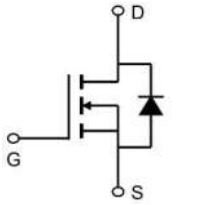
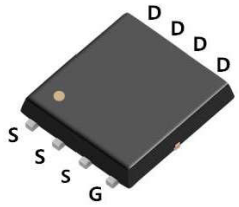
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	120A
V_{DSS}	100V
R_{DSON}-typ(@V_{GS}=10V)	< 4.5mΩ(Type:3.8 mΩ)





PDFN5*6-8L

Features

♦YFW-SGT technology

Application

♦Isolated DC
♦Motor control
♦Synchronous-rectification

Product Specification Classification

Part Number	Package	Marking	Pack
YFW120N10NF	PDFN5*6-8L	YFW 120N10NF XXXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1] @T_A=25℃	I_D	120	A
Continuous Drain Current[1] @T_A=70℃	I_D	76	A
Pulsed Drain Current[2]	I_{DM}	480	A
Single Pulse Avalanche Energy[3]	E_{AS}	320	mJ
Avalanche Current	I_{AS}	40	A
Total Power Dissipation[4] @T_A=25℃	P_D	131.6	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance, Junction ambient[1]	$R_{\theta JA}$	25	°C/W
Thermal Resistance, Junction-case[1]	$R_{\theta JC}$	0.95	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	**V(BR)DSS**	100	107	-	**V**
Gate Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	**I_{GSS}**	-	-	±100	**nA**
Zero Gate Voltage Drain Current	V_{DS}=100V , V_{GS}=0V T_J=25°C	**I_{DSS}**	-	-	1	**μA**
	V_{DS}=100V , V_{GS}=0V T_J=100°C			-	100	
Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	**$V_{GS(th)}$**	2.0	3.0	4.0	**V**
Drain-Source on-Resistance [4]	V_{GS}=10V, I_D=20A	**$R_{DS(ON)}$**	-	3.8	4.5	**mΩ**
Forward Transconductance[4]	V_{DS}=10V , I_D=20A	**g_{fs}**	-	62	-	**S**
Input Capacitance	V_{DS}=50V V_{GS}=0V f=1MHz	**C_{iss}**	-	6865	-	**pF**
Output Capacitance		**C_{oss}**	-	740	-	
Reverse Transfer Capacitance		**C_{rss}**	-	21	-	
Gate Resistance	f=1MHz	**R_g**	-	1.3	-	**Ω**
Total Gate Charge	V_{GS}=10V V_{DS}=50V I_D=20A	**Q_g**	-	111.2	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	30.5	-	
Gate-Drain Charge		**Q_{gd}**	-	27.3	-	
Turn-on delay time	V_{GS}=10V V_{DD}=50V R_G=3Ω I_D=20A	**$t_{d(on)}$**	-	33	-	**ns**
Rise Time		**T_r**	-	39	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	67.1	-	
Fall Time		**t_f**	-	32	-	
Body Diode Reverse Recovery Time	I_F=20A , dI/dt=100A/μs	**t_{rr}**	-	58.7	-	**ns**
Body Diode Reverse Recovery Charge		**Q_{rr}**	-	97.3	-	**nC**
Diode Forward Voltage[4]	V_{GS}=0V , I_S=20A	**V_{SD}**	-	-	1.2	**V**
Continuous Source Current T_C=25°C		**I_S**	-	-	120	**A**

Note :
1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3、The EAS data shows Max. rating . The test condition is VDD=72V,VGS=10V, L=0.1mH IAS=40A
4、The power dissipation is limited by 150℃ junction temperature
5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation

