● General Description

• DC/DC Converters in Computing, Servers, and POL

• Isolated DC/DC Converters in Telecom and Industrial

● Features

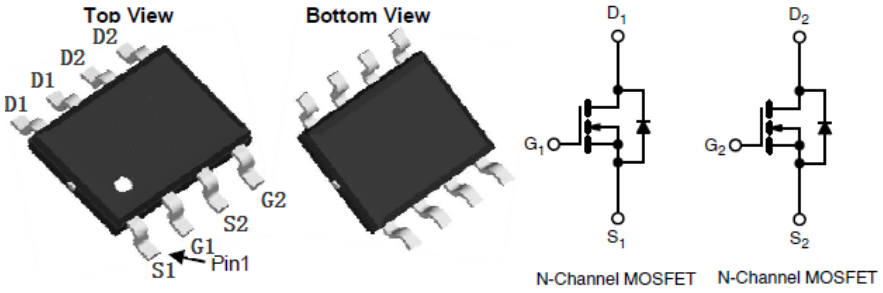
V_{DS} = 30V,

I_D = 22A

$R_{DS(ON)}$ @V_{GS}= 10V, typ=7.5mΩ

$R_{DS(ON)}$ @V_{GS}= 4.5V, typ=10.5mΩ

● Pin Configurations



SOP-8L

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
4816	XPX4816XS	SOP-8	-	-	3000

● Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	22	A
	T_A=70°C		13	
Drain Current (Pulse) *B		I_{DM}	44.8	A
Power Dissipation	T_A=25°C	P_D	3	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

● Thermal Resistance Ratings

Parameter		Symbol	Typical	Unit
Maximum Junction-to-Ambient	t ≤ 10s	R_{thJA}	62.5	°C/W

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= 250μA	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250μA	1	1.7	2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 12A	--	7.5	10	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 10A	--	10.5	14	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= 1A , V_{GS}=0V	--	0.73	1.2	V
Diode Forward Current *AC	I_S	T_A =25°C	--	--	2.7	A
Switching						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=9A	--	14.7	--	nC
Gate-Source Charge	Q_{gs}		--	2.8	--	nC
Gate-Drain Charge	Q_{gd}		--	1.8	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=15V, I_D= 9A, R_{GEN}=0.3Ω	--	11	--	ns
Turn-on Rise Time	t_r		--	3.8	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	31	--	ns
Turn-Off Fall Time	t_f		--	6.5	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz	--	950	--	pF
Output Capacitance	C_{oss}		--	162	--	pF
Reverse Transfer Capacitance	C_{rss}		--	83	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating

