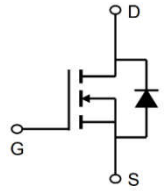
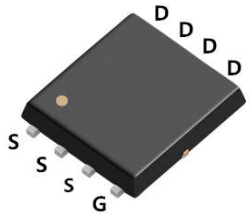
30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	70A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	< 4.5mΩ(Type:3.5 mΩ)





PDFN5*6-8L

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW70N03NF	PDFN5*6-8L	YFW 70N03NF 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	70	A
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=100℃	I_D	51	A
Pulsed Drain Current [2]	I_{DM}	210	A
Single Pulse Avalanche Energy [3]	E_{AS}	325	mJ
Avalanche Current	I_{AS}	48	A
Total Power Dissipation[4] @T_C=25℃	P_D	59	W
Total Power Dissipation4[4] @T_A=25℃	P_D	2	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 to Case[1]	$R_{\theta JC}$	2.1	°C/W

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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	BV_{DSS}	30	33	-	V
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=30A	$R_{DS(ON)}$	-	3.5	4.5	mΩ
	V_{GS}=4.5V, I_D=15A		-	6.5	8.5	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	1.0	1.6	2.5	V
V_{GS}(th) Temperature Coefficient		$\Delta V_{GS(th)}$	-	-6.16	-	mV/°C
Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	1	μA
	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 Transconductance	V_{DS}=5V , I_D=30A	g_{fs}	-	22	-	S
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	R_g	-	1.7	3.4	Ω
Total Gate Charge(4.5V)	V_{DS}=15V I_D=15A V_{GS}=4.5V	Q_g	-	20	-	nC
Gate-Source Charge		Q_{gs}	-	7.6	-	
Gate-Drain Charge		Q_{gd}	-	7.2	-	
Turn-on delay time	V_{DD} =15V V_{GS}=10V I_D= 15A R_G=3.3Ω	$t_{d(on)}$	-	7.8	-	ns
Rise Time		T_r	-	15	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	37.3	-	
Fall Time		t_f	-	10.6	-	
Input Capacitance	V_{DS}=15V V_{GS}=0V f=1.0MHz	C_{iss}	-	2295	-	pF
Output Capacitance		C_{oss}	-	267	-	
Reverse Transfer Capacitance		C_{rss}	-	210	-	
Continuous Source Current[1,6]	V_G=V_D=0V , Force Current	I_S	-	-	80	A
Pulsed Source Current[2,6]		I_{SM}	-	-	160	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	V_{SD}	-	-	1	V
Reverse Recovery Time	IF=30A , dI/dt=100A/μs , T_J=25℃	t_{rr}	-	14	-	nS
Reverse Recovery Charge		Q_{rr}	-	5	-	nC

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 VDD=24V,VGS=10V,L=0.5mH,IAS=48A
4、The power dissipation is limited by 175℃ junction temperature
5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

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Ratings and Characteristic Curves

