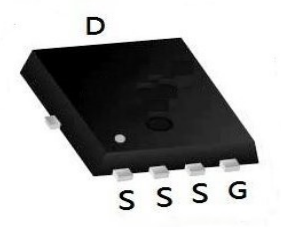
P-Ch 30V Fast Switching MOSFETs

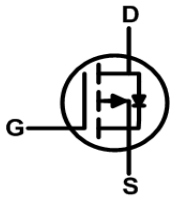
- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

Product Summary

BVDSS	RDSON	ID
-30V	8.3 mΩ	-55A

PDFN5060-8L Pin Configuration





Description

The XXW3019A is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	-55	A
		T_C = 100℃	-23	A
I_{DM}	Pulsed Drain Current note1		-140	A
E_{AS}	Single Pulsed Avalanche Energy note2		78.8	mJ
P_D	Power Dissipation	T_C = 25℃	21.5	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		5.8	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D= -250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= -250μA	-1.0	-1.5	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =-10V, I_D =-12A	-	8.3	11	mΩ
		V_{GS} =-4.5V, I_D =-8A	-	13	18	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz	-	2800	-	pF
C_{oss}	Output Capacitance		-	346	-	pF
C_{rss}	Reverse Transfer Capacitance		-	319	-	pF
Q_g	Total Gate Charge	V_{DS}= -15V, I_D = -20A, V_{GS} = -10V	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	5.3	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	7.6	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -15V, I_D = -20A, V_{GS}=-10V, R_{GEN}=2.5Ω	-	14	-	ns
t_r	Turn-on Rise Time		-	20	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	95	-	ns
t_f	Turn-off Fall Time		-	65	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-55	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-140	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -35A	-	-0.8	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J= 25℃, VDD= -20V, VG= -10V, L= 0.5mH, RG= 25Ω, IAS= -17A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

