

**P-Ch 30V Fast Switching MOSFETs**


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

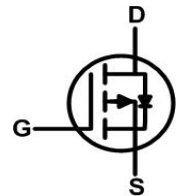
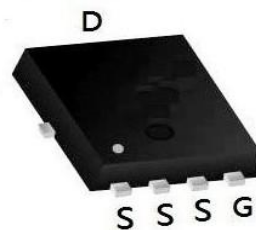
**Product Summary**

BVDSS	R <sub>DS(on)</sub>	I <sub>D</sub>
-30V	2.5mΩ	-110A

**Description**

The XXW110P03DF is the high cell density trenched P-ch MOSFETs, which provide excellent R<sub>DS(on)</sub> and gate charge for most of the synchronous buck converter applications.

The XXW110P03DF meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

**PRPAK5X6 Pin Configuration**

**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	-30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1,6</sup>	-110	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1,6</sup>	-70	A
I <sub>DM</sub>	Pulsed Drain Current <sup>2</sup>	-450	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	576	mJ
I <sub>AS</sub>	Avalanche Current	-70	A
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation <sup>4</sup>	6.0	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 175	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 175	°C

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient <sup>1</sup> (t ≤ 10S)	---	20	°C/W
	Thermal Resistance Junction-ambient <sup>1</sup> (Steady State)	---	50	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-case <sup>1</sup>	---	3.6	°C/W

