

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

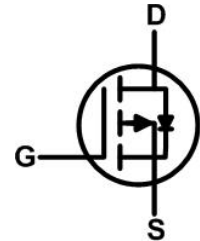
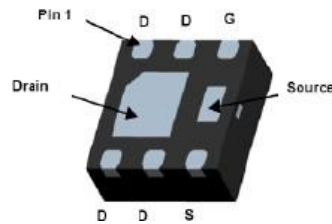

Product Summary

BVDSS	RDSON	ID
-15V	11mΩ	-16A

Description

The XXW16P02M 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 XXW16P02M meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

DFN2020-6L Pin Configuration

Table 1. Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit
V _{DS}	Drain-Source Voltage (V _{GS} =0V)	-15	V
V _{GS}	Gate-Source Voltage (V _{DS} =0V)	±12	V
I _D	Drain Current-Continuous(T _A =25°C)	-16	A
	Drain Current-Continuous(T _A =100°C)	-8.8	A
I _{DM (pluse)}	Drain Current-Continuous@ Current-Pulsed (Note 1)	-58	A
P _D	Maximum Power Dissipation(T _A =25°C)	2	W
	Maximum Power Dissipation(T _A =100°C)	0.8	W
E _{AS}	Avalanche energy (Note 2)	20	mJ
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 To 150	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
R _{θJA}	Thermal Resistance, Junction-to- Ambient		63	°C/W