Typical Characteristics

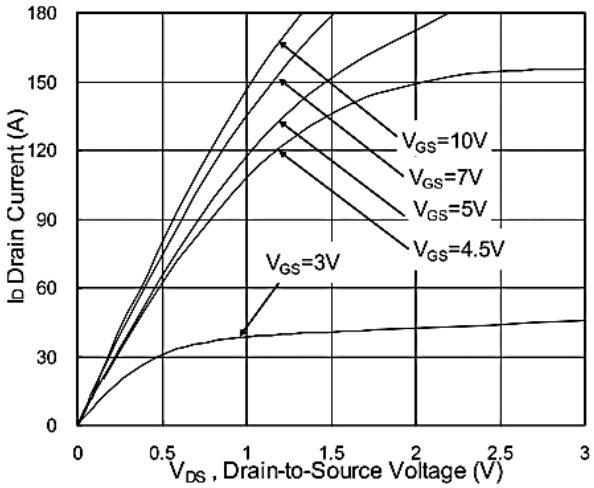

Fig.1 Typical Output Characteristics

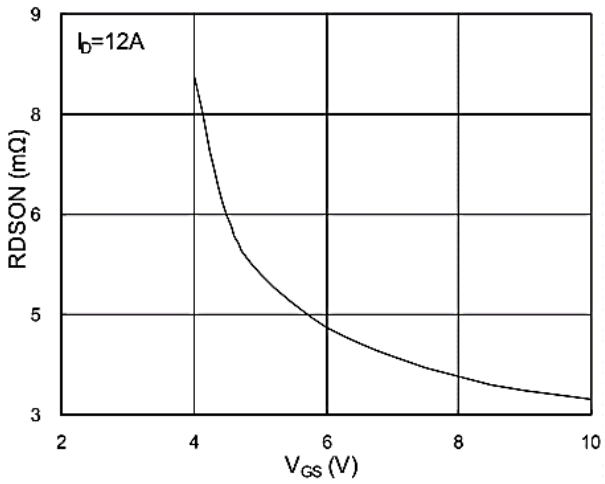

Fig.2 On-Resistance vs. G-S Voltage

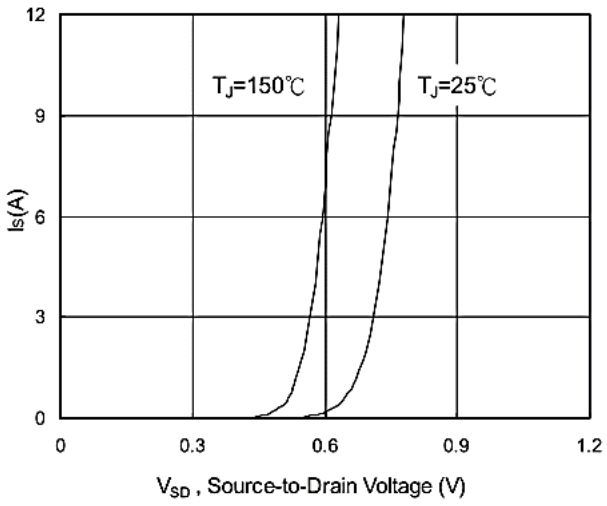

Fig.3 Forward Characteristics of Reverse

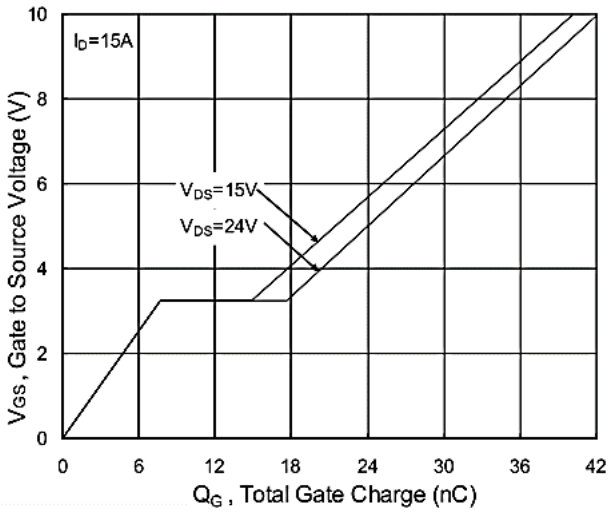

Fig.4 Gate-Charge Characteristics

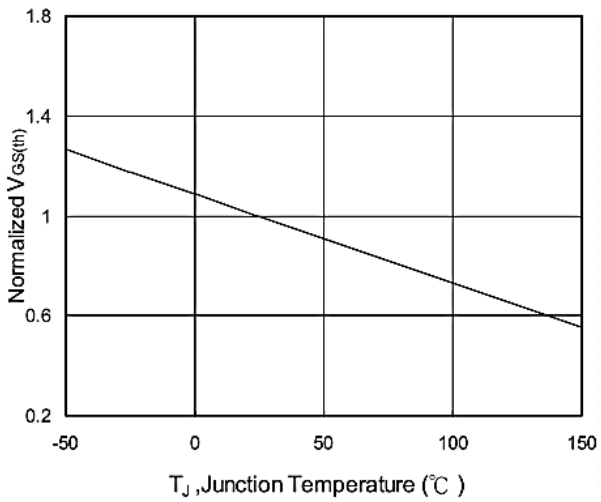

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

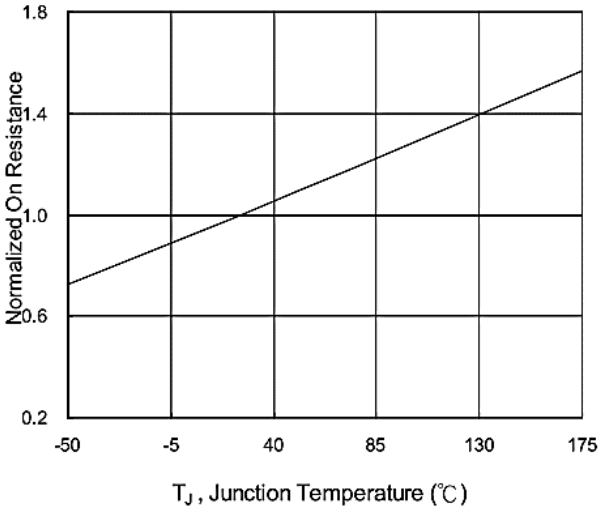

Fig.6 Normalized R_{DSON} vs. T_J

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Ratings and Characteristic Curves

