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

Product Summary

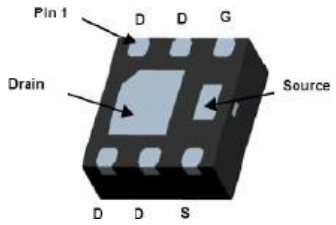
Green

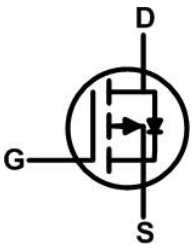
BVDSS	RDSON	ID
-15V	10mΩ	-16A

Description

The XR1216M is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.
The XR1216M meets the RoHS and Green Product requirements, 100% EAS guaranteed with full function reliability approved.

DFN2020-6L Pin Configuration





Absolute Maximum Ratings (T_A=25 °C, unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-15	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_C=25℃	Continuous Drain Current	-16	A
I_D@T_C=100℃	Continuous Drain Current	-8.8	A
I_{DM}	Pulsed Drain Current-continuous@currrent-pulsed(Note1)	-58	A
EAS	Single Pulsed Avalanche Energy(Note2)	20	mJ
P_D	Maximum Power Dissipation(T_A=25°C)	2	W
	Maximum Power Dissipation(T_A=100°C)	0.8	
T_J T_{STG}	Operation Junction and Storage Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	63	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	---	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characterisitics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-15	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-4.5V , I_D=-5A,	---	10	13	mΩ
		V_{GS}=-2.5V , I_D=-4A,	---	15.5	20	
		V_{GS}=-1.8V , I_D=-8A,	---	---	---	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-0.5	---	-1	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-20V , V_{GS}=0V , T_J=25℃	---	----	-1	uA
		V_{DS}=-20V, V_{GS}=0V , T_J=100℃	---	---	---	
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	I_D =-15A , V_{DS} =-5V	---	16.6	---	S
Switching Characteristics						
Q_g	Total Gate Charge	V_{GS}=-4.5V , V_{DS}=-6V , I_D=-5A	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	6	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-6V, R_L=2Ω, R_G=3Ω, V_{GS}=-10V	---	14.4	---	ns
T_r	Rise Time		---	5.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	59.4	---	
T_f	Fall Time		---	21.6	---	
trr	Body Diode Reverse Recovery Time	I_F=-5A ,,V_{GS}=0V dIF/dt=100A/us	---	31.2	---	ns
Qrr	Body Diode Recerse Recovery Charge		---	10.9	---	nC
Dynamic Characterisitics						
C_{iss}	Input Capacitance	V_{DS}=-10V , V_{GS}=0V , f=1MHz	---	1470	---	pF
C_{oss}	Output Capacitance		---	314	---	
C_{rss}	Reverse Transfer Capacitance		---	292	---	
Rg	Gate Resistance	f=1MHz	---	25	---	Ω

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Source-Drain Current	V_{GS}=0V ,Is=-5A	---	---	-16	A
V_{SD}	Forward on Voltage(Note3)	V_{GS}=0V, Is=-5A	---	---	-1.2	V
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		---	---	-240	A

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.E_{AS} condition: T_J=25℃,V_{DD}=-20V,V_G=-10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