Ratings and Characteristic Curves

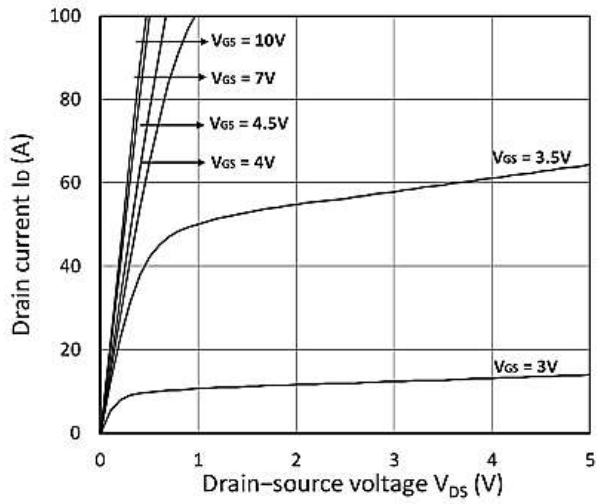


Figure 1. Output Characteristics

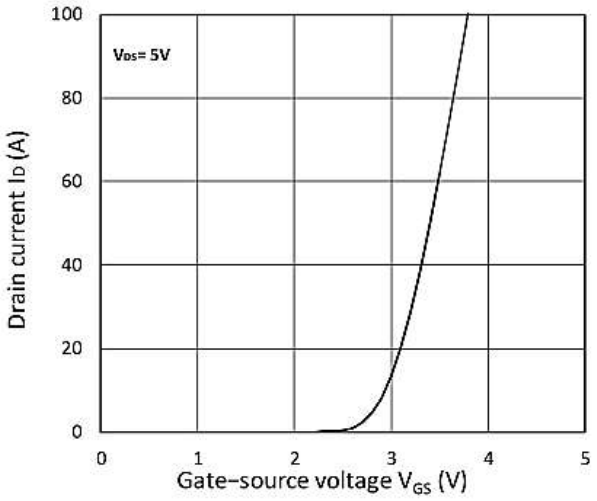


Figure 2. Transfer Characteristics

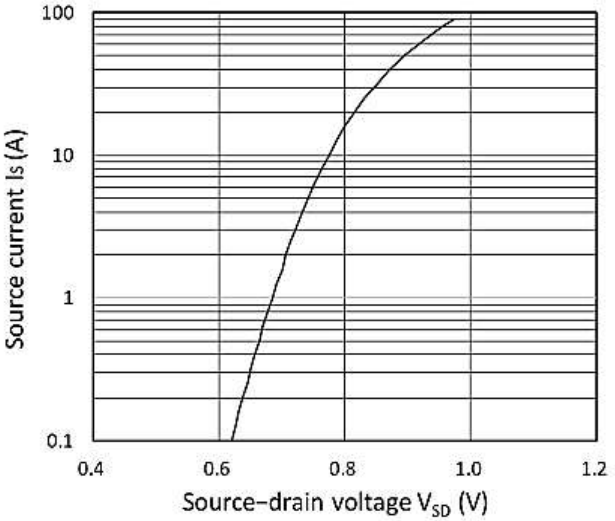


Figure 3. Forward Characteristics of Reverse

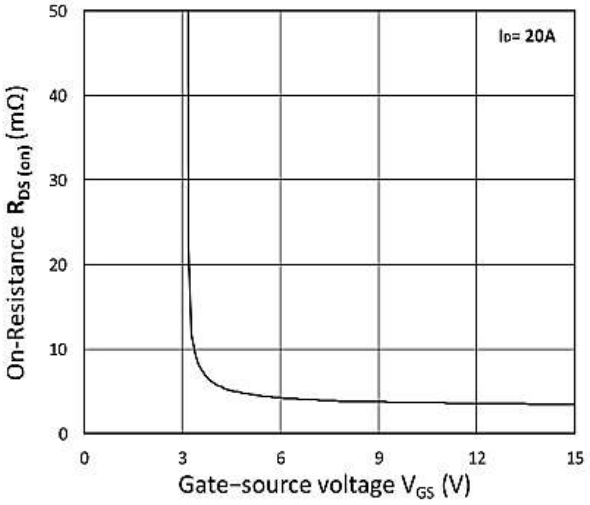


Figure 4. RDS(ON) vs. VGS

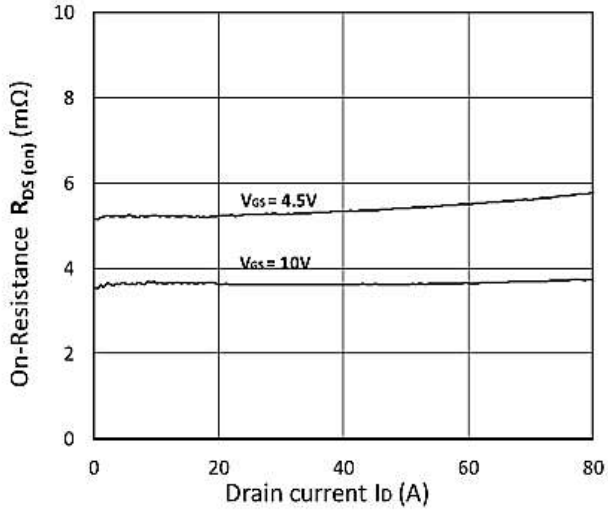


Figure 5. RDS(ON) vs. ID

