RoHS COMPLIANT

Description

The XPX16P20XS uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

V_{DS} =-20V,I_D =-16A

$R_{DS(ON)}$=10mΩ (typ) @ V_{GS}=-4.5V

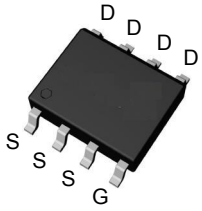
$R_{DS(ON)}$=13mΩ (typ) @ V_{GS}=-2.5V

General Features

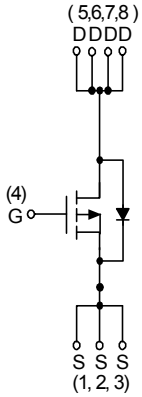
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Application

- Load switch
- Battery protection



Top View of SOP-8



P-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	
I_D [a]	Continuous Drain Current (V_{GS}=-4.5V)	T_A=25°C	-16	A
		T_A=100°C	-9.2	
I_{DM} [a]	Pulsed Drain Current (V_{GS}=-4.5V)		-44 *	
I_S [a]	Diode Continuous Forward Current		-10	A
T_J	Maximum Junction Temperature		150	°C
I_{AS} [d]	Avalanche Current, Single pulse	L=0.5mH	-12	A
E_{AS} [d]	Avalanche Energy, Single pulse	L=0.5mH	36	mJ
T_{STG}	Storage Temperature Range		-55 to 150	°C
P_D [a]	Maximum Power Dissipation	T_A=25°C	3.1	W
		T_A=70°C	2	
$R_{\theta JA}$ [a,b]	Thermal Resistance-Junction to Ambient	t ≤ 10s	40	°C/W
		Steady State	75	
$R_{\theta JL}$ [c]	Thermal Resistance-Junction to Case		24	°C/W

Note * : Package limited.
Note a : Surface Mounted on 1in^2 pad area, t ≤ 10sec.
Note b : Maximum under Steady State conditions is 75 °C/W.
Note c : The power dissipation P_D is based on $T_{J(MAX)}$ = 150°C, and it is useful for reducing junction-to-case thermal resistance ($R_{\theta JC}$) when additional heat sink is used.
Note d : UIS tested and pulse width limited by maximum junction temperature 150oC (initial temperature Tj=25oC).

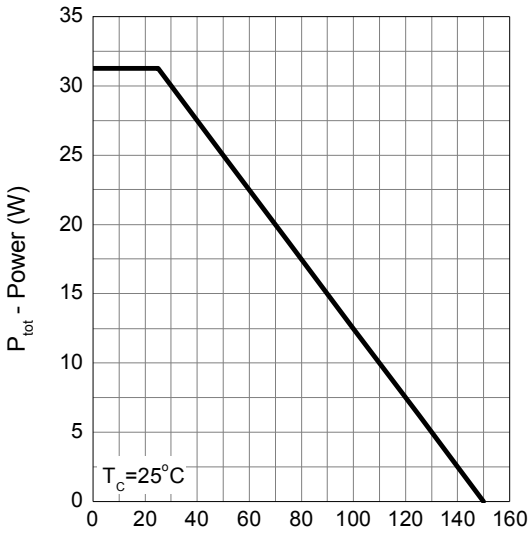
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.5	-	-1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±10	μA
$R_{DS(ON)}$ [e]	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_{DS}=-16A	-	10	13	mΩ
		V_{GS}=-2.5V, I_{DS}=-6A	-	13	18	
		V_{GS}=-1.8V, I_{DS}=-1A	-	20	25	
Diode Characteristics						
V_{SD} [e]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1	V
t_{rr} [f]	Reverse Recovery Time	I_{SD}=-11A, dI_{SD}/dt=100A/μs	-	63	-	ns
Q_{rr} [f]	Reverse Recovery Charge		-	54	-	nC
Dynamic Characteristics [f]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-10V, Frequency=1.0MHz	-	1620	-	pF
C_{oss}	Output Capacitance		-	320	-	
C_{rss}	Reverse Transfer Capacitance		-	290	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-10V, R_L=10Ω, I_{DS}=-1A, V_{GEN}=-4.5V, R_G=6Ω	-	9	-	ns
t_r	Turn-on Rise Time		-	13	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	26	-	
t_f	Turn-off Fall Time		-	167	-	
Gate Charge Characteristics [f]						
Q_g	Total Gate Charge	V_{DS}=-10V, V_{GS}=-4.5V, I_{DS}=-11A	-	25	-	nC
Q_{gs}	Gate-Source Charge		-	1.6	-	
Q_{gd}	Gate-Drain Charge		-	11	-	