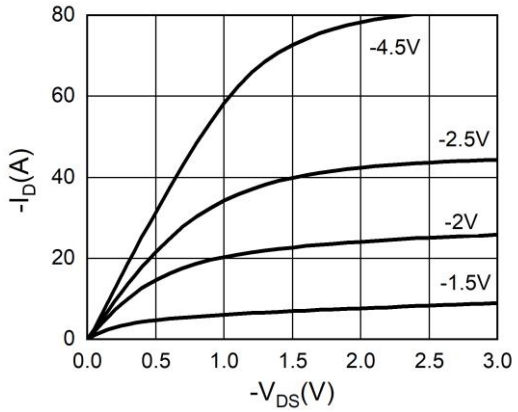


Figure 2. Transfer Characteristics

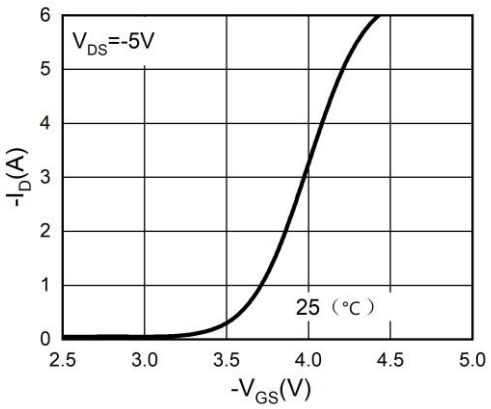


Figure 3. Power Dissipation

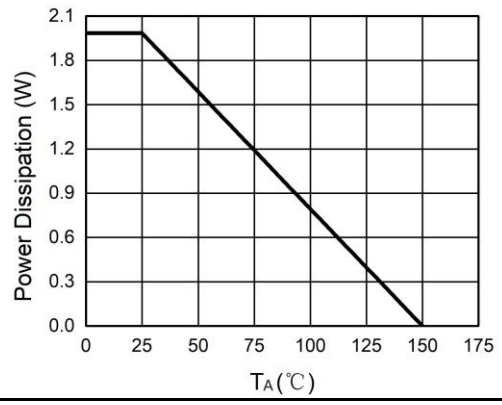


Figure 4. Drain Current

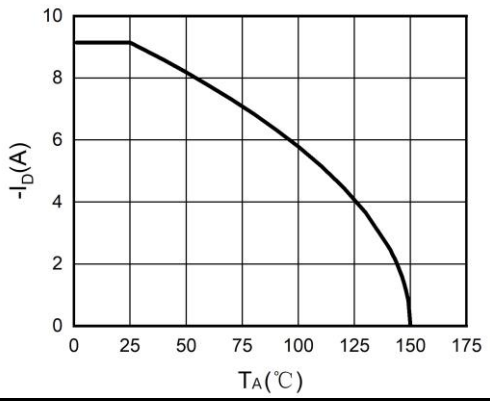


Figure 5. BV_{DSS} vs Junction Temperature

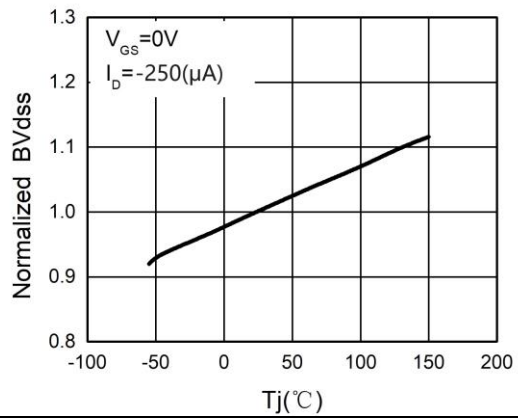
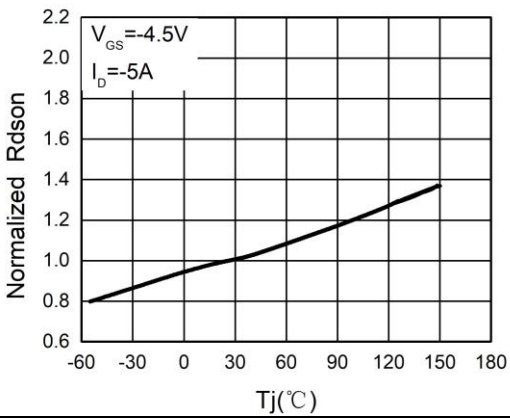


