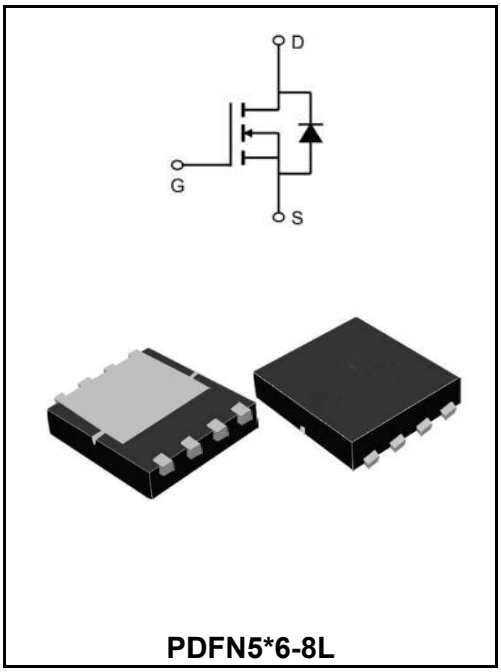
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	20V
R_{DSON}-typ(@V_{GS}=4.5V)	< 3.5mΩ(Type:2.8 mΩ)



PDFN5*6-8L

lead-free ROHS

Application

- Solar road lights
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW80N02NF	PDFN5*6-8L	YFW 80N02NF XXXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	±12	V
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=25℃	I_D	80	A
Continuous Drain Current, V_{GS} @ 10V[1] @T_C=100℃	I_D	59	A
Pulsed Drain Current note1	I_{DM}	360	A
Single Pulse Avalanche Energy note2	E_{AS}	110	mJ
Power Dissipation	P_D	81	W
Thermal Resistance, Junction to Case	$R_{\theta JA}$	65	°C/W
Thermal Resistance Junction to Case 1	$R_{\theta JC}$	4	°C/W
Operating Junction Temperature Range	T_J ,T_{STG}	-55 to +175	°C

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}	20	24	-	V
BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	$\Delta BVD_{SS/\Delta TJ}$	-	0.018	-	V/℃
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	0.5	0.65	1.0	V
Static Drain-Source On-Resistance	V_{GS}=4.5V, I_D=30A	$R_{DS(ON)}$	-	2.8	4.0	mΩ
	V_{GS}=2.5V, I_D=20A		-	4.0	6.0	
Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate to Body Leakage Current	V_{GS}=±10V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	C_{iss}	-	3200	-	pF
Output Capacitance		C_{oss}	-	460	-	
Reverse Transfer Capacitance		C_{rss}	-	446	-	
Total Gate Charge	V_{DS}=10V I_D=30A V_{GS}=4.5V	Q_g	-	11.05	-	nC
Gate-Source Charge		Q_{gs}	-	1.73	-	
Gate-Drain Charge		Q_{gd}	-	3.1	-	
Turn-on delay time	V_{GS}=4.5V V_{DS} =10V I_D= 30A R_{GEN} =1.8Ω	$t_{d(on)}$	-	9.7	-	ns
Turn-on Rise Time		T_r	-	37	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	63	-	
Turn- Off Fall Time		t_f	-	52	-	
Drain Forward Voltage	V_{GS}=0V , I_S=7.6A	V_{SD}	-	-	1.2	V

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 power dissipation is limited by 150℃ junction temperature
4、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.
5、EAS condition: TJ=25℃, VDD=15V, VG=4.5V, RG=25Ω, L=0.5mH, IAS=21A

