



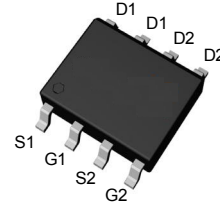
## Features

- 30V/8A,  
 $R_{DS(ON)} = 16.5m\Omega(\text{typ.}) @ V_{GS} = 10V$   
 $R_{DS(ON)} = 21m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- 100% UIS +  $R_g$  Tested
- Reliable and Rugged
- Lead Free and Green Devices Available  
 (RoHS Compliant)

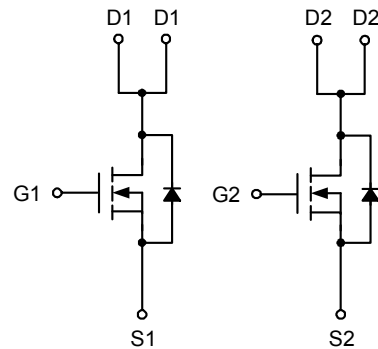
## Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

## Pin Description



Top View of SOP-8



N-Channel MOSFET

## Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
XPX4842XS	4842	SOP-8	-	-	-

**Absolute Maximum Ratings** ( $T_A = 25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit	
$V_{DSS}$	Drain-Source Voltage	30	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 20$		
$I_D^a$	Continuous Drain Current ( $V_{GS}=10V$ )	$T_A=25^\circ\text{C}$	8	A
		$T_A=70^\circ\text{C}$	6.5	
$I_{DM}^a$	300 $\mu\text{s}$ Pulsed Drain Current ( $V_{GS}=10V$ )	40		
$I_S^a$	Diode Continuous Forward Current	1		
$I_{AS}^b$	Avalanche Current (Single Pulse)	9		
$E_{AS}^b$	Avalanche Energy, Single Pulse ( $L=0.5mH$ )	20	mJ	
$T_J$	Maximum Junction Temperature	150	$^\circ\text{C}$	
$T_{STG}$	Storage Temperature Range	-55 to 150		
$P_D^a$	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	1.7	W
		$T_A=70^\circ\text{C}$	1.08	
$R_{\theta JA}^a$	Thermal Resistance-Junction to Ambient	$t \leq 10s$	48	$^\circ\text{C/W}$
		Steady State	74	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	Steady State	32	

Note a : Surface Mounted on  $1in^2$  pad area,  $t \leq 10sec$ . Maximum Power dissipation is calculated from  $R_{\theta JA}$  (worst) =  $62.5^\circ\text{C/W}$  under  $t \leq 10s$ .

Note b : UIS tested and pulse width limited by maximum junction temperature  $150^\circ\text{C}$  (initial temperature  $T_J=25^\circ\text{C}$ ).

**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	UT4842			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=24V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=85^\circ\text{C}$	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.3	1.9	2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=8A$	-	16.5	19	m $\Omega$
		$V_{GS}=4.5V, I_{DS}=8A$	-	21	25	
$G_{fs}$	Forward Transconductance	$V_{DS}=5V, I_{DS}=8A$	-	32	-	S
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD}=1A, V_{GS}=0V$	-	0.7	1.1	V
$t_{rr}^b$	Reverse Recovery Time	$I_{SD}=8A, dI_{SD}/dt=100A/\mu s$	-	15.5	-	ns
$Q_{rr}^b$	Reverse Recovery Charge		-	6.5	-	nC