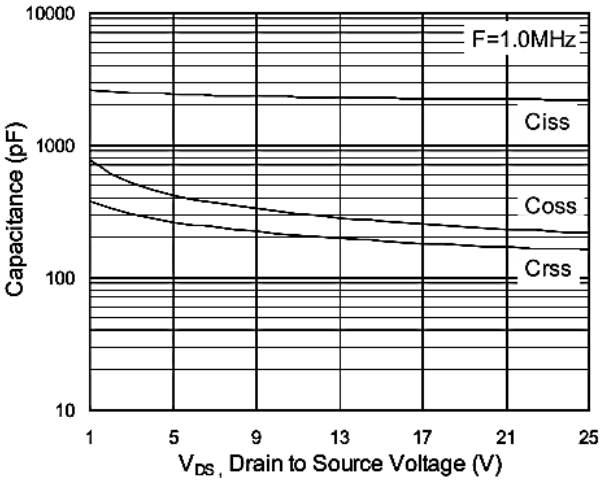

Fig.7 Capacitance

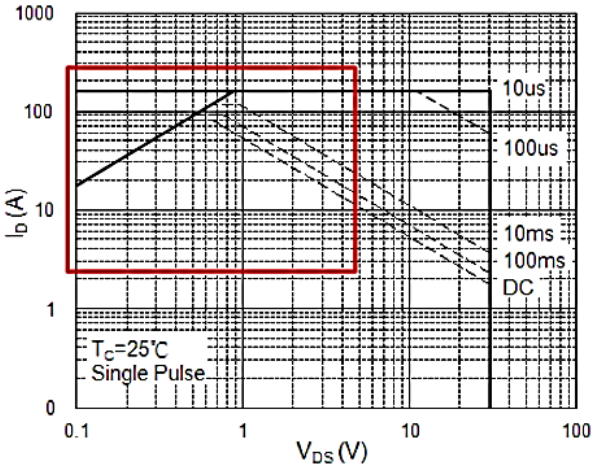

Fig.8 Safe Operating Area

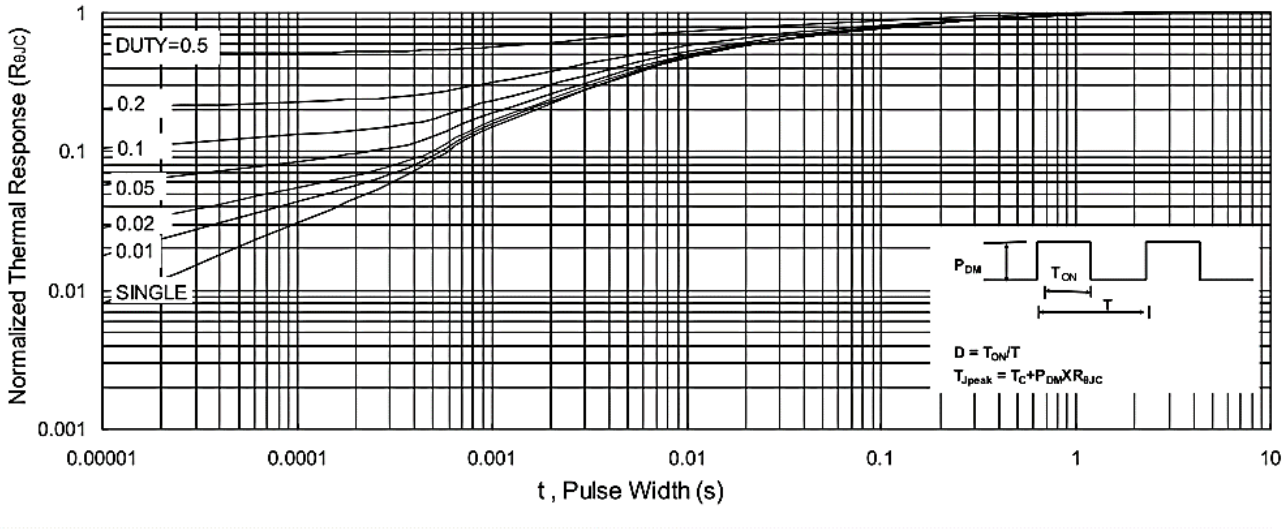

Fig.9 Normalized Maximum Transient Thermal Impedance

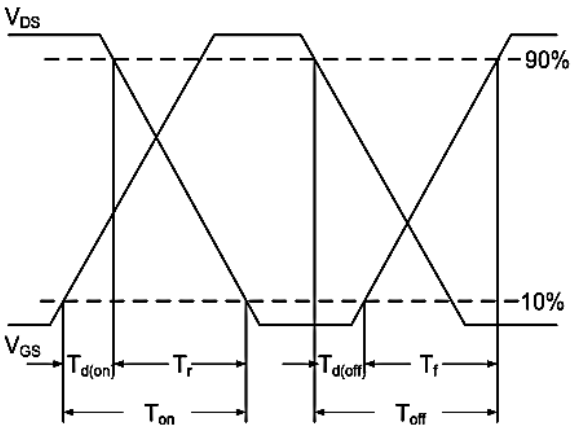

Fig.10 Switching Time Waveform

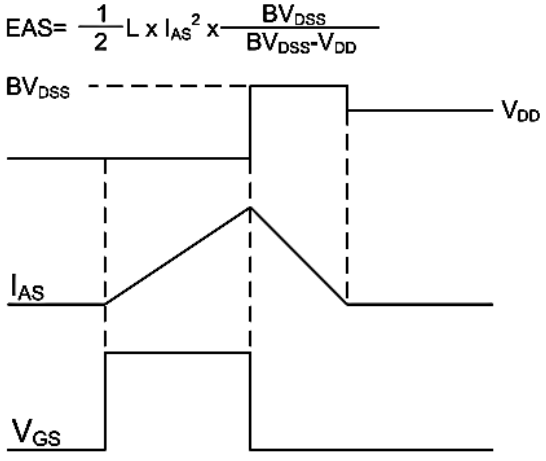