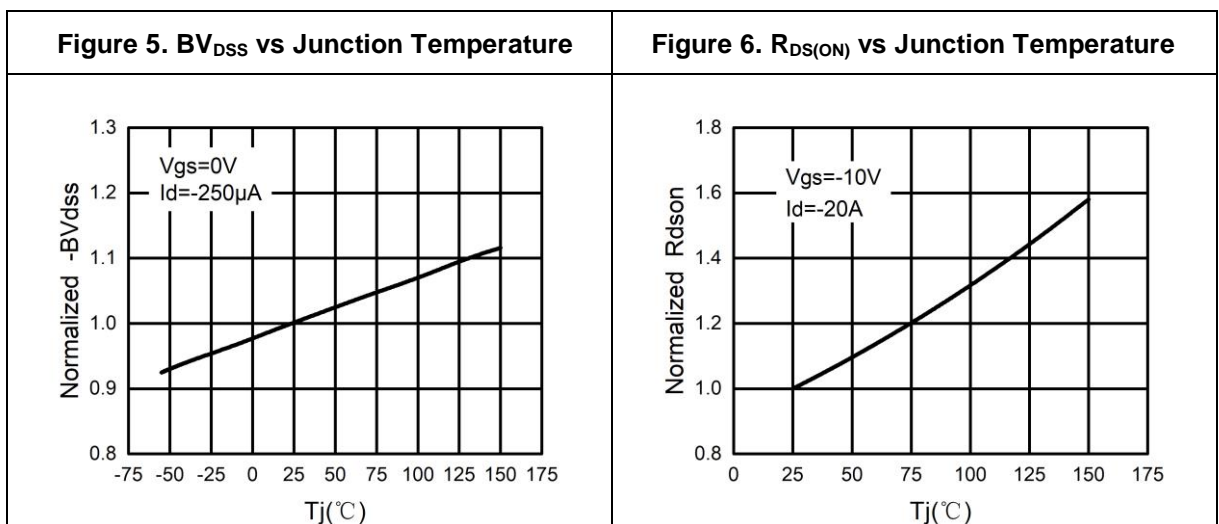
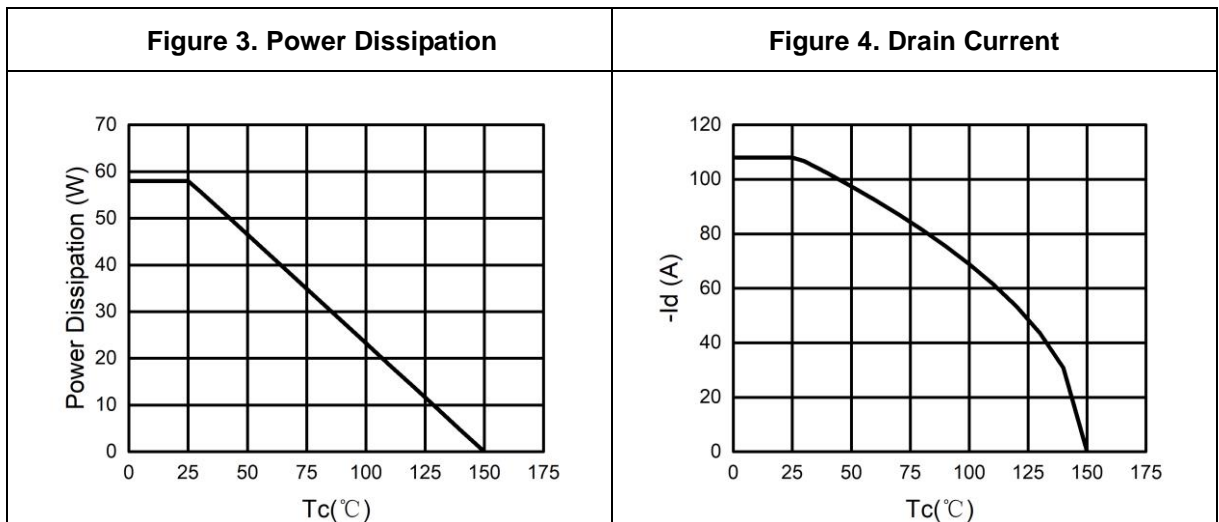
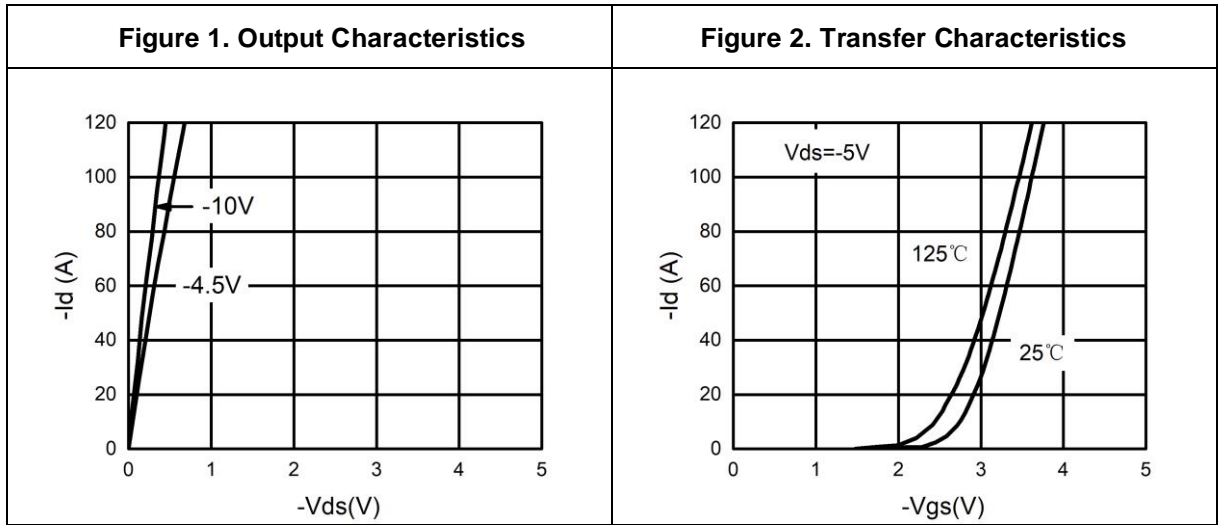
**P-Ch 30V Fast Switching MOSFETs**
**Table 3. Electrical Characteristics ( $T_J=25^{\circ}\text{C}$  unless otherwise noted)**