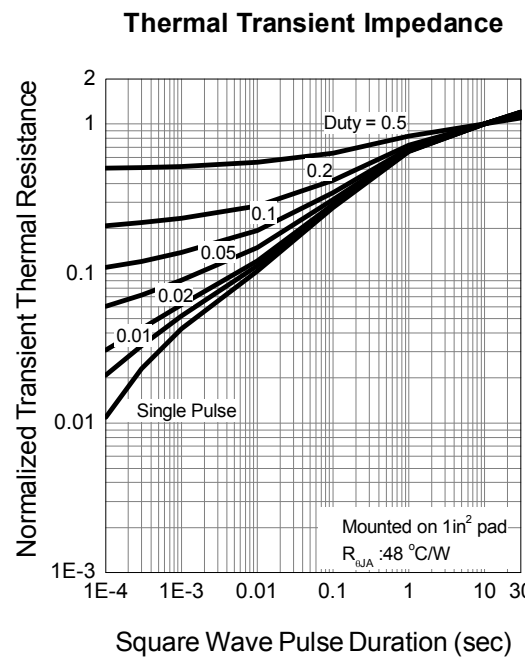
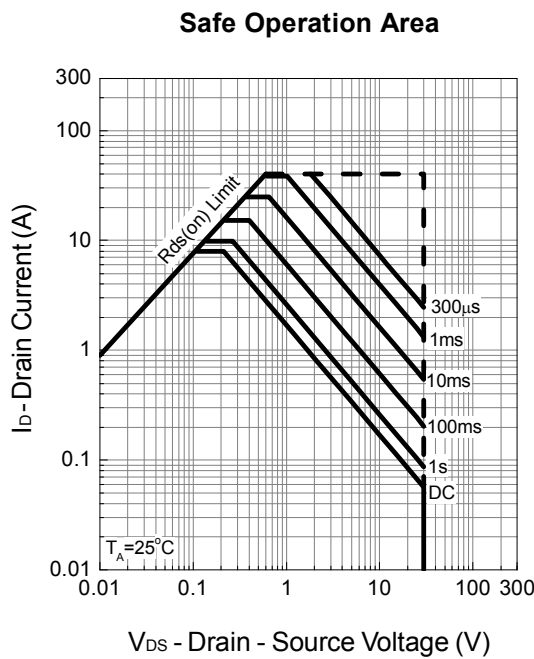
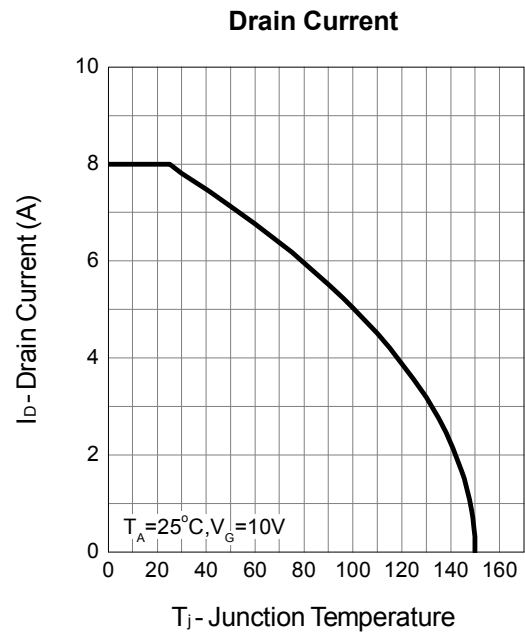
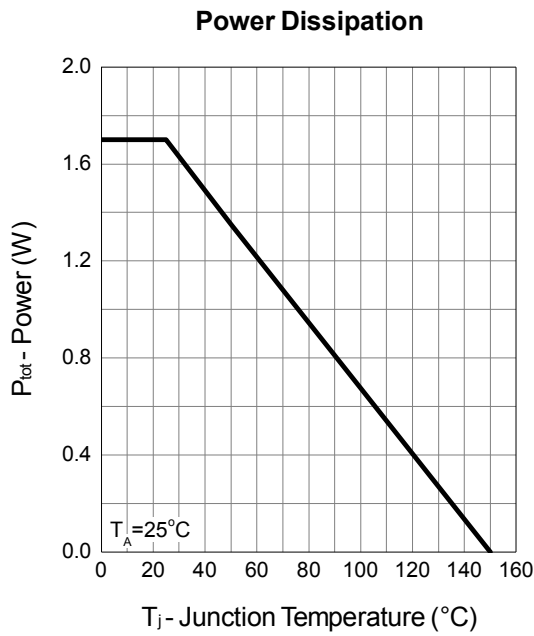
**Electrical Characteristics (Cont.)** ( $T_A = 25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	XS4842			Unit
			Min.	Typ.	Max.	
<b>Dynamic Characteristics<sup>b</sup></b>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	1.3	1.7	2.3	$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=15V,$ Frequency=1.0MHz	-	580	-	pF
$C_{oss}$	Output Capacitance		-	95	-	
$C_{riss}$	Reverse Transfer Capacitance		-	57	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=15V, R_L=15\Omega,$ $I_{DS}=1A, V_{GEN}=10V,$ $R_G=6\Omega$	-	5.9	10	ns
$t_r$	Turn-on Rise Time		-	10	17	
$t_{d(OFF)}$	Turn-off Delay Time		-	17	35	
$t_f$	Turn-off Fall Time		-	4	9	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V,$ $I_{DS}=8A$	-	10.2	14	nC
	Total Gate Charge		-	5.3	7.5	
$Q_{gth}$	Threshold Gate Charge	$V_{DS}=15V, V_{GS}=4.5V,$ $I_{DS}=8A$	-	0.78	-	
$Q_{gs}$	Gate-Source Charge		-	1.7	-	
$Q_{gd}$	Gate-Drain Charge		-	2.2	-	