Figure1: Output Characteristics

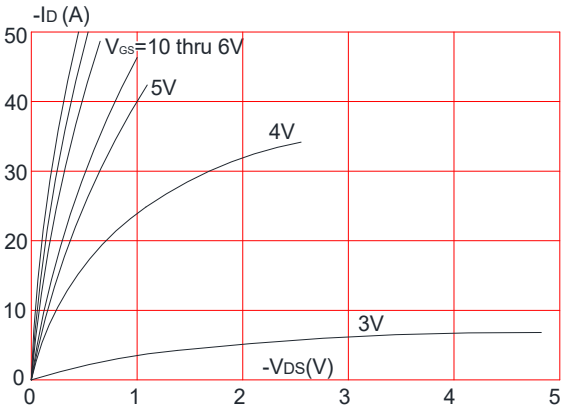


Figure 2: Typical Transfer Characteristics

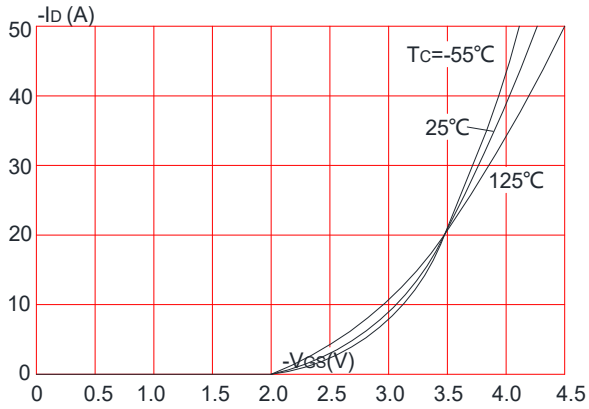


Figure 3: On-resistance vs. Drain Current

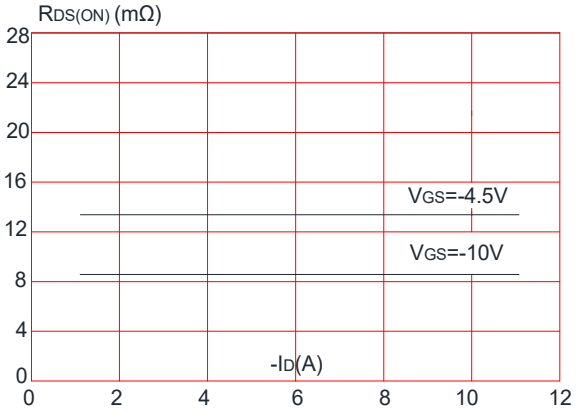


Figure 4: Body Diode Characteristics

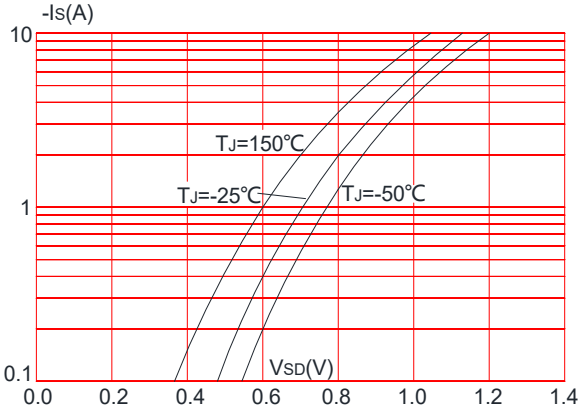


Figure 5: Gate Charge Characteristics

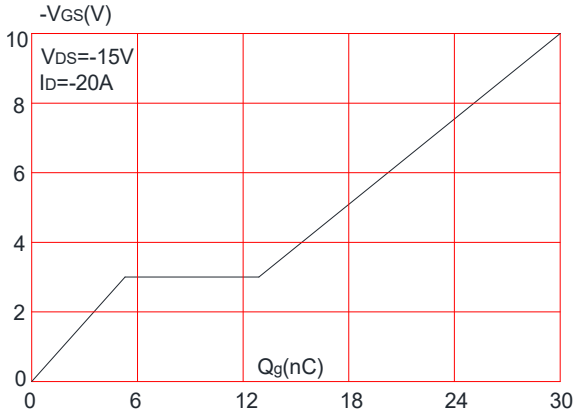


Figure 6: Capacitance Characteristics

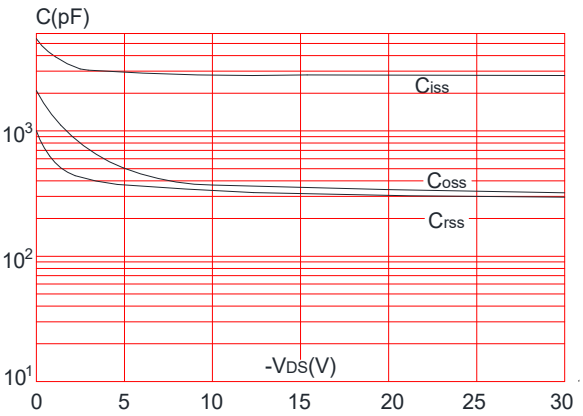


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