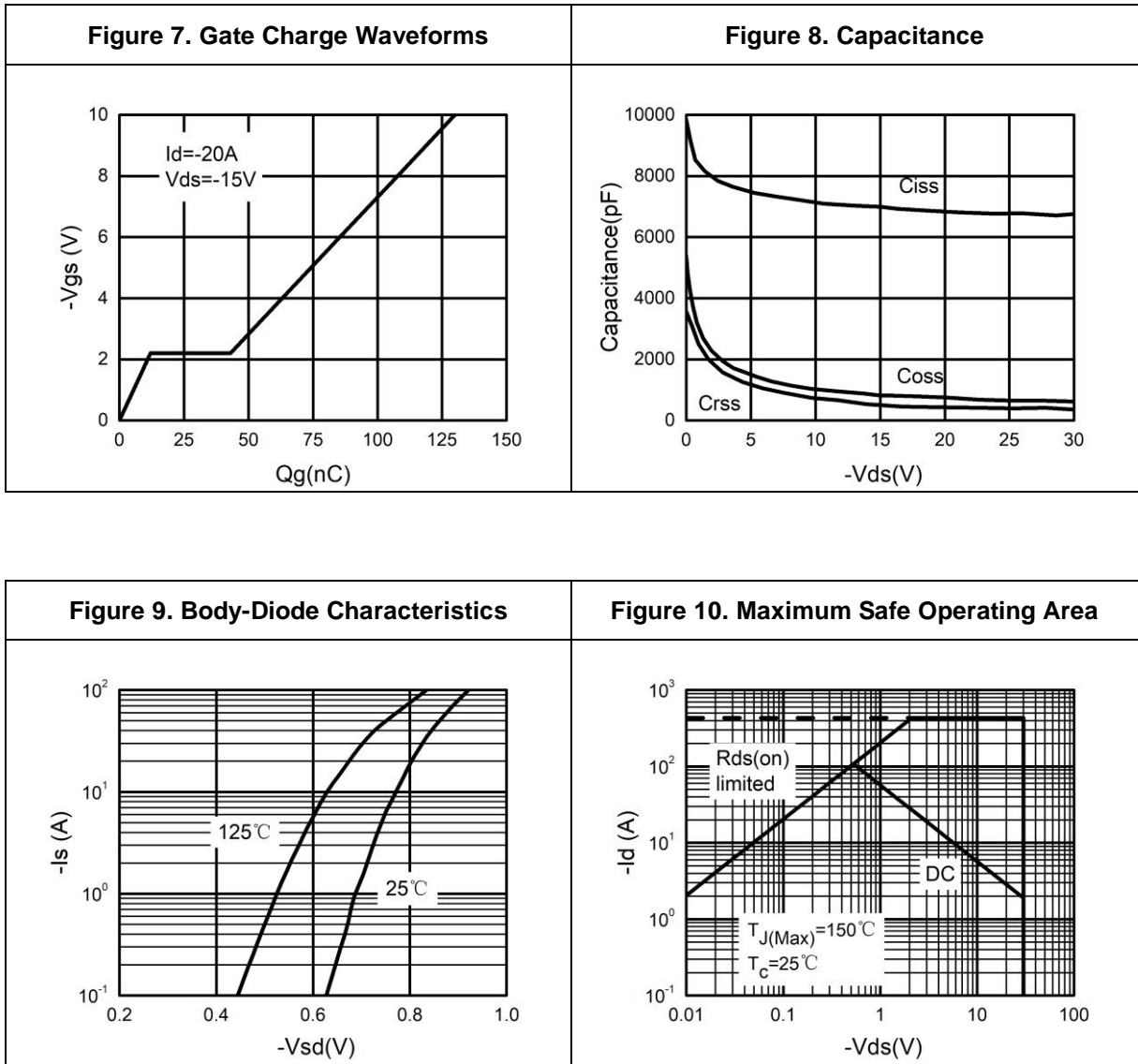
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.7	-2.5	V
$g_{FS}$	Forward Transconductance	$V_{DS}=-5V, I_D=-20A$		65		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-20A$		2.5	3.1	$m\Omega$
		$V_{GS}=-4.5V, I_D=-20A$		4	5.2	$m\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1.0MHz$		7000		pF
$C_{oss}$	Output Capacitance			820		pF
$C_{rss}$	Reverse Transfer Capacitance			540		pF
$R_g$	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$		2.2		$\Omega$
<b>Switching Parameters</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=-10V, V_{DS}=-15V, R_L=0.75\Omega, R_{GEN}=3\Omega$		14		nS
$t_r$	Turn-on Rise Time			13		nS
$t_{d(off)}$	Turn-Off Delay Time			65		nS
$t_f$	Turn-Off Fall Time			37		nS
$Q_g$	Total Gate Charge	$V_{GS}=-10V, V_{DS}=-15V, I_D=-20A$		130		nC
$Q_{gs}$	Gate-Source Charge			12		nC
$Q_{gd}$	Gate-Drain Charge			31		nC
<b>Source-Drain Diode Characteristics</b>						
$I_{SD}$	Source-Drain Current (Body Diode)				-108	A
$V_{SD}$	Forward on Voltage <sup>(Note 3)</sup>	$V_{GS}=0V, I_S=-20A$			-1.2	V
$t_{rr}$	Reverse Recovery Time	$I_F=-20A, di/dt=100A/\mu s$		30		ns
$Q_{rr}$	Reverse Recovery Charge	$I_F=-20A, di/dt=100A/\mu s$		40		nC