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

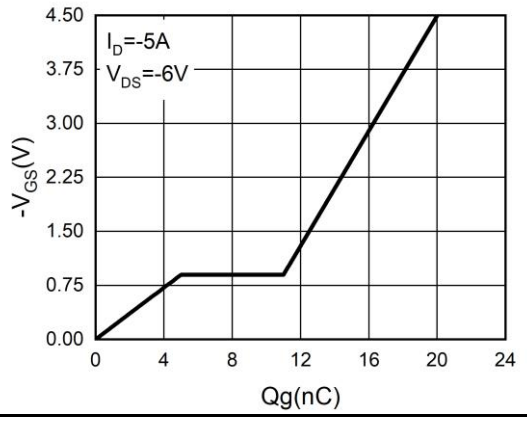


Figure 8. Capacitance

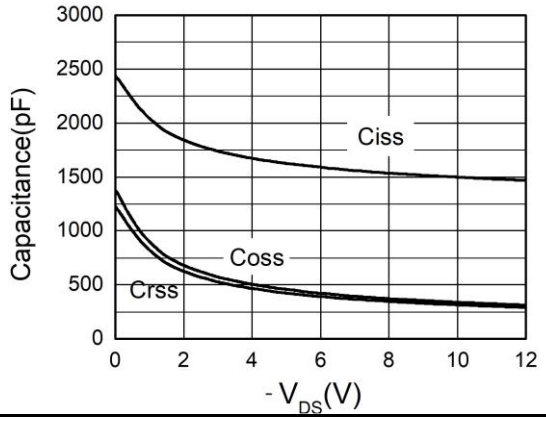


Figure 9. Body-Diode Characteristics

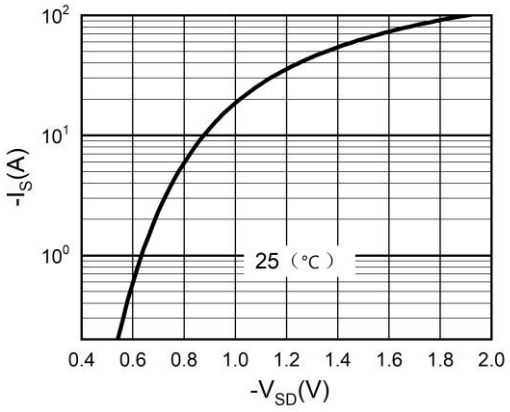
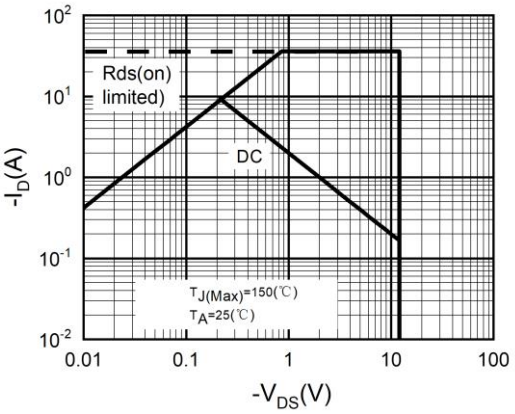
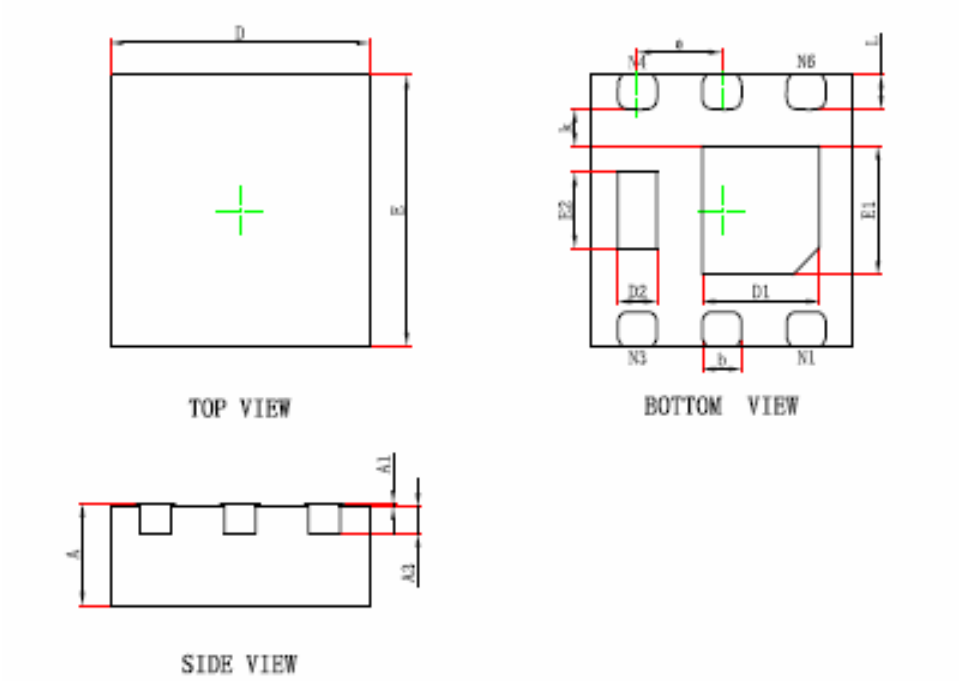


Figure 10. Maximum Safe Operating Area



DFN2020-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.174	0.326	0.007	0.013