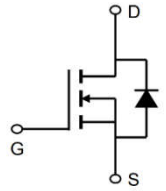
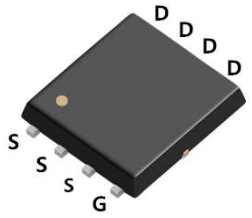
30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	< 4.0mΩ(Type:2.9mΩ)





PDFN5*6-8L

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW80N03NF	PDFN5*6-8L	YFW 80N03NF 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[1.6] @T_C=25℃	I_D	80	A
Continuous Drain Current, V_{GS} @ 10V[1.6] @T_C=100℃	I_D	65	A
Pulsed Drain Current [note1]	I_{DM}	400	A
Single Pulsed Avalanche Energy [note2]	E_{AS}	320	mJ
Avalanche Current	I_{AS}	45.8	A
Storage Temperature Range	T_{STG}	-55 to +175	°C
Operating Junction Temperature Range	T_J	-55 to +175	°C
Total Power Dissipation[4] @T_C=25℃	P_D	88	W
Total Power Dissipation[4] @T_A=25℃	P_D	44	W
Thermal Resistance Junction-ambient [1]	$R_{\theta JA}$	58	°C/W
Thermal Resistance Junction-Ambient 1 (t ≤10s)	$R_{\theta JA}$	20	°C/W
Thermal Resistance, Junction to Case[1]	$R_{\theta JC}$	2.3	°C/W

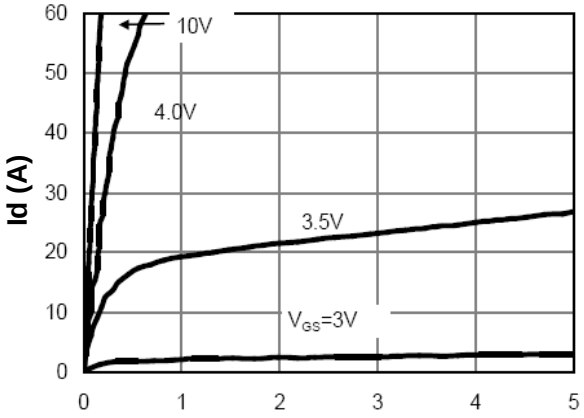
Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	**V(BR)DSS**	30	-	-	**V**
Zero Gate Voltage Drain Current	V_{DS}=30V , V_{GS}=0V	**I_{DSS}**	-	-	1.0	**μA**
Gate to Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	**I_{GSS}**	-	-	±100	**nA**
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	**$V_{GS(th)}$**	1.0	1.5	2.5	**V**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=24A	**$R_{DS(ON)}$**	-	2.9	4.0	**mΩ**
	V_{GS}=4.5V, I_D=12A		-	5.3	6.5	
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	**R_g**	-	-	3.3	**Ω**
Forward Transconductance	V_{DS}=10V, I_D=10A	**g_{FS}**	-	15.5	-	**S**
Input Capacitance	V_{DS}=25V V_{GS}=0V f=1.0MHz	**C_{iss}**	-	2200	-	**pF**
Output Capacitance		**C_{oss}**	-	280	-	
Reverse Transfer Capacitance		**C_{rss}**	-	177	-	
Total Gate Charge	V_{DS}=15V I_D=24A V_{GS}=10V	**Q_g**	-	42	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	4	-	
Gate-Drain(“Miller”) Charge		**Q_{gd}**	-	13	-	
Turn-on delay time	V_{DS}=15V I_D=15A R_{GEN}=3.3Ω V_{GS}=10V	**$t_{d(on)}$**	-	12.6	-	**ns**
Turn-on Rise Time		**T_r**	-	19.5	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	42.8	-	
Turn-Off Fall Time		**t_f**	-	13.2	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	**I_S**	-	-	100	**A**
Pulsed Source Current[2,6]		**I_{SM}**	-	-	400	**A**
Diode Forward Voltage [2]	V_{GS}=0V , I_S=30A	**V_{SD}**	-	-	1.2	**V**
Body Diode Reverse Recovery Time	IF=30A,dI/dt=100A/μs	**t_{rr}**	-	19	-	**ns**
Body Diode Reverse Recovery Charge		**Q_{rr}**	-	11	-	**nC**

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 =25V,V GS =10V,L=0.1mH,I AS =45.8A
4.The power dissipation is limited by 175℃ 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.
6.Package limitation current is 85A