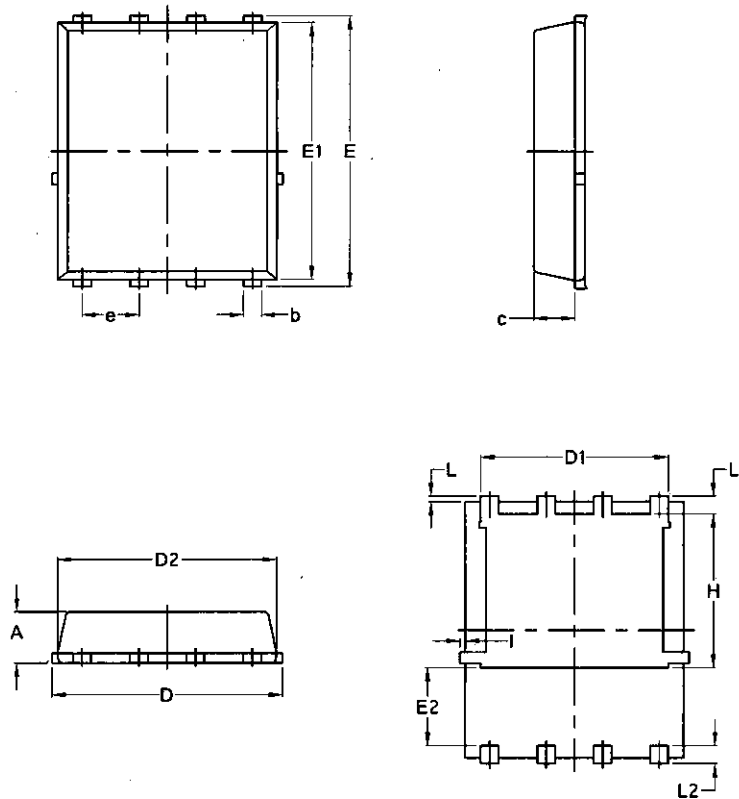
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2. $E_{AS}$  condition:  $T_J=25^{\circ}\text{C}, V_{DD}=15V, V_G=-10V, R_g=25\Omega, L=0.5mH$ .

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

**Typical Electrical And Thermal Characteristics (Curves)**




**Package Mechanical Data-DFN5\*6-8L-JQ Single**


Symbol	Common			
	mm		Inch	
	Min	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