Note a : Pulse test ; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

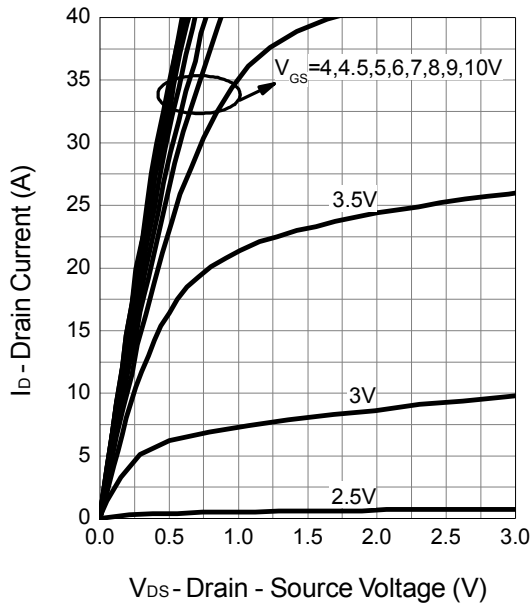
Note b : Guaranteed by design, not subject to production testing.

## Typical Operating Characteristics

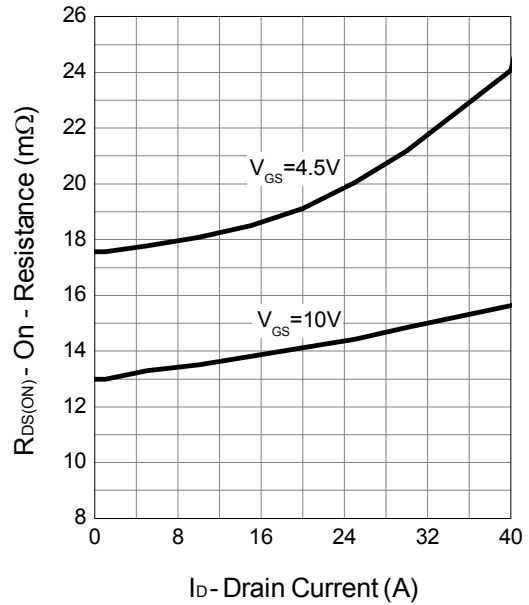


## Typical Operating Characteristics (Cont.)

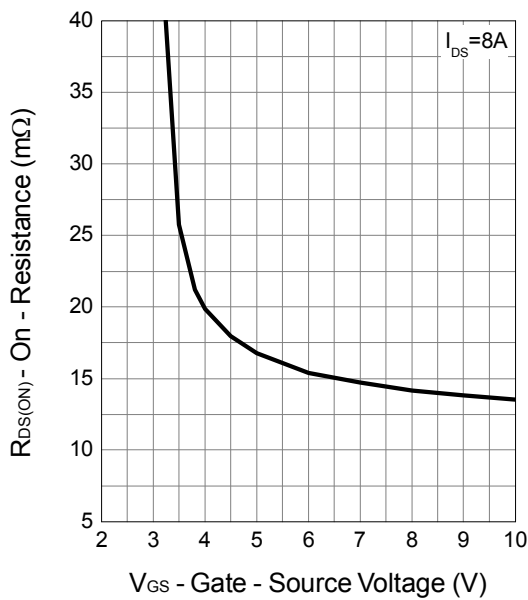
