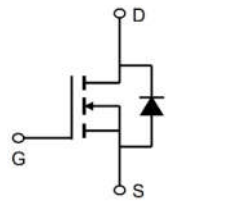
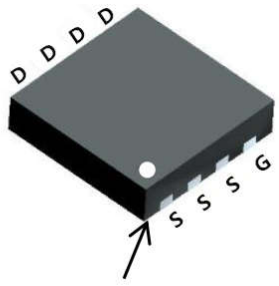
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	20V
R_{DSON}-typ(@V_{GS}=4.5V)	< 2mΩ(Type:1.5 mΩ)





Pin1

DFN3*3-8L

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW80N02DF	DFN3*3-8L	YFW 80N02DF 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[1] @T_C=25℃	I_D	80	A
Continuous Drain Current[1] @T_C=100℃	$I_{D(100℃)}$	39	A
Pulsed Drain Current [2]	I_{DM}	200	A
Single Pulse Avalanche Energy [3]	E_{AS}	80	mJ
Avalanche Current	I_{AS}	40	A
Total Power Dissipation[4] @T_C=25℃	P_D	83	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction and Storage Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-ambient [1] (t≦10S)	$R_{\theta JA}$	20	C/W
Thermal Resistance Junction-ambient [1] (Steady State)		55	C/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	1.5	°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	BV_{DSS}	20	-	-	V
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	0.4	-	1.0	V
Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=20A	$R_{DS(ON)}$	1.05	1.5	2	mΩ
	V_{GS}=2.5V, I_D=20A		1.4	2	2.7	
Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	I_{DSS}	-	-	1	μA
	V_{DS}=16V , V_{GS}=0V , T_J=125℃			-	5	
Gate-Source Leakage Current	V_{GS}=±10V , V_{DS}=0V	I_{GSS}		-	±10	μA
Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	R_g	-	1.2	-	Ω
Total Gate Charge(10V)	V_{DS}=15V V_{GS}=10V I_D=20A	Q_g	-	77	-	nC
Gate-Source Charge		Q_{gs}	-	8.7	-	
Gate-Drain Charge		Q_{gd}	-	14	-	
Turn-on delay time	V_{DD} =15V V_{GS}=10V R_G = 3 I_D= 20A	$t_{d(on)}$	-	10.2	-	ns
Rise Time		T_r	-	11.7	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	56.4	-	
Fall Time		t_f	-	16.2	-	
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	C_{iss}	-	4307	-	pF
Output Capacitance		C_{oss}	-	501	-	
Reverse Transfer Capacitance		C_{rss}	-	321	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	50	A
Diode Forward Voltage [2]	V_{GS}=0V , I_S=1A , T_J=25℃	V_{SD}	-	-	1.2	V
Reverse Recovery Time	I_F=20A , di/dt=100A/μs , T_J=25℃	t_{rr}	-	22	-	ns
Reverse Recovery Charge		Q_{rr}	-	72	-	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=25V,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 ID and IDM , in real applications , should be limited by total power dissipation