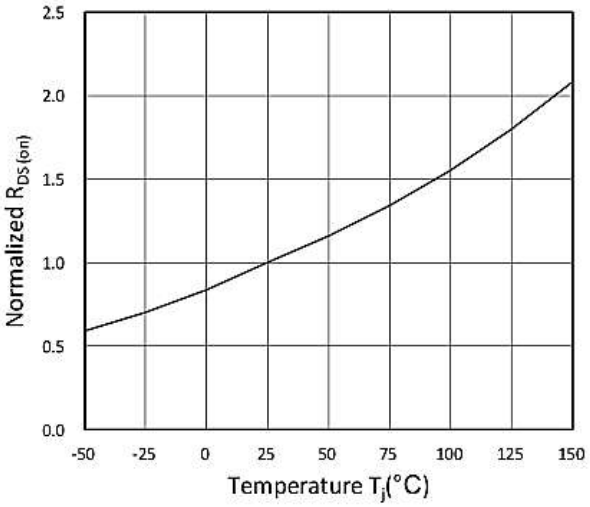


Figure 6. Normalized RDS(on) vs. Temperature

Ratings and Characteristic Curves

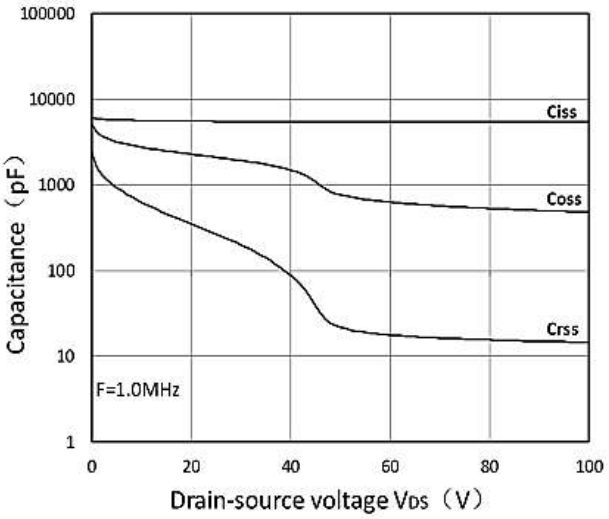


Figure 7. Capacitance Characteristics

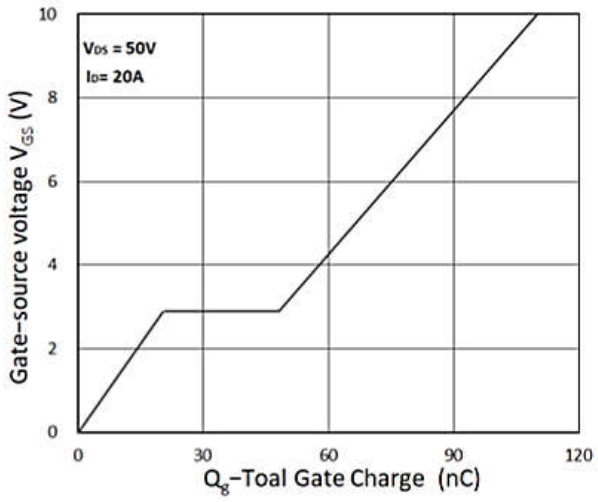


Figure 8. Gate Charge Characteristics

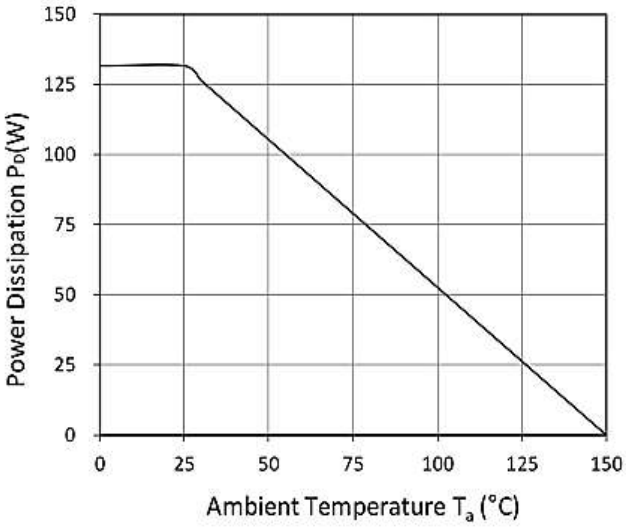


Figure 9. Power Dissipation

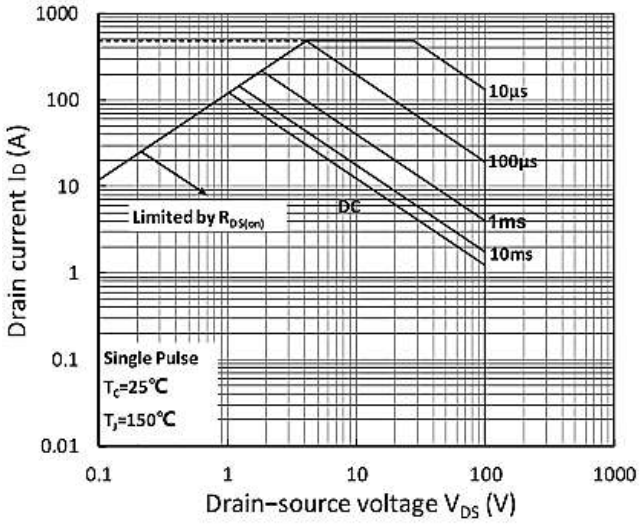


Figure10. Safe Operating Area

