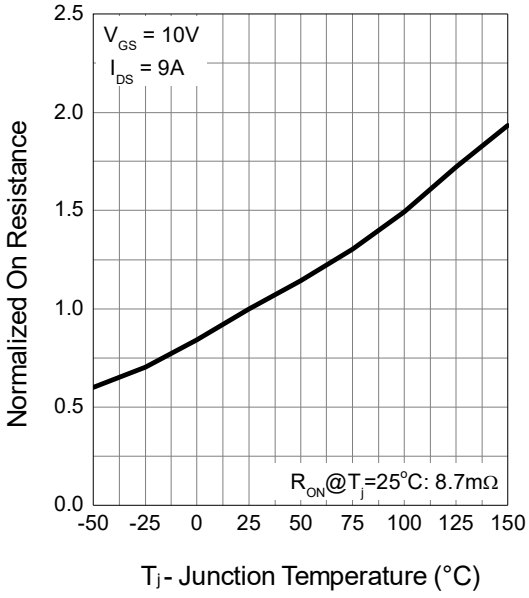


Gate Threshold Voltage

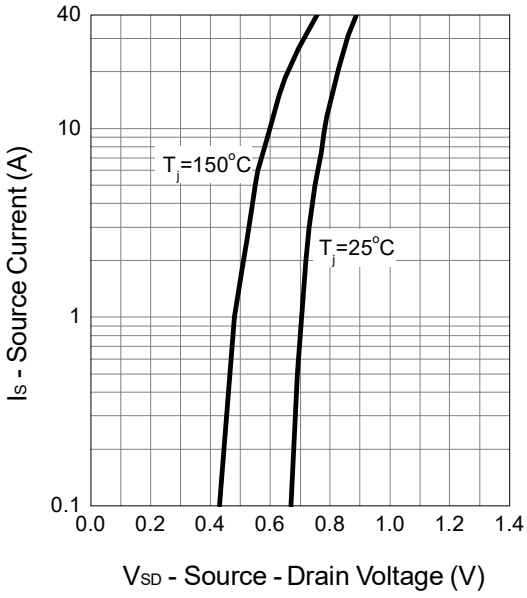


Typical Operating Characteristics (Cont.)

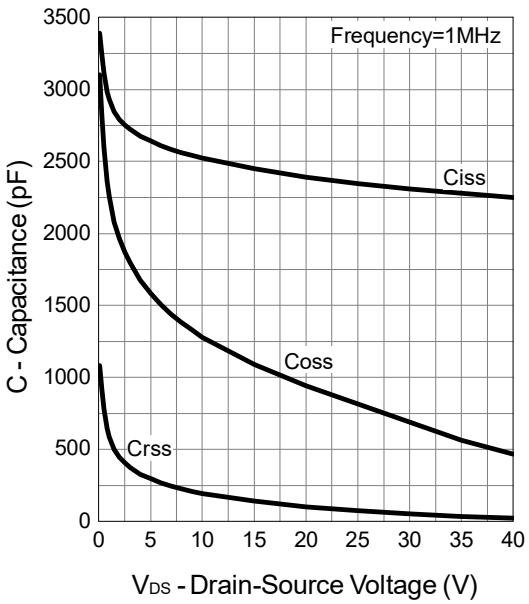
Drain-Source On Resistance



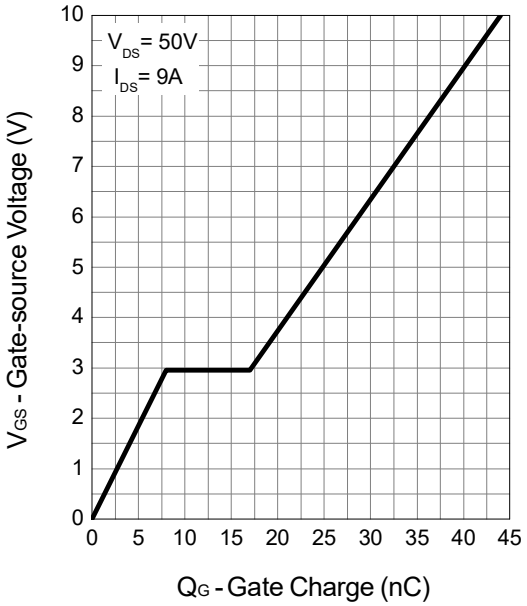
Source-Drain Diode Forward



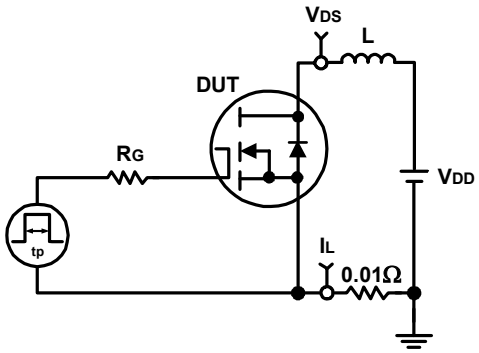
Capacitance

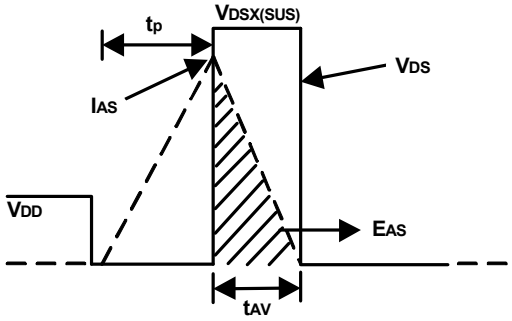


Gate Charge

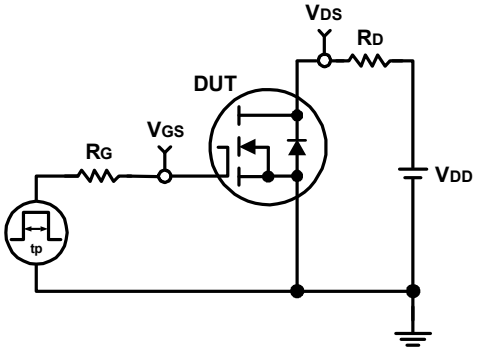


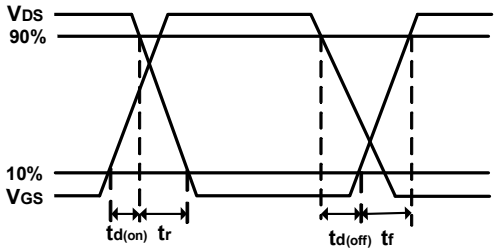
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





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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