Table 3. Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

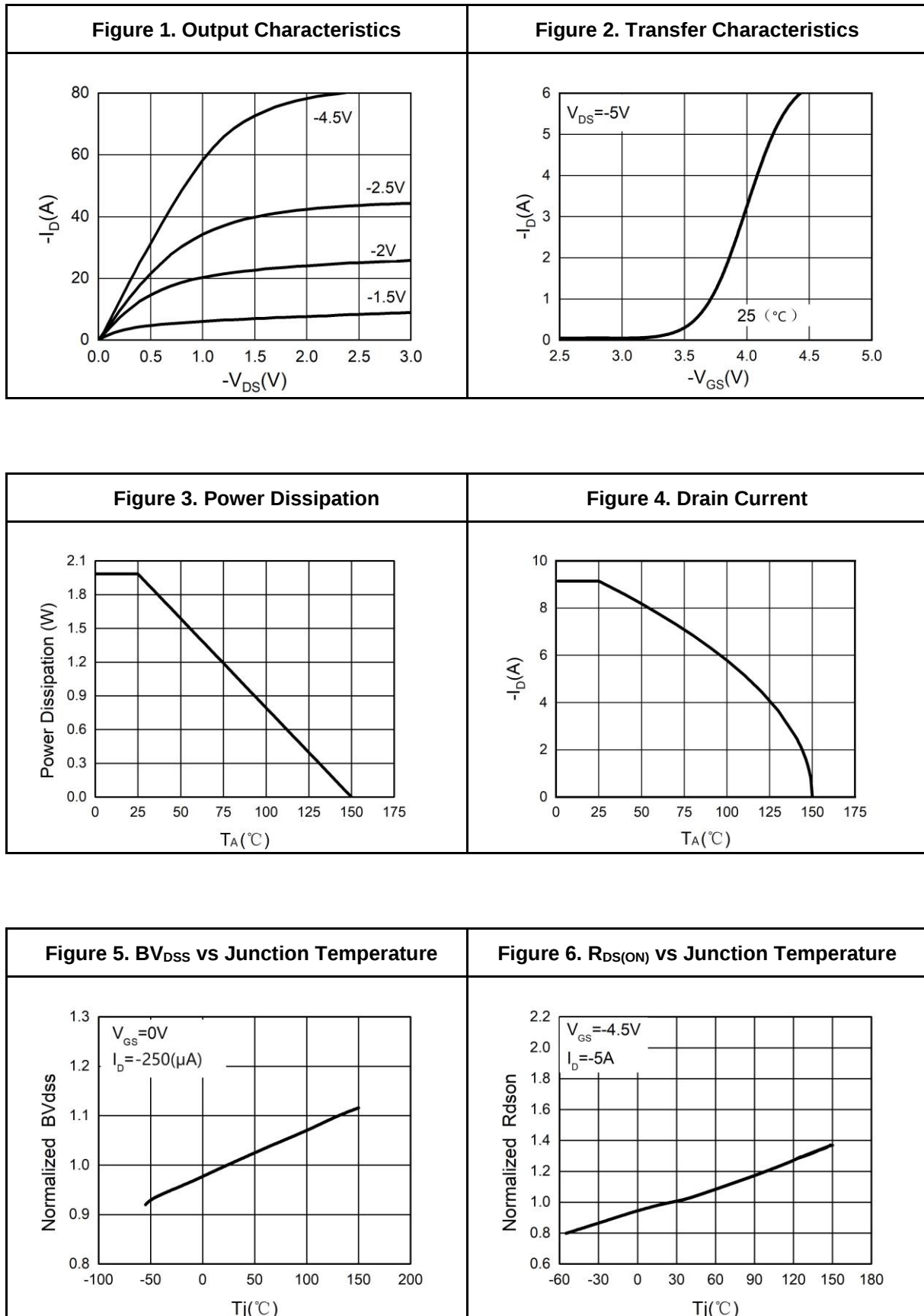
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-15			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-12V, V _{GS} =0V T _J =25℃			-1	μA
		V _{DS} =-12V, V _{GS} =0V T _J =125℃			-100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.5		-1	V
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-10A		16.6		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-5A T _J =25℃		11	13.8	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-2.5V, I _D =-4A T _J =25℃		16.4	20.5	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-10V,V _{GS} =0V, f=1.0MHz		1470		pF
C _{oss}	Output Capacitance			314		pF
C _{rss}	Reverse Transfer Capacitance			292		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		25		Ω
Switching Parameters						
t _{d(on)}	Turn-on Delay Time	V _{GS} =-10V, V _{DS} =-6V, R _L =2Ω, R _{GEN} =3Ω		14.4		nS
t _r	Turn-on Rise Time			5.5		nS
t _{d(off)}	Turn-Off Delay Time			59.4		nS
t _f	Turn-Off Fall Time			21.6		nS
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-6V, I _D =-5A		20		nC
Q _{gs}	Gate-Source Charge			5		nC
Q _{gd}	Gate-Drain Charge			6		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current (Body Diode)				-16	A
V _{SD}	Forward on Voltage (Note 3)	V _{GS} =0V, I _S =-5A			-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-5A, dI/dt=-100A/μs		31.2		ns
Q _{rr}	Reverse Recovery Charge	I _F =-5A, dI/dt=-100A/μs		10.9		nC

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

Notes 2. E_{AS} condition: $T_J=25^{\circ}\text{C}, V_{DD}=-20V, V_G=-10V, R_g=25\Omega, L=0.5\text{mH}$.

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

Typical Electrical And Thermal Characteristics (Curves)



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Figure 7. Gate Charge Waveforms