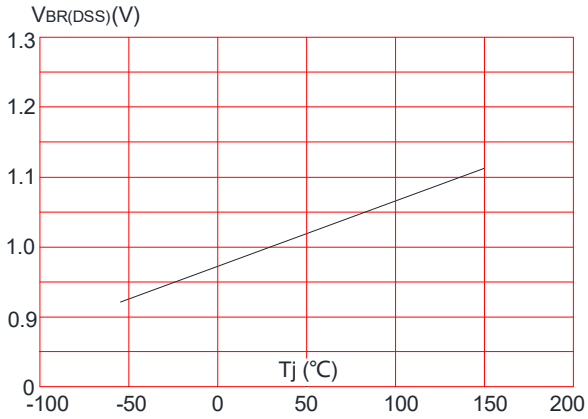


Figure 8: Normalized on Resistance vs. Junction Temperature

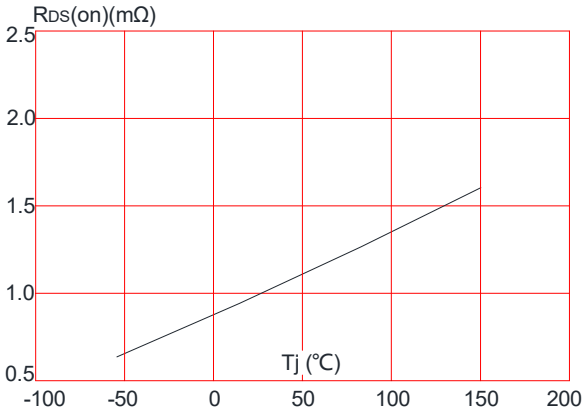


Figure 9: Maximum Safe Operating Area

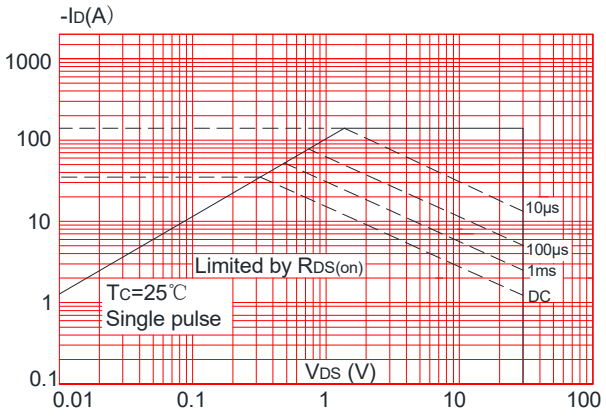


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

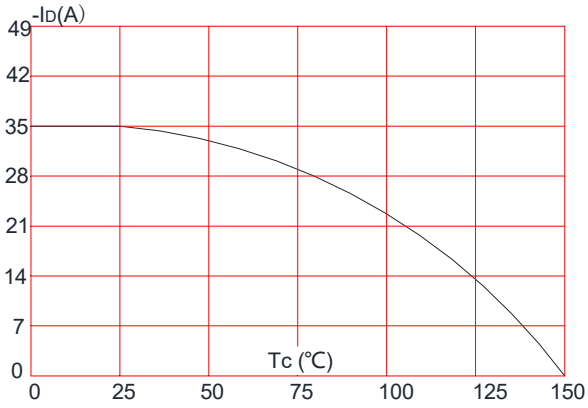
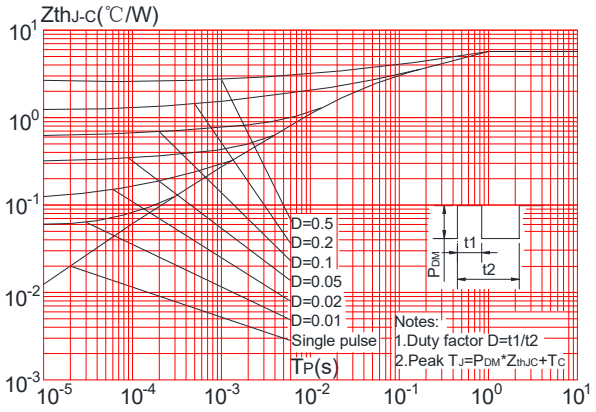
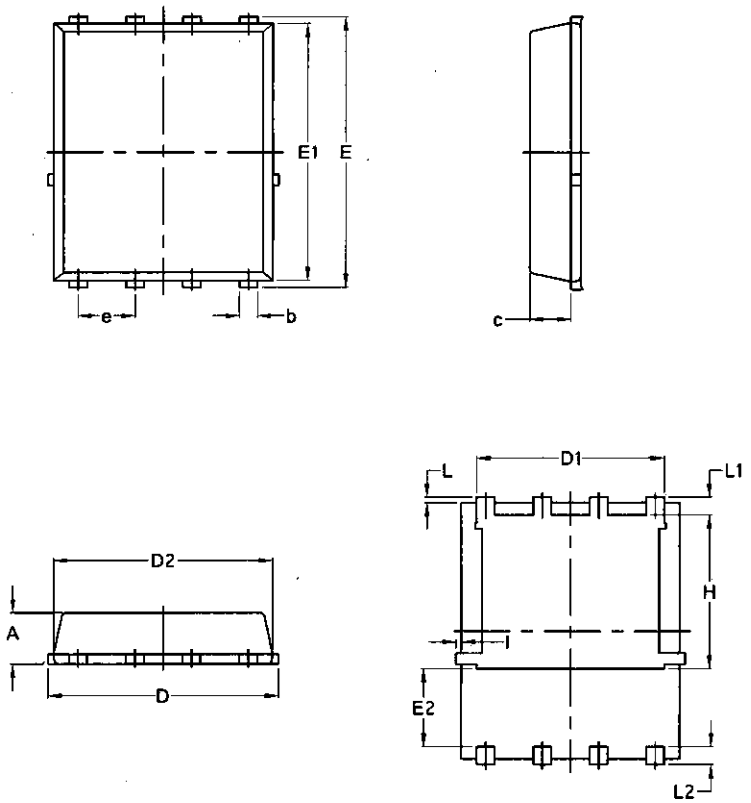


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Mechanical Data-PDFN5060-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070