- **Typical Performance Characteristics（(TJ = 25 °C, unless otherwise noted)）**

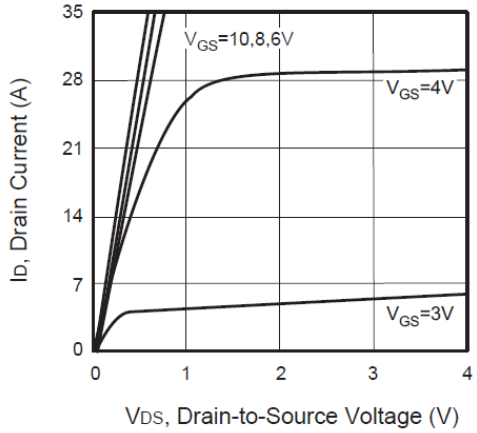


Figure 1. Output Characteristics

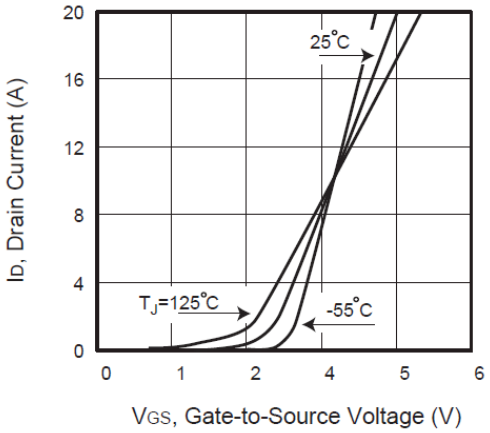


Figure 2. Transfer Characteristics

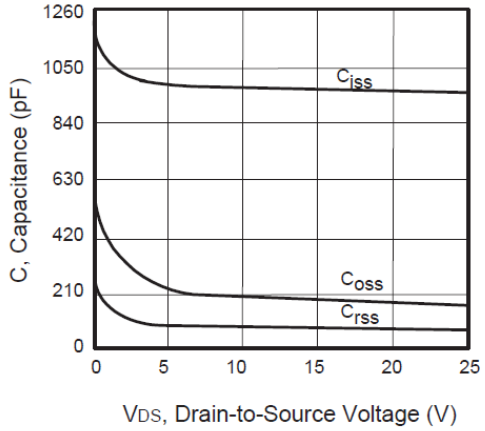


Figure 3. Capacitance

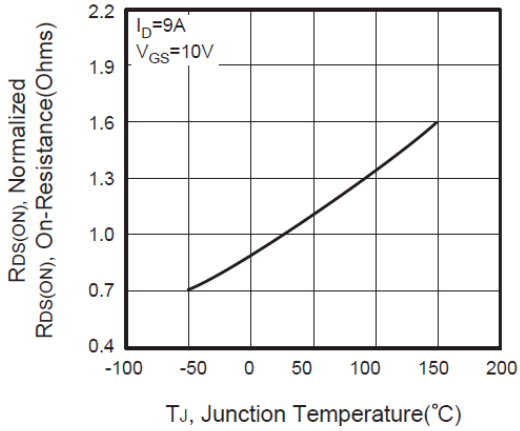


Figure 4. On-Resistance Variation with Temperature

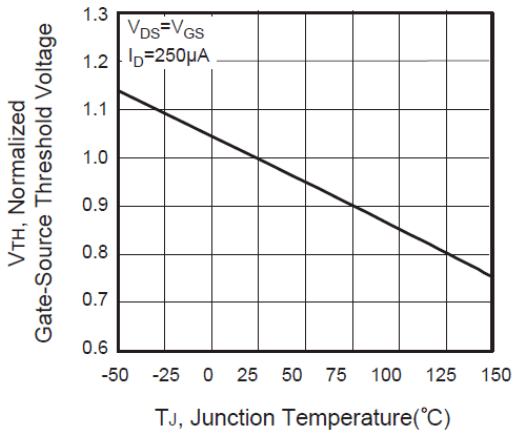


Figure 5. Gate Threshold Variation with Temperature

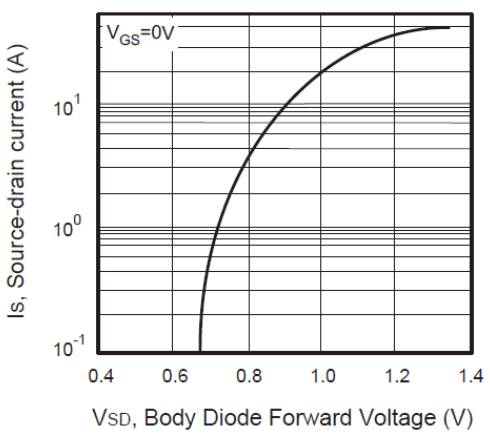


Figure 6. Body Diode Forward Voltage Variation with Source Current

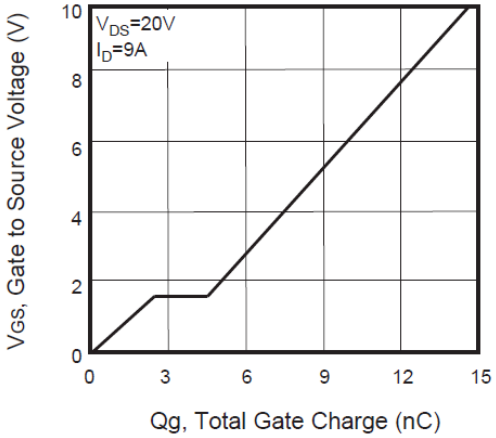


Figure 7. Gate Charge