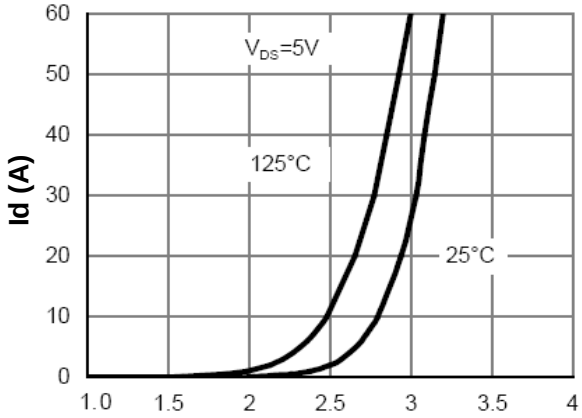
Ratings and Characteristic Curves

Typical Characteristics



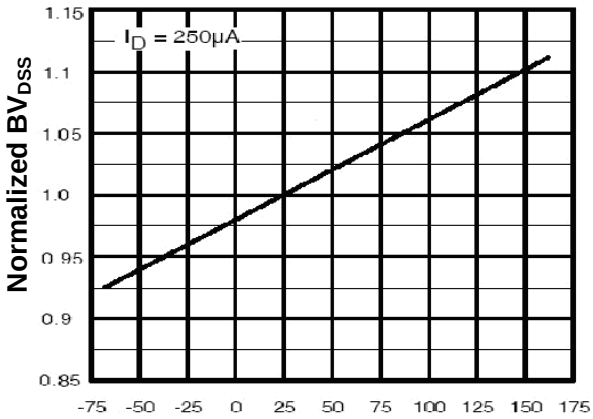
VDS Drain-to-Source Voltage(V)

Figure 1. Output Characteristics



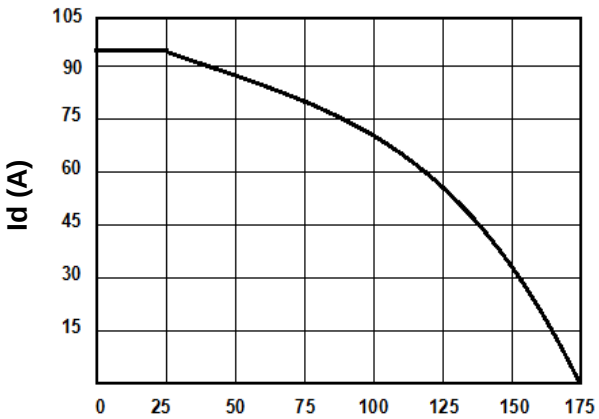
VGS Gate-to-Source Voltage(V)

Figure 2. Transfer Characteristics



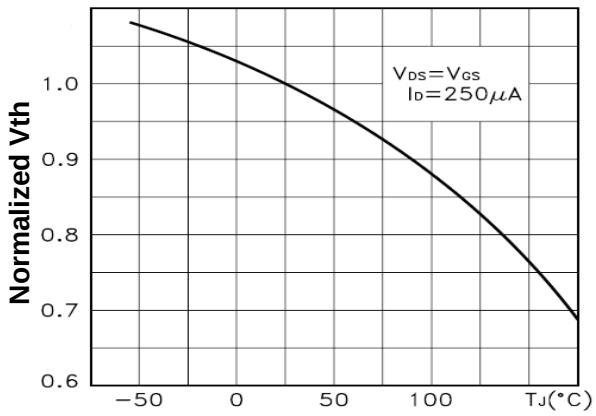
T_J-Junction Temperature(℃)

Figure 3. Max BV_{DSS} vs Junction Temperature



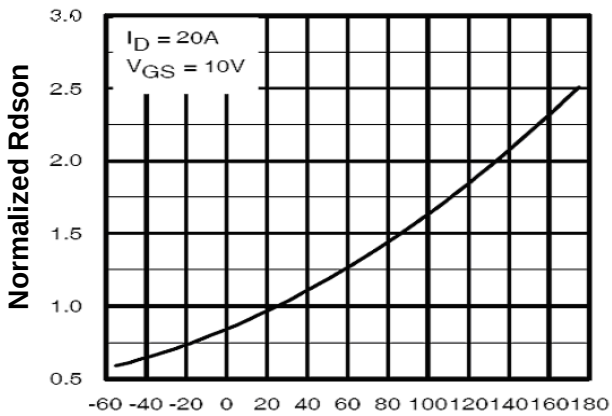
T_J-Junction Temperature(℃)