Output Characteristics



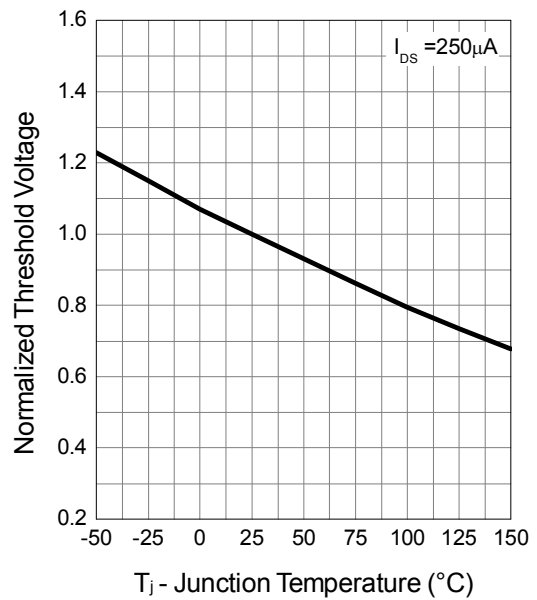
Drain-Source On Resistance



Gate-Source On Resistance

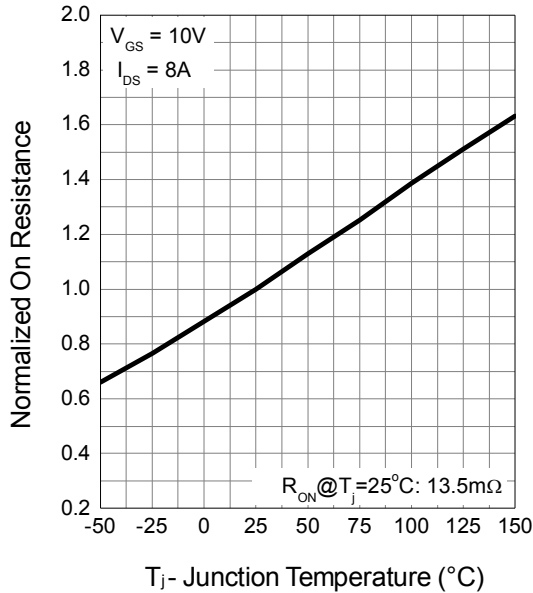


Gate Threshold Voltage

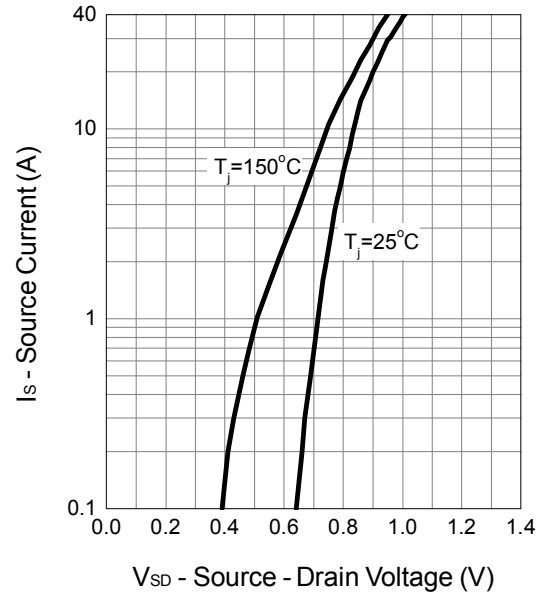


## Typical Operating Characteristics (Cont.)

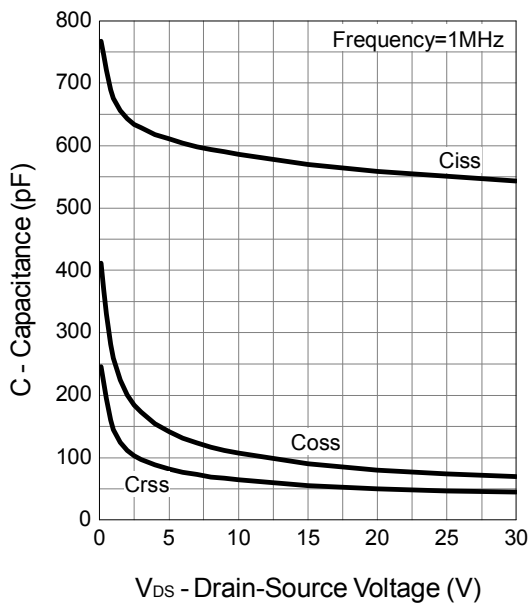
**Drain-Source On Resistance**



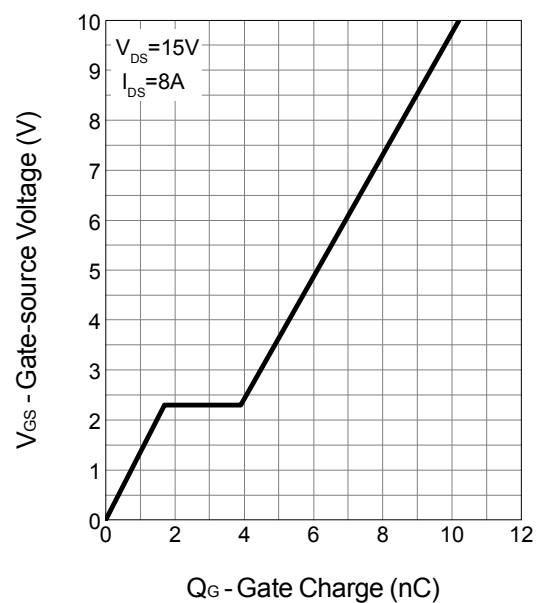