Ratings and Characteristic Curves

Typical Characteristics

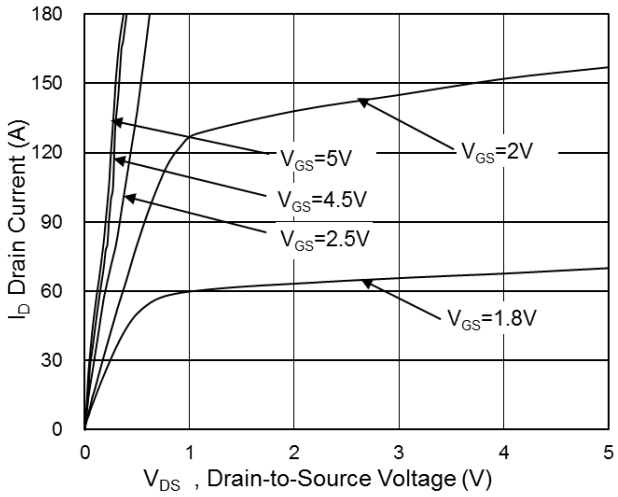


Fig.1 Typical Output Characteristics

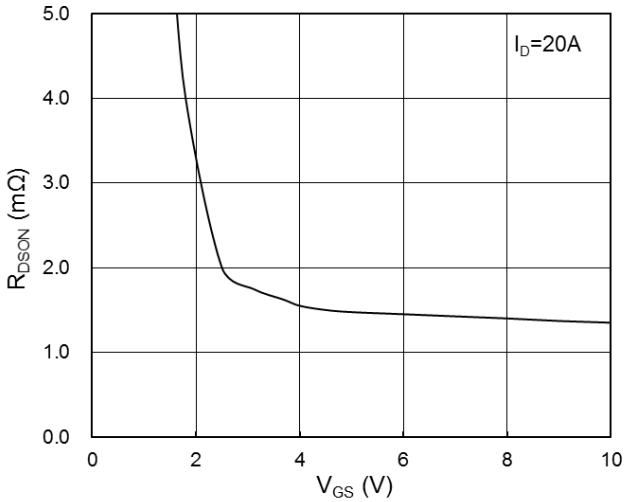


Fig.2 On-Resistance vs. Gate-Source Voltage

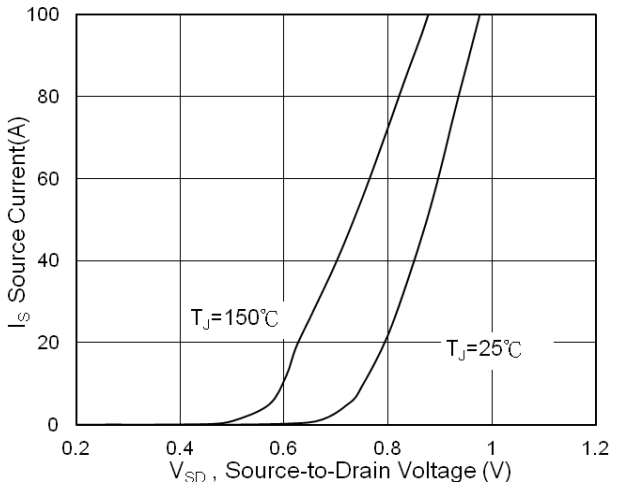


Fig.3 Forward Characteristics of Reverse

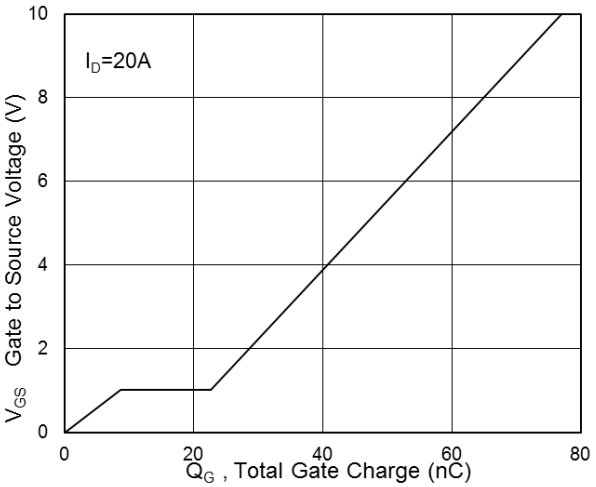


Fig.4 Gate-Charge Characteristics

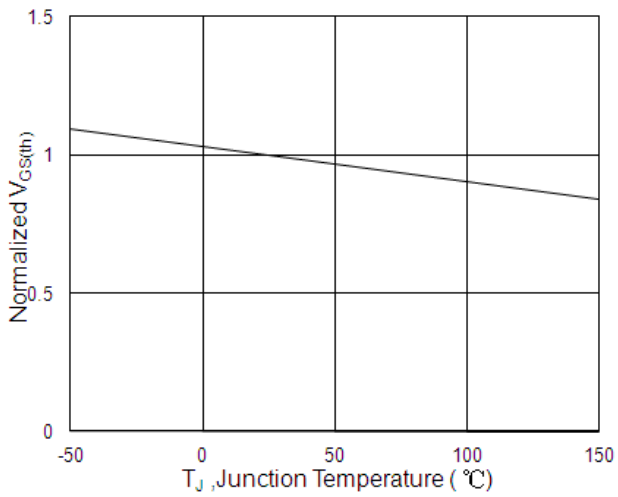


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

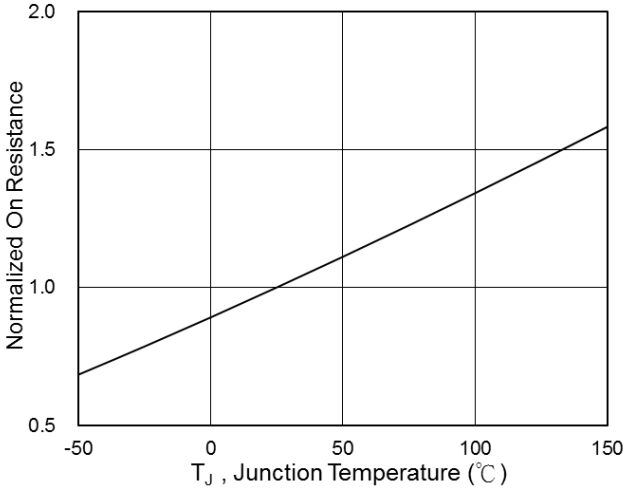


Fig.6 Normalized R_{DSON} vs. T_J

Ratings and Characteristic Curves