Figure 4. Drain Current



T_J-Junction Temperature(℃)

Figure 5. $V_{GS(th)}$ vs Junction Temperature



T_J-Junction Temperature(℃)

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

Ratings and Characteristic Curves

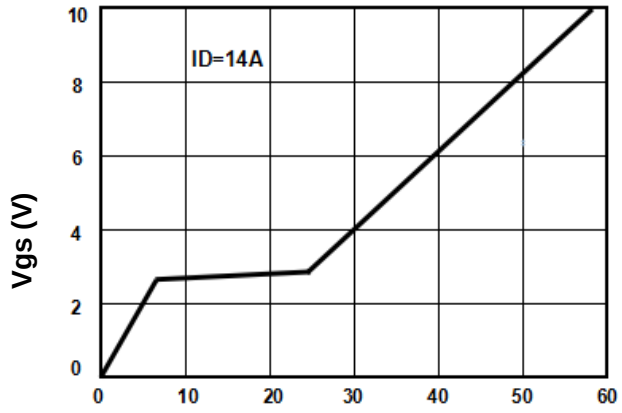


Figure 7. Gate Charge Waveforms

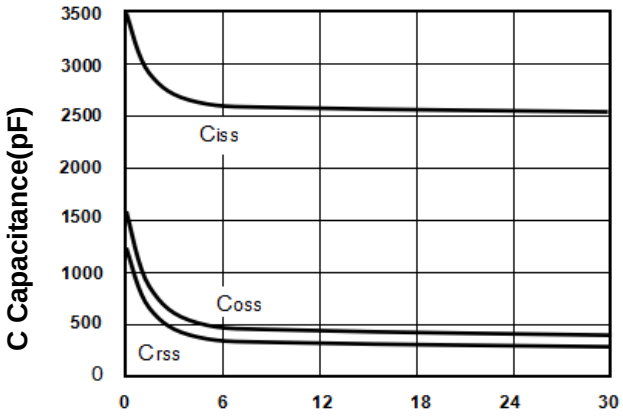


Figure 8. Capacitance