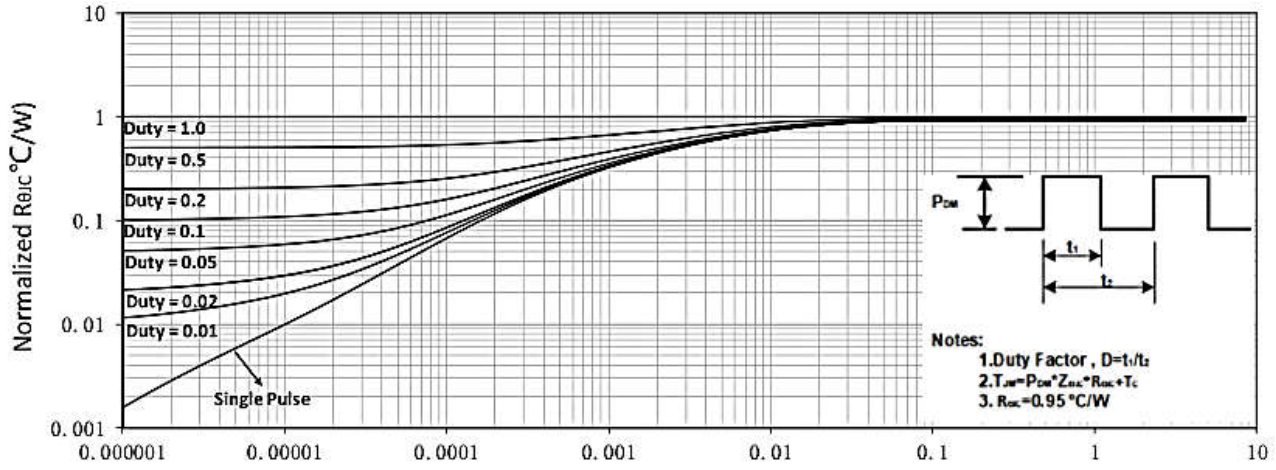
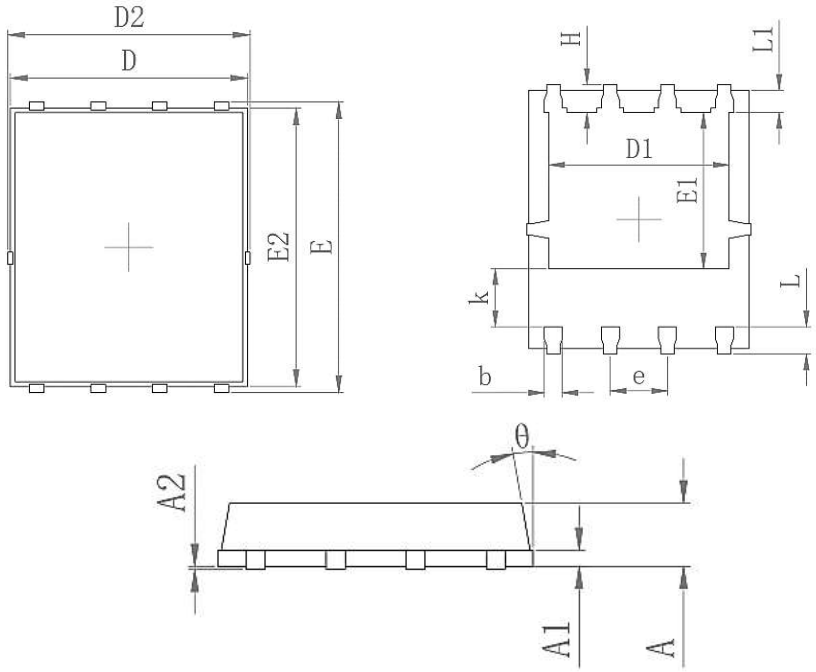


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions Millimeters

PDFN5X6-8L



Symbol	Common	
	mm	
	Mim	Max
A	0.90	1.10
A1	0.254 REF	
A2	0-0.05	
D	4.824	4.976
D1	3.910	4.110
D2	4.944	5.076
E	5.924	6.076
E1	3.375	3.575
E2	5.674	5.826
b	0.350	0.450
e	1.270	
L	0.534	0.686
L1	0.424	0.576
K	1.190	1.390
H	0.549	0.701
Φ	8°	12°