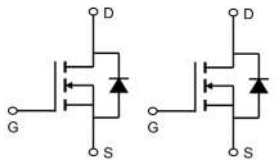
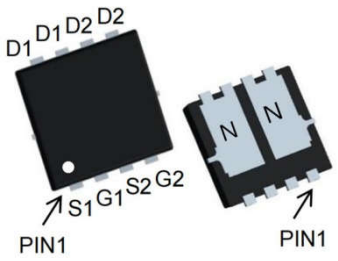
30V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	24.7A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	< 12mΩ(Type:8.5 mΩ)





PDFN5*6-8L

Application

- Lithium battery protection
- Wireless impact
- Mobile phone fast charging

Product Specification Classification

Part Number	Package	Marking	Pack
YFW20H03NF	PDFN5*6-8L	YFW 20H03NF XXXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=25℃	I_D	24.7	A
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=100℃	I_D	10.6	A
Pulsed Drain Current[2]	I_{DM}	92	A
Single Pulse Avalanche Energy[3]	E_{AS}	57.8	mJ
Avalanche Current	I_{AS}	13	A
Total Power Dissipation[4] @T_C=25℃	P_D	19.2	W
Total Power Dissipation[4] @T_A=25℃	P_D	1.42	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]	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	6.5	°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	**BVDSS**	30	33	-	**V**
BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	**$\Delta BV_{DSS/\Delta TJ}$**	-	0.023	-	**V/℃**
Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=15A	**$R_{DS(ON)}$**	-	8.5	12	**mΩ**
	V_{GS}=4.5V, I_D=10A		-	11.5	16.5	
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	**$V_{GS(th)}$**	1.0	-	2.5	**V**
$V_{GS(th)}$ Temperature Coefficient		**$\Delta V_{GS(th)}$**	-	-5.08	-	**mV/℃**
Drain-Source Leakage Current	V_{DS}=24V, V_{GS}=0V T_J=25℃	**I_{DSS}**	-	-	1	**uA**
	V_{DS}=24V , V_{GS}=0V , T_J=55℃		-	-	5	
Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	**I_{GSS}**	-	-	±100	**nA**
Forward Transcond uctance	V_{DS} = 5V, I_D = 15A	**g_{fs}**	-	24.4	-	**S**
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	**R_g**		1.8	-	**Ω**
Total Gate Charge (4.5V)	V_{DS}=15V V_{GS}=4.5V I_D=12A	**Q_g**	-	9.82	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	2.24	-	
Gate-Drain Charge		**Q_{gd}**	-	5.54	-	
Turn-on delay time	V_{DD} =15V V_{GS}=10V R_G = 1.5Ω I_D= 20A	**$t_{d(on)}$**	-	6.4	-	**ns**
Rise Time		**T_r**	-	39	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	21	-	
Fall Time		**t_f**	-	4.7	-	
Input Capacitance	V_{DS}=15V V_{GS}=0V f=1.0MHz	**C_{iss}**	-	896	-	**pF**
Output Capacitance		**C_{oss}**	-	126	-	
Reverse Transfer Capacitance		**C_{rss}**	-	108	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	**I_S**	-	-	37	**A**
Pulsed Source Current[2,5]		**I_{SM}**	-	-	75	**A**
Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	**V_{SD}**	-	-	1	**V**

Note :
1、The data tested by surface mounted on a 1 inch2 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 V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=13A
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