Ratings and Characteristic Curves

Typical Characteristics

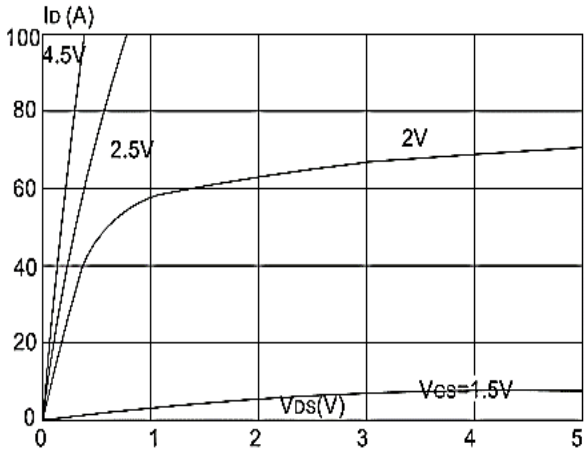


Figure1: Output Characteristics

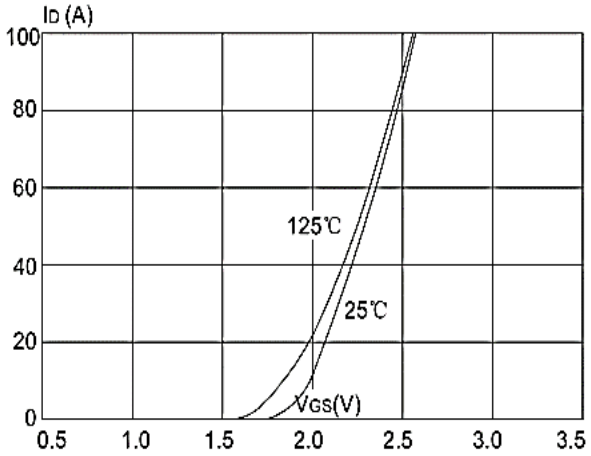


Figure 2: Typical Transfer Characteristics

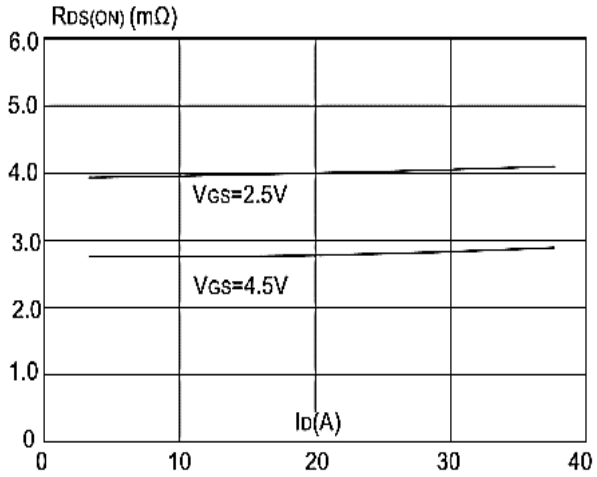


Figure 3:On-resistance vs. Drain Current

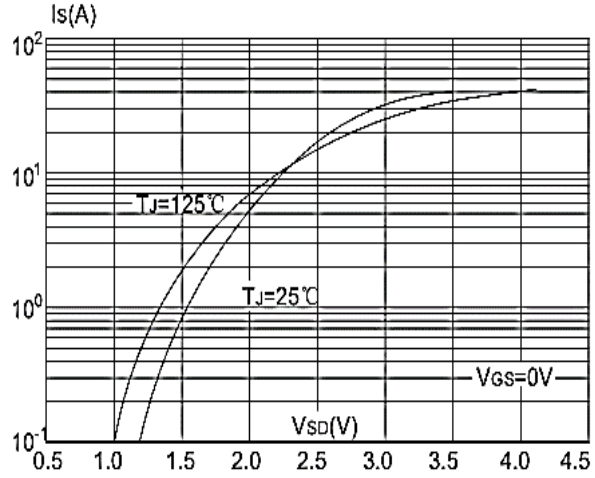


Figure 4: Body Diode Characteristics