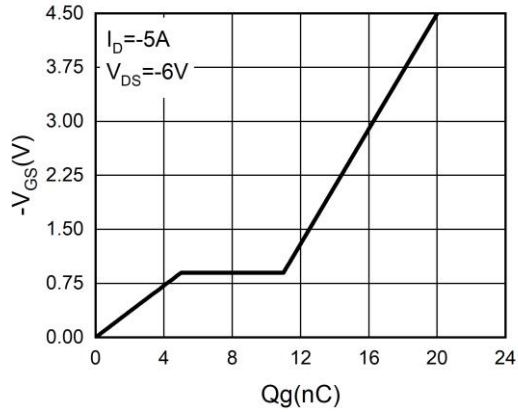


Figure 8. Capacitance

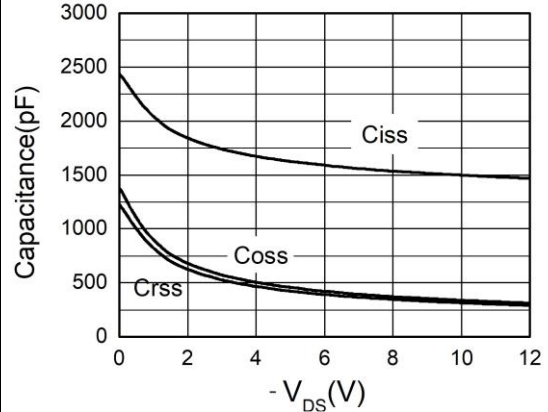


Figure 9. Body-Diode Characteristics

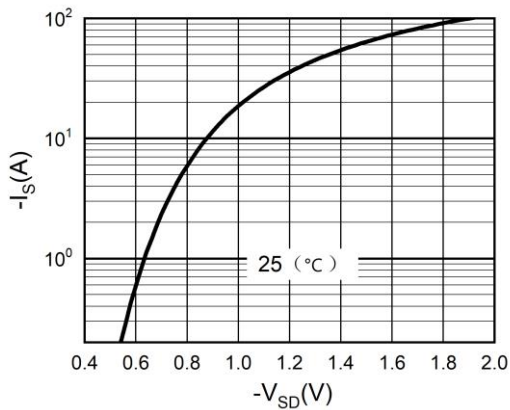
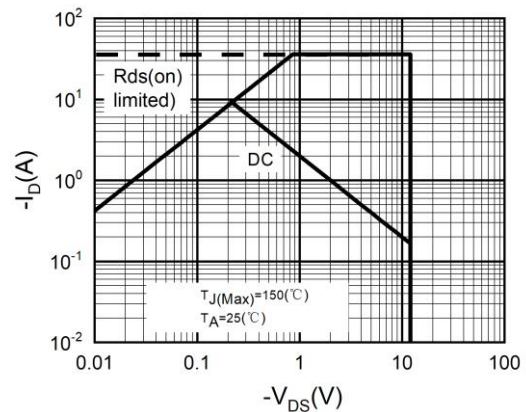
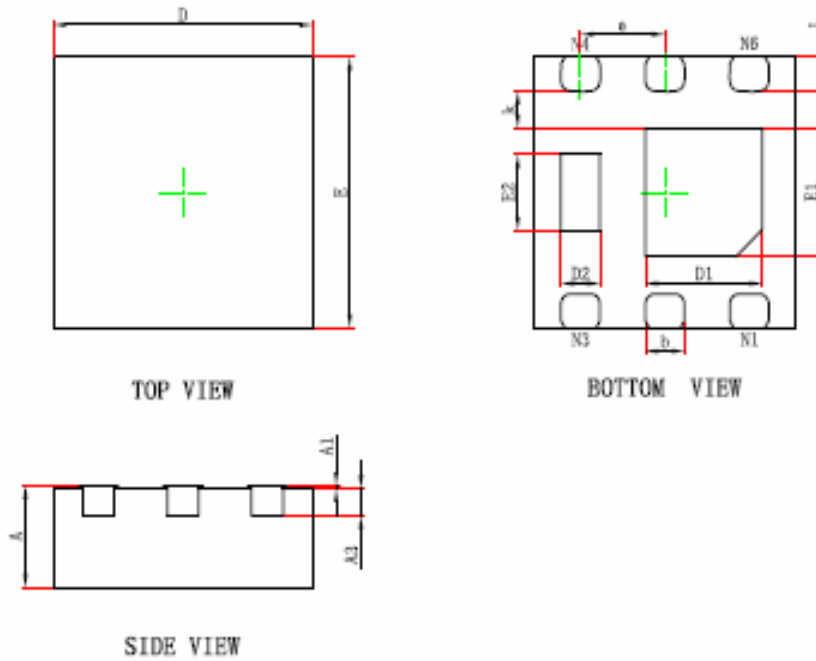


Figure 10. Maximum Safe Operating Area



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