Fig.11 Unclamped Inductive Switching Waveform

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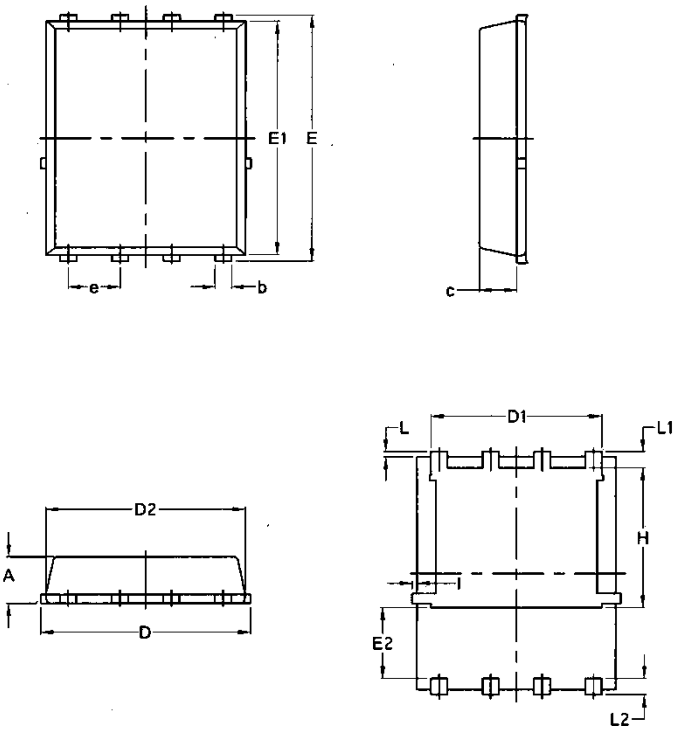
Package Outline Dimensions Millimeters

PDFN5*6-8L



Symbol	Common			
	mm		Inch	
	Mim	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

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