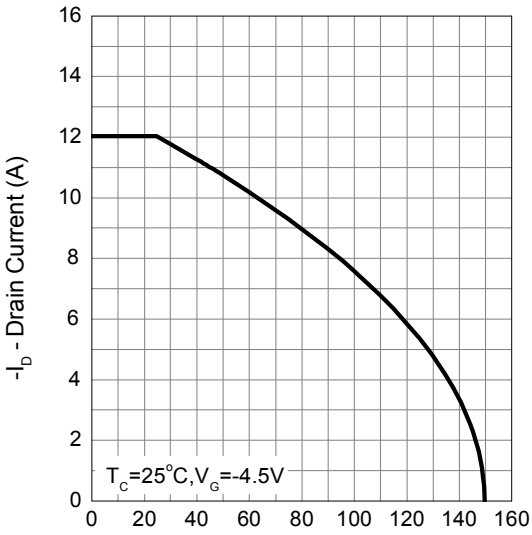
Note e：Pulse test; pulse width≤300μs, duty cycle≤2%.
Note f：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

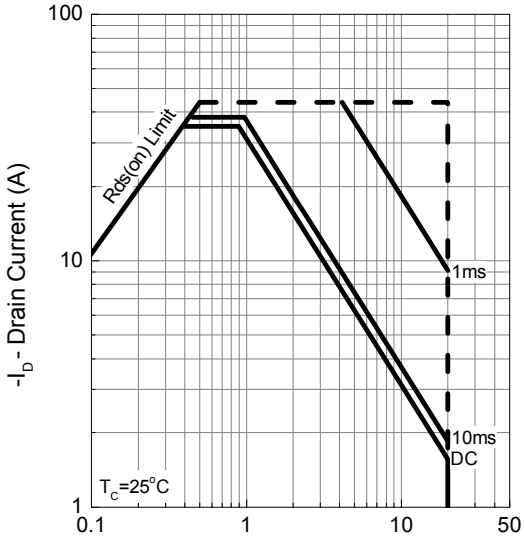
Power Dissipation



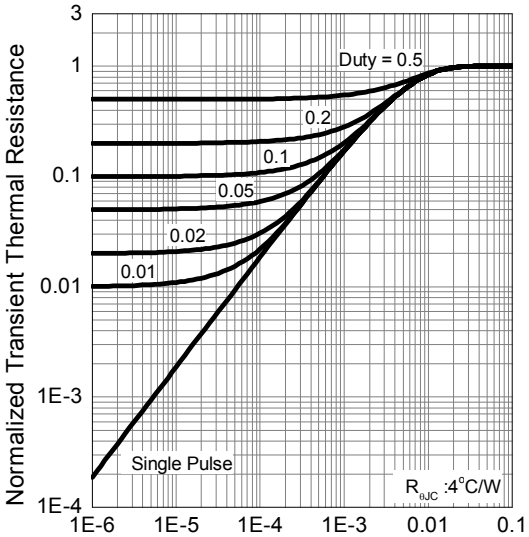
Drain Current



Safe Operation Area

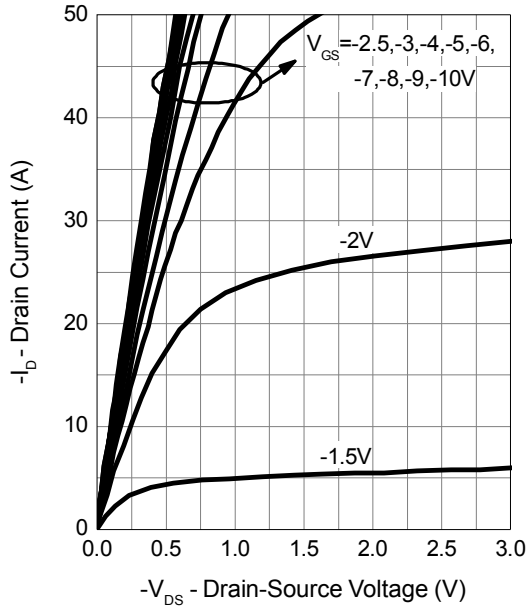


Thermal Transient Impedance

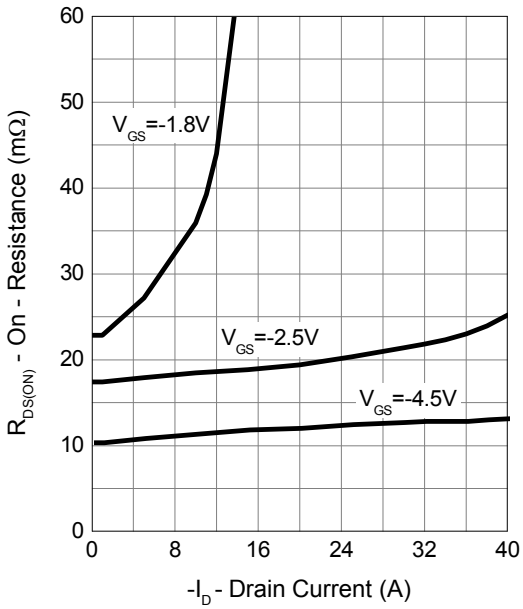


Typical Operating Characteristics (Cont.)