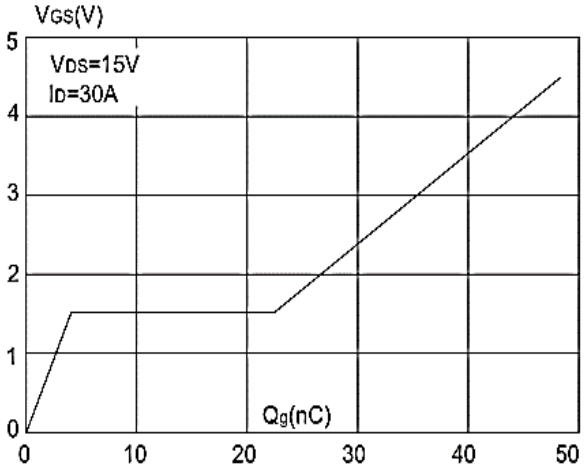


Figure 5: Gate Charge Characteristics

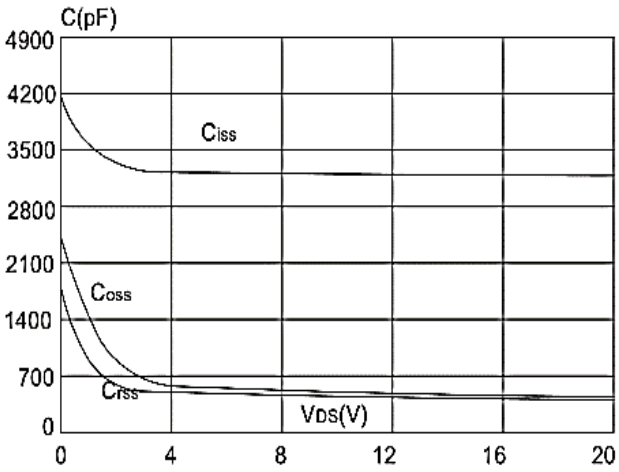


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

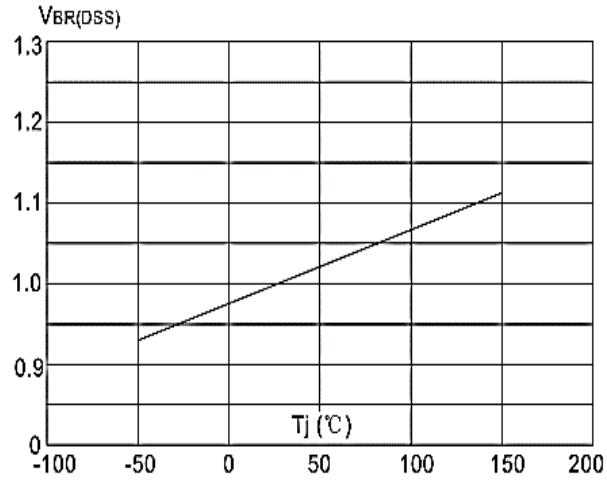


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

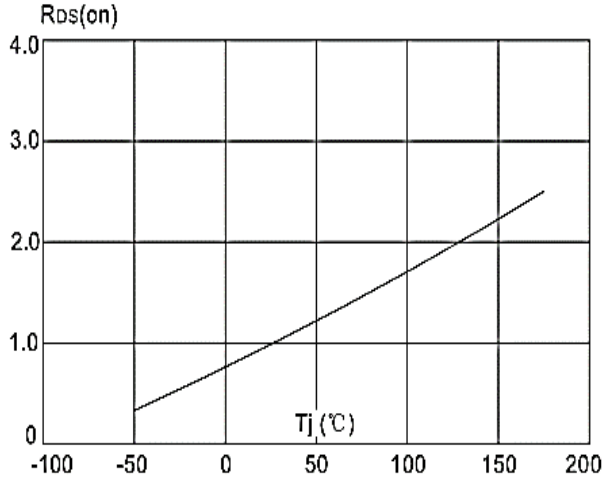


Figure 8: Normalized on Resistance vs. Junction Temperature