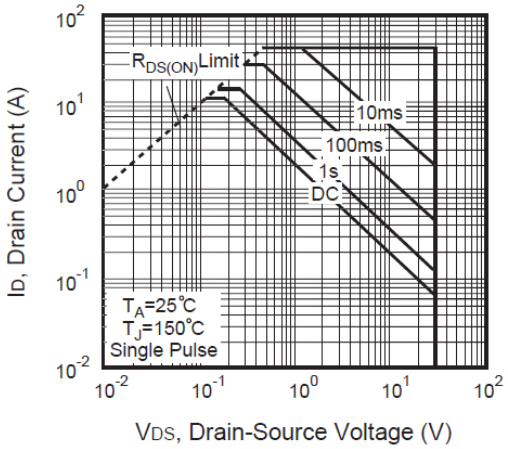


Figure 8. Maximum Safe Operating Area

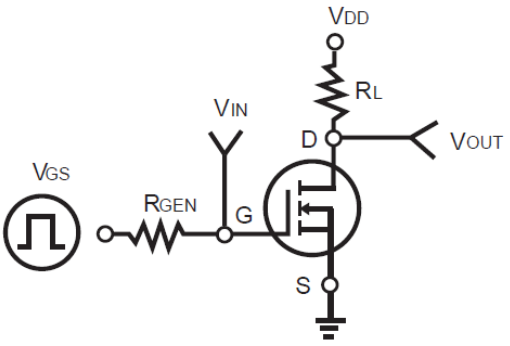


Figure 9. Switching Test Circuit

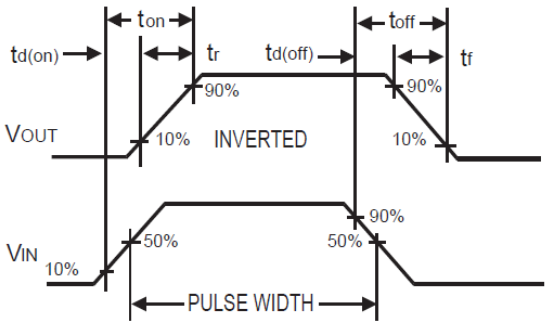


Figure 10. Switching Waveforms

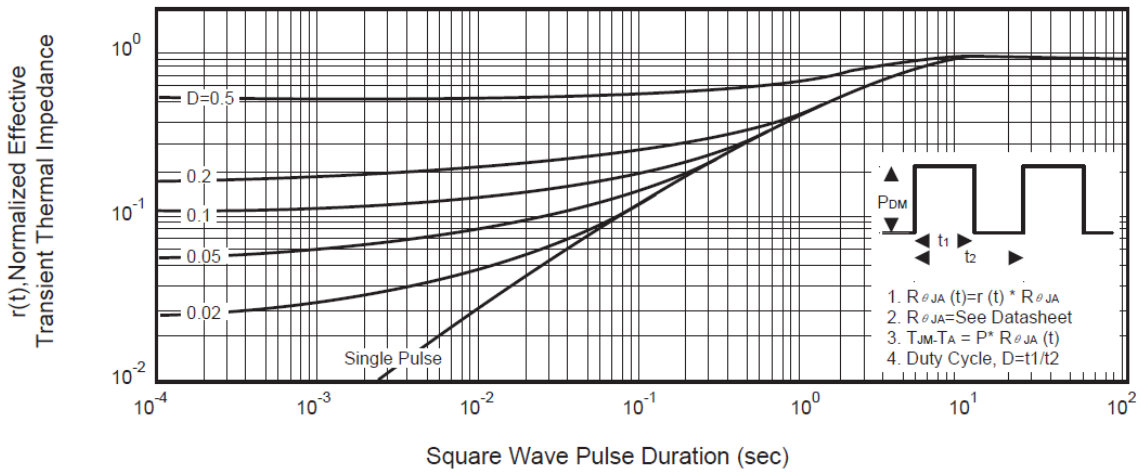
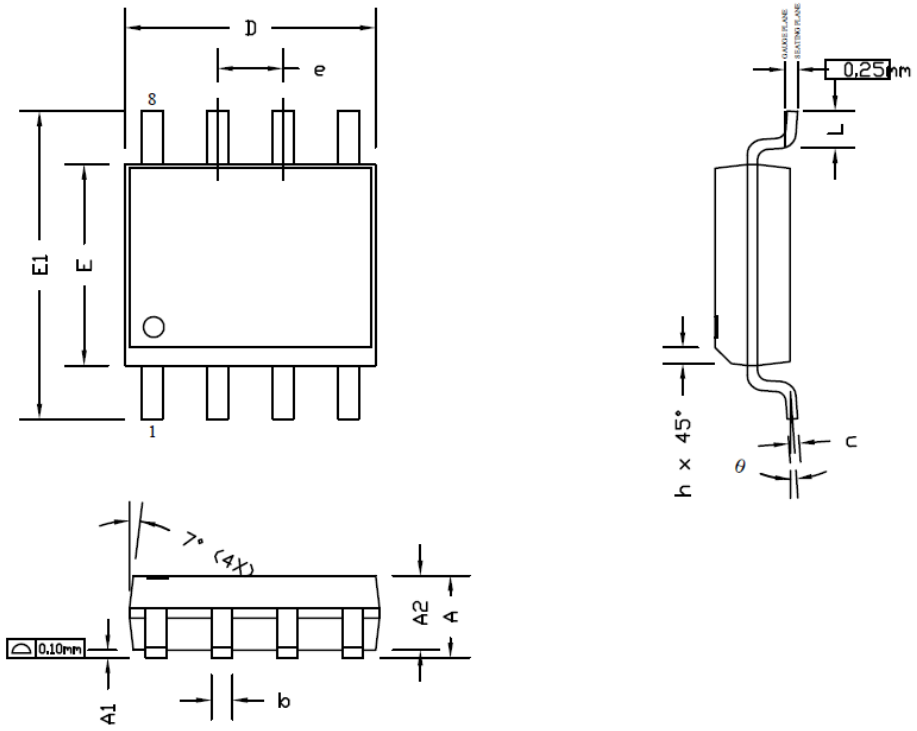
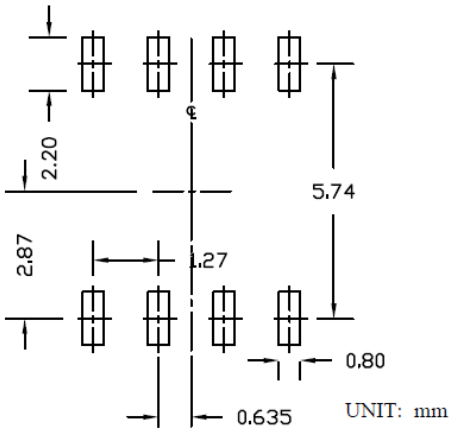


Figure 11. Normalized Thermal Transient Impedance Curve

- **Package Information**



RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35	1.65	1.75	0.053	0.065	0.069
A1	0.10	0.15	0.25	0.004	0.006	0.010
A2	1.25	1.50	1.65	0.049	0.059	0.065
b	0.31	0.41	0.51	0.012	0.016	0.020
c	0.17	0.20	0.25	0.007	0.008	0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E	3.80	3.90	4.00	0.150	0.154	0.157
e	1.27 BSC			0.050 BSC		
E1	5.80	6.00	6.20	0.228	0.236	0.244
h	0.25	0.30	0.50	0.010	0.012	0.020
L	0.40	0.69	1.27	0.016	0.027	0.050
θ	0°	4°	8°	0°	4°	8°

NOTE
1. ALL DIMENSIONS ARE IN MILLMETERS.
2. DIMENSIONS ARE INCLUSIVE OF PLATING.
3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
   MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
4. DIMENSION L IS MEASURED IN GAUGE PLANE.
5. CONTROLLING DIMENSION IS MILLIMETER.
   CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

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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