Typical Characteristics

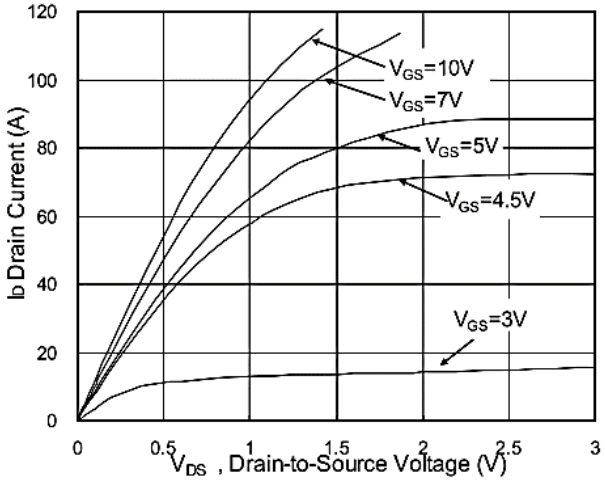


Figure1:Typical Output Characteristics

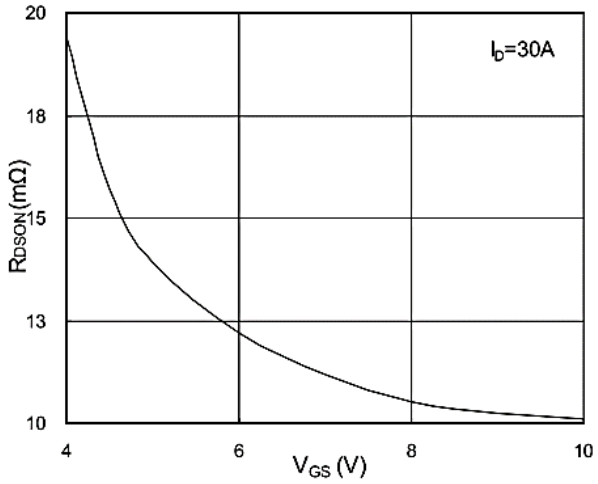


Figure2:On-Resistance vs. G-S Voltage

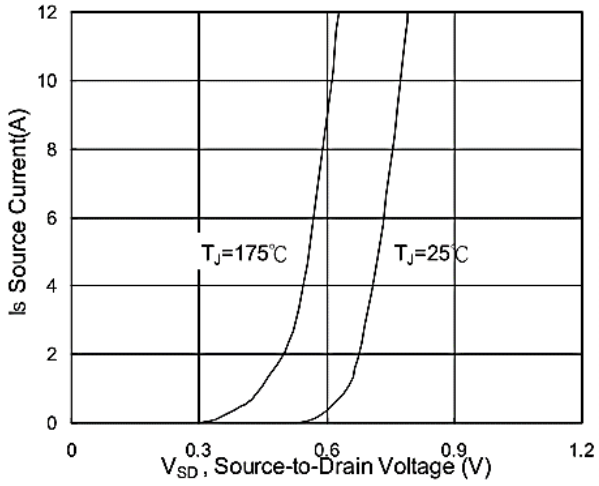


Figure3:Forward Characteristics of Reverse diode

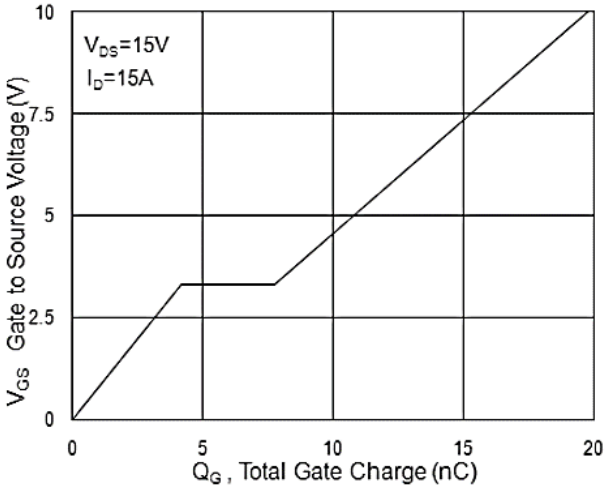


Figure 4:Gate-Charge Characteristics

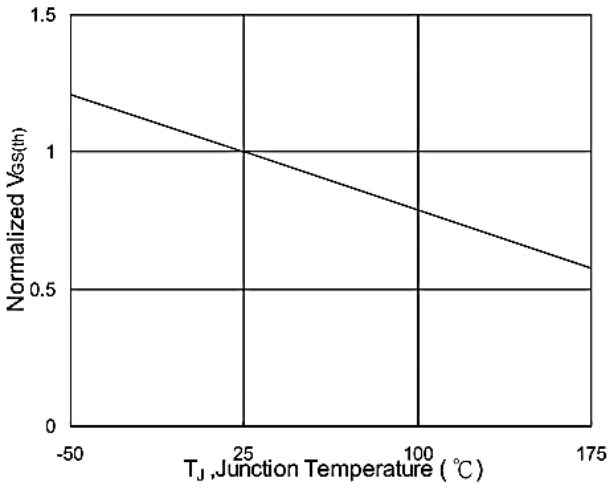


Figure5: Normalized V GS(th) vs. T J