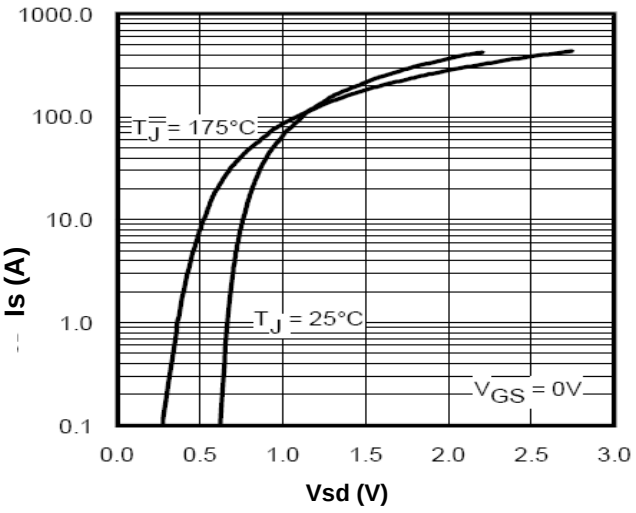


Figure 9. Body-Diode Characteristics

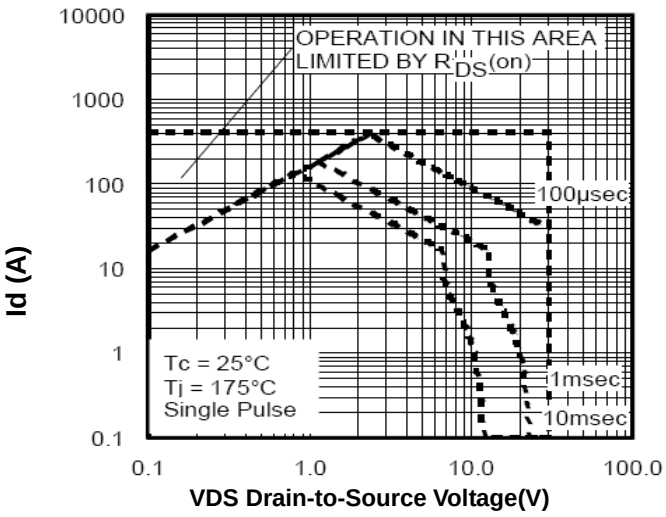


Figure 10. Maximum Safe Operating Area

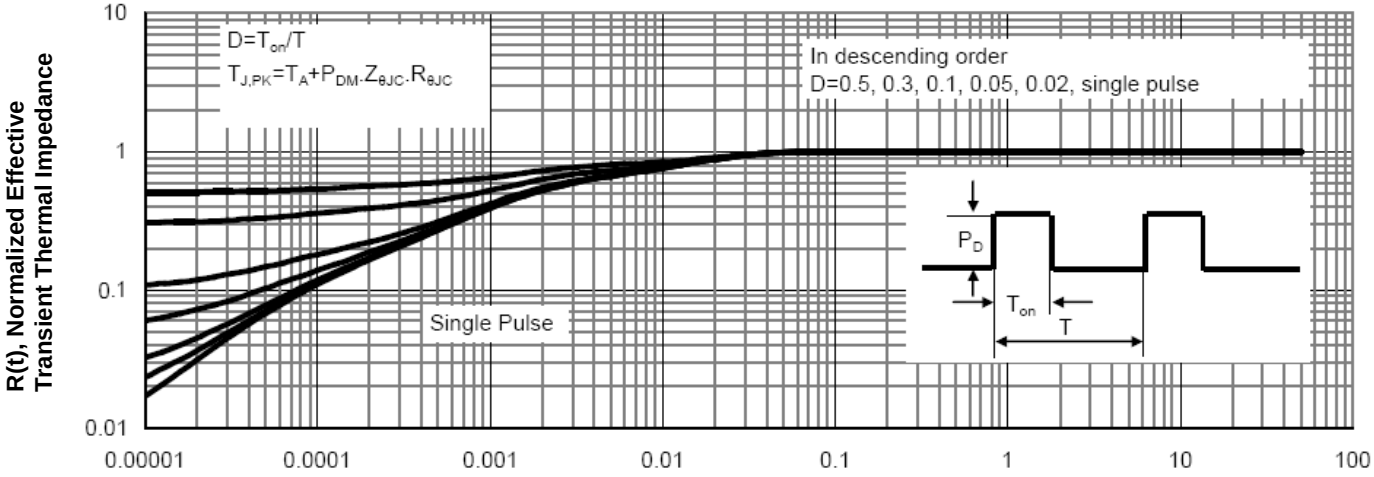
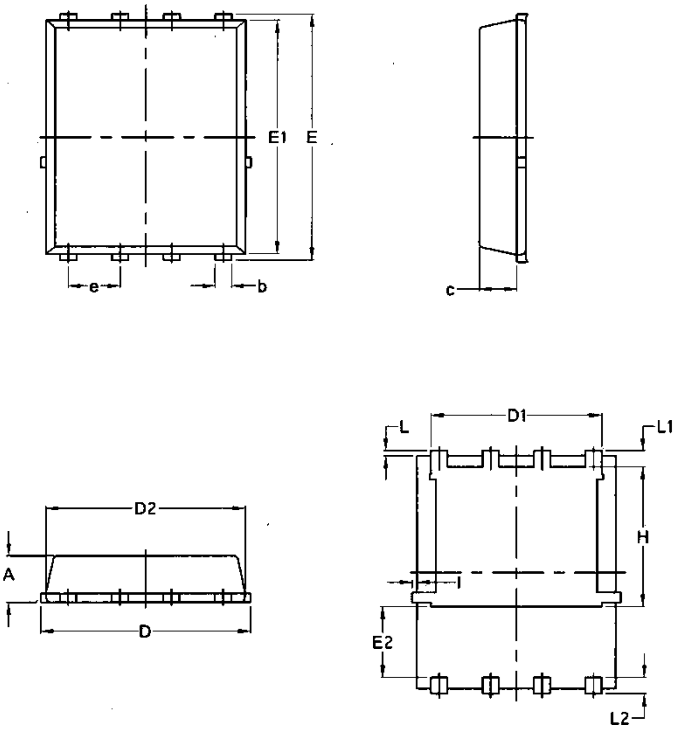


Figure 11. Normalized Maximum Transient Thermal Impedance

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