**Source-Drain Diode Forward**



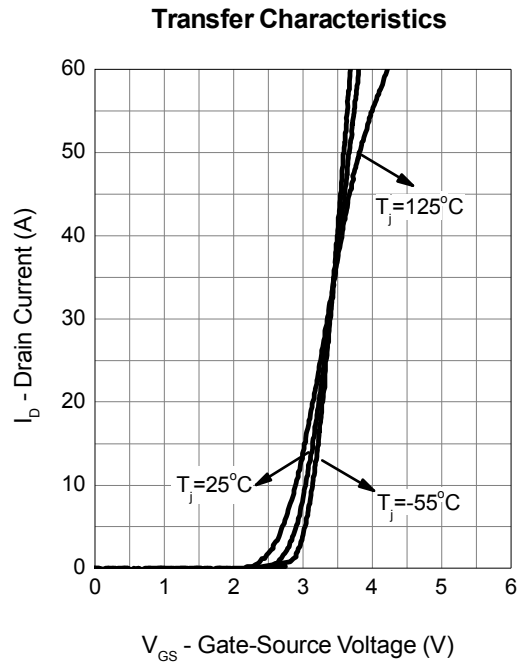
**Capacitance**



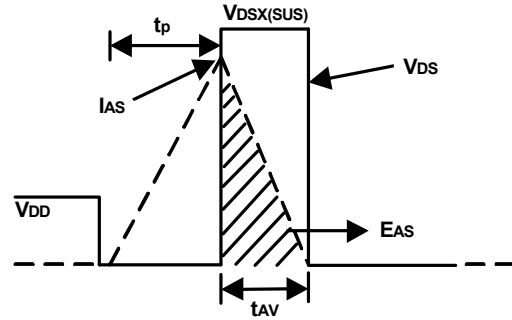
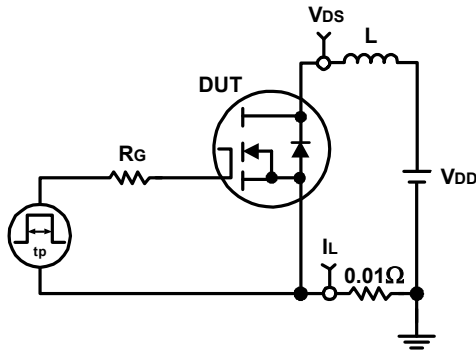
**Gate Charge**



## Typical Operating Characteristics (Cont.)



## Avalanche Test Circuit and Waveforms



## Switching Time Test Circuit and Waveforms