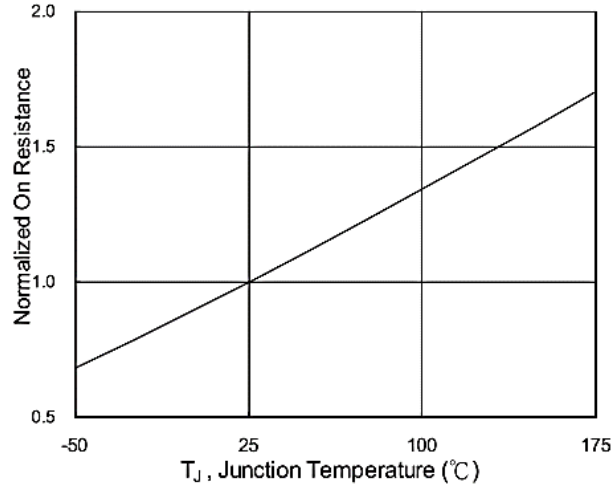


Figure6: Normalized R DSON vs. T J

Ratings and Characteristic Curves

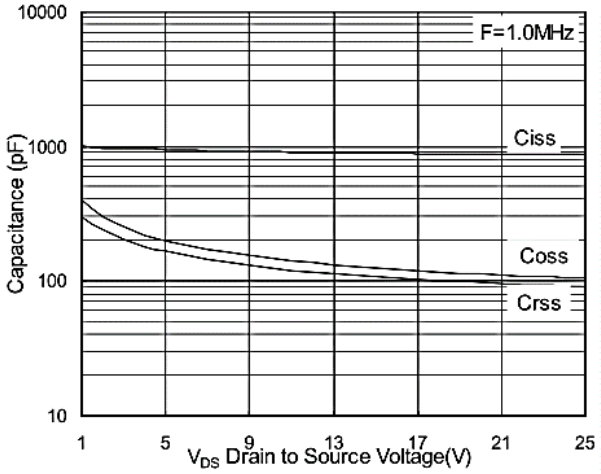


Figure7:Capacitance

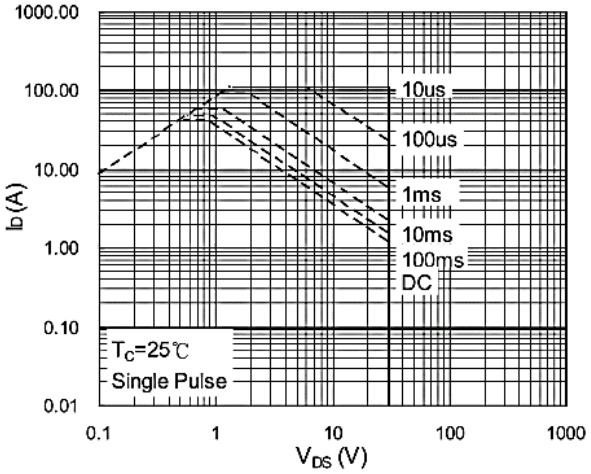


Figure8:Safe Operating Area

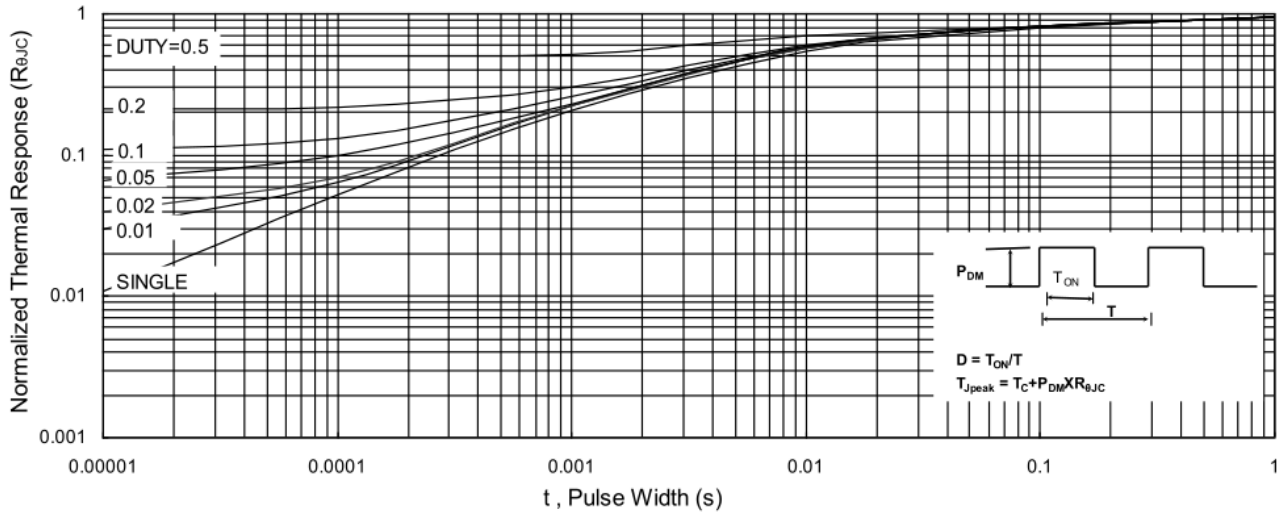


Figure9: Normalized Maximum Transient Thermal Impedance

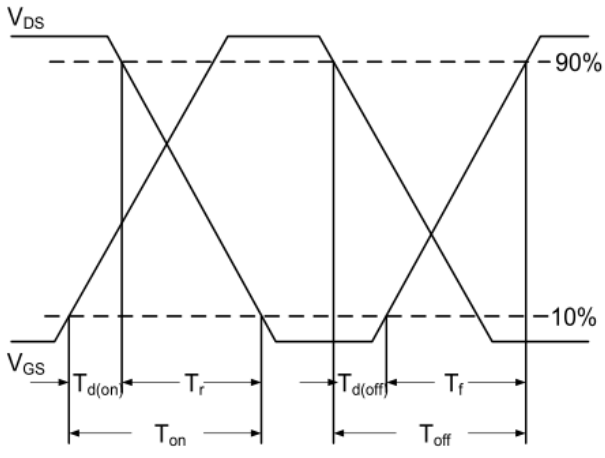


Figure10: Switching Time Waveform