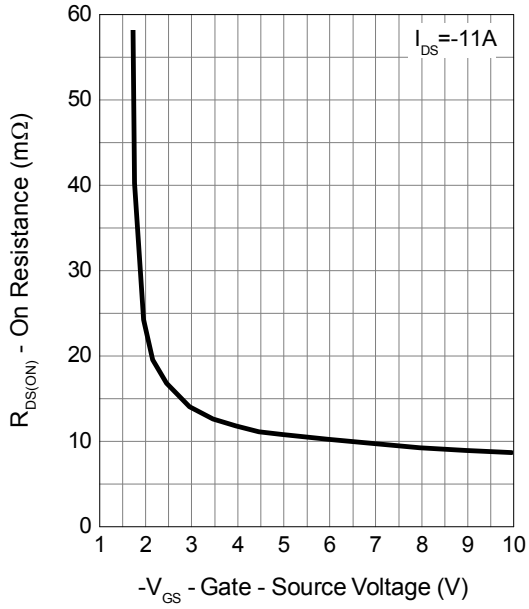
Output Characteristics



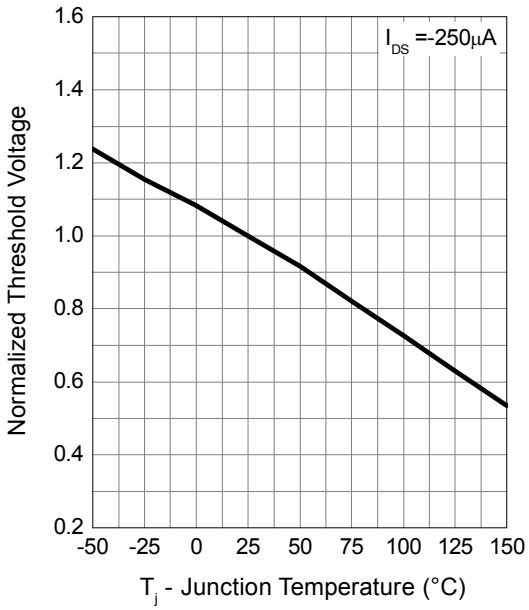
Drain-Source On Resistance



Gate-Source On Resistance

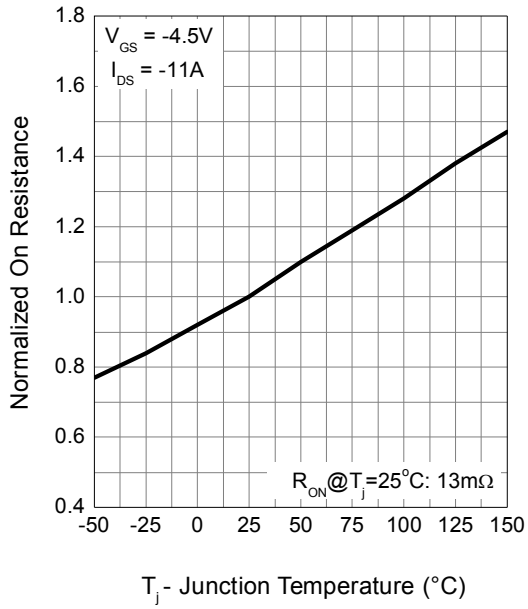


Gate Threshold Voltage

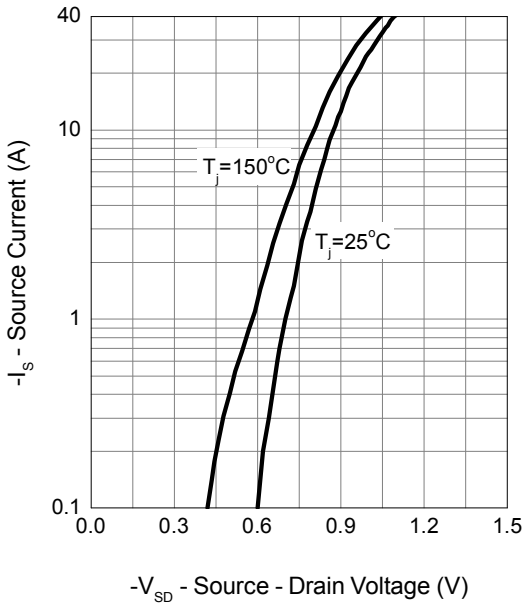


Typical Operating Characteristics (Cont.)