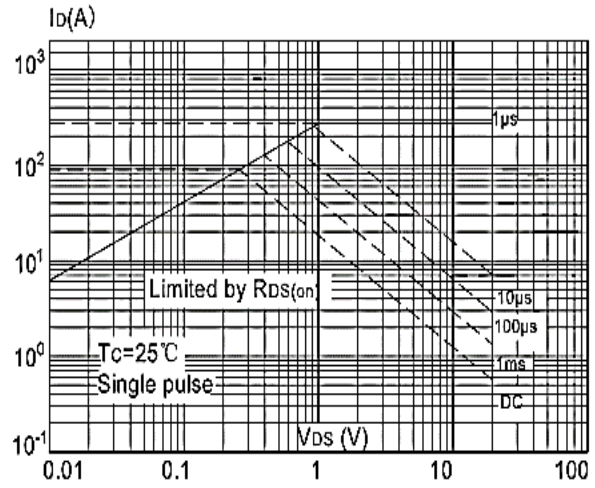


Figure 9: Maximum Safe Operating Area

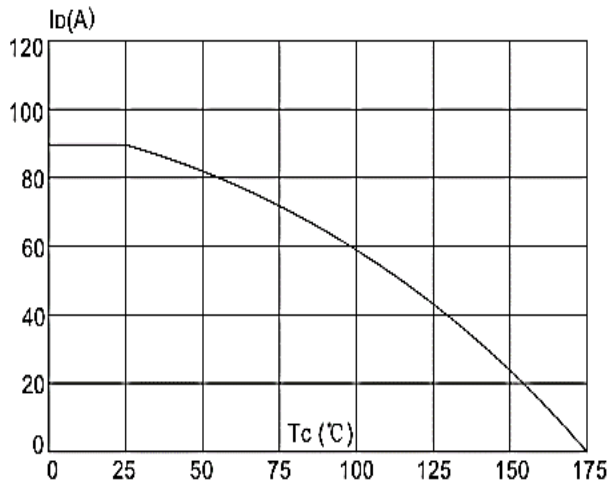


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

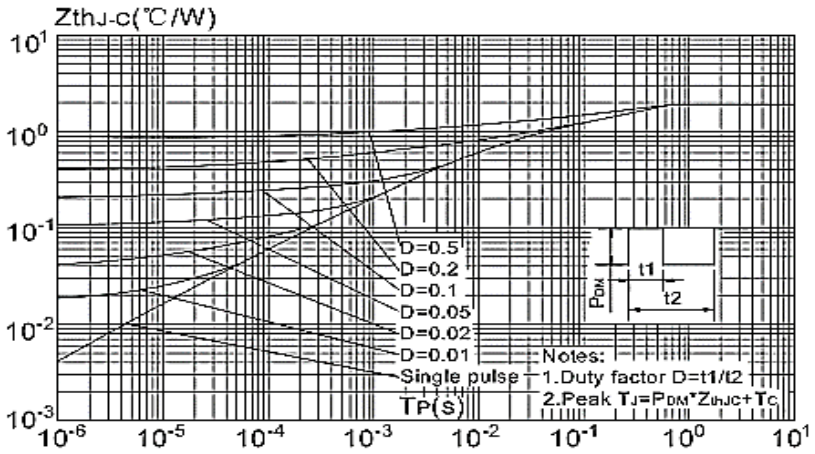
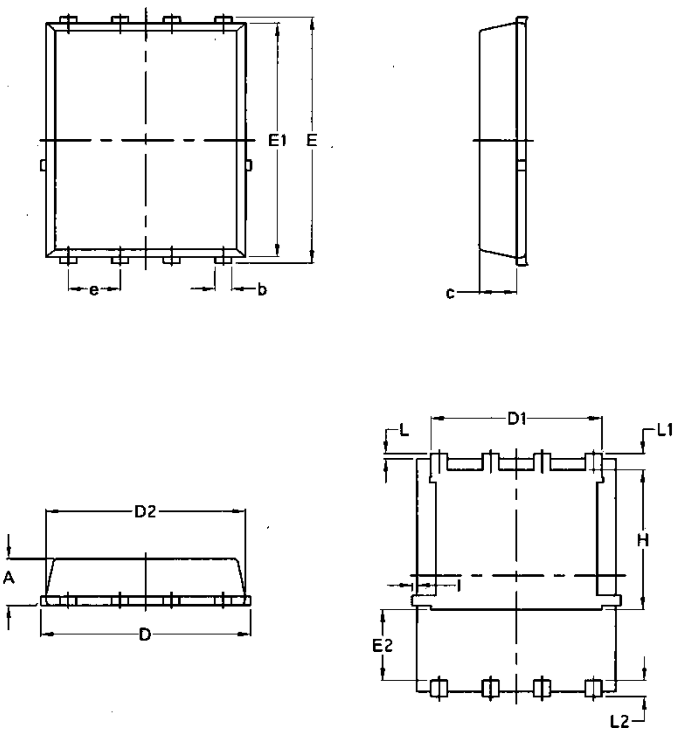


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

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