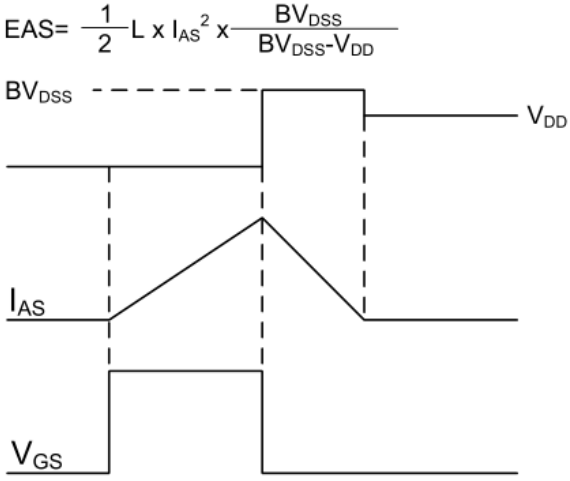
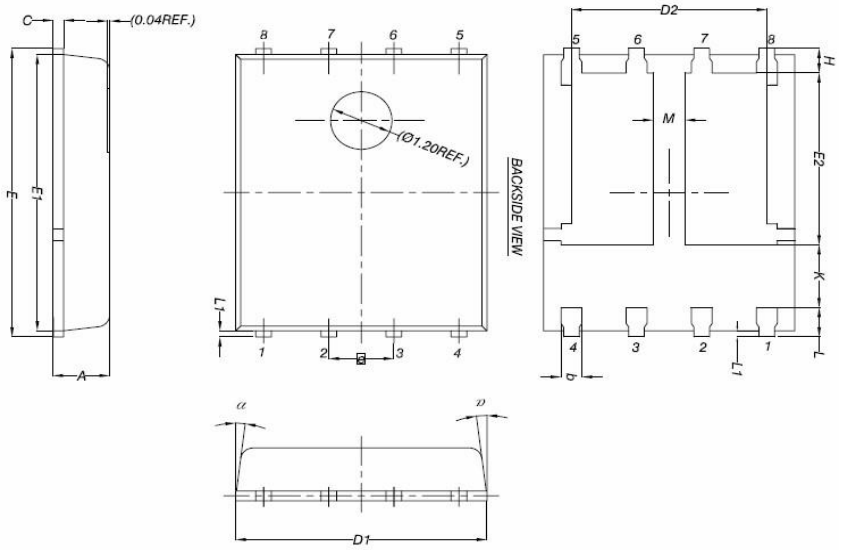


Fig.11 Unclamped Inductive Switching Waveform

Package Outline Dimensions Millimeters

PDFN5*6-8L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.90	1.00	1.10
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	3.30	3.45
E2	3.38	3.05	3.20
e	1.27BSC		
H	0.41	0.51	0.61
K	1.10	--	--
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
M	0.50	--	--
a	0°	--	12°