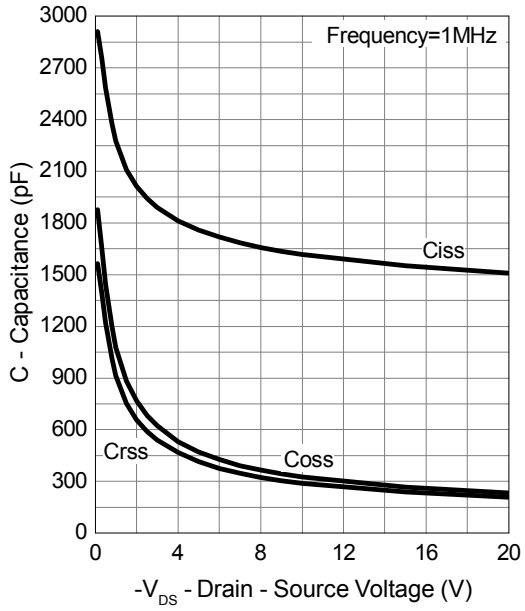
Drain-Source On Resistance



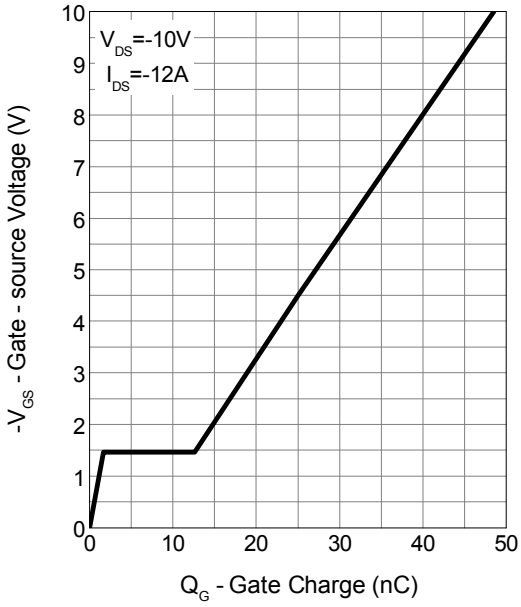
Source-Drain Diode Forward



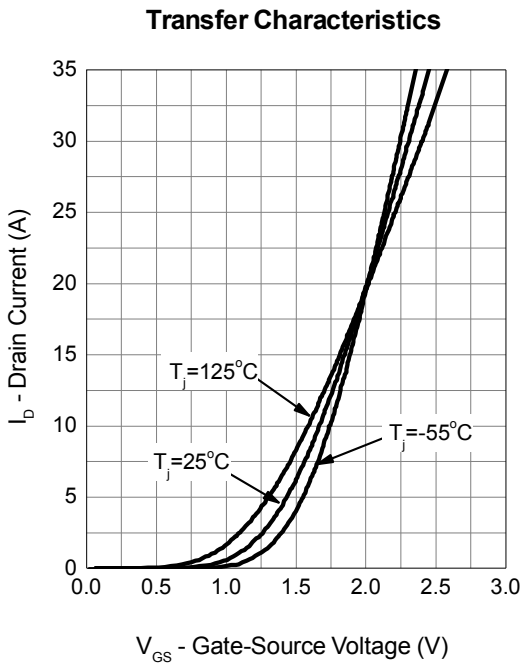
Capacitance



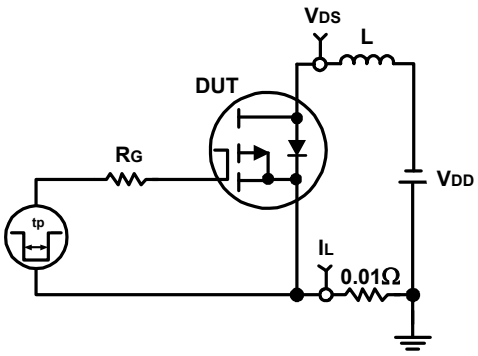
Gate Charge

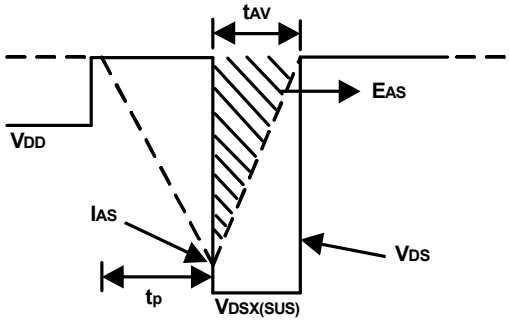


Typical Operating Characteristics (Cont.)

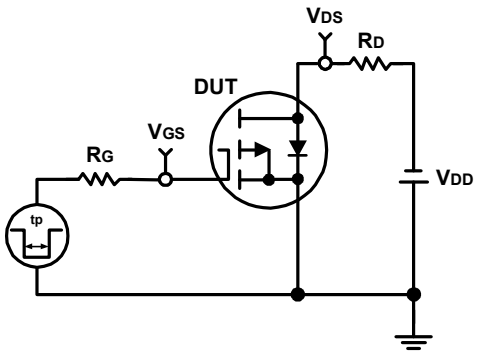


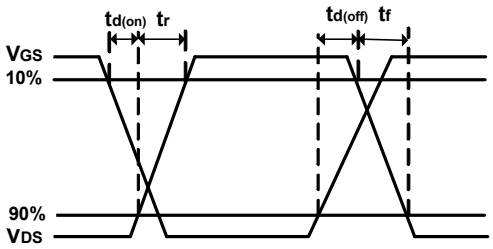
Avalanche Test Circuit and Waveforms



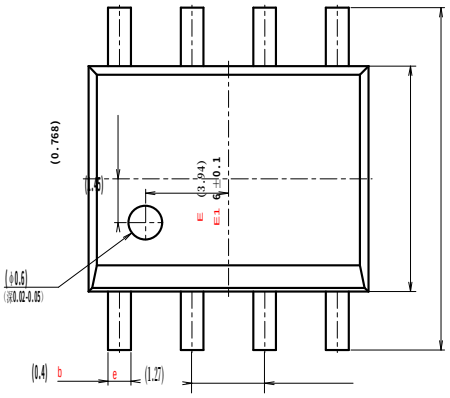


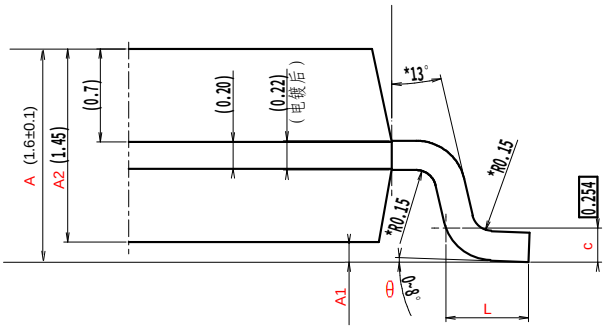
Switching Time Test Circuit and Waveforms

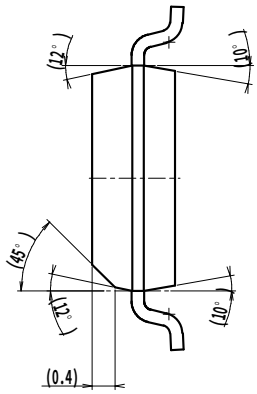




SOP8 PACKAGE OUTLINE







字符	Dimension millimeters		
	Min	Standard	Max
A	1.500	1.600	1.700
A1	0.040	0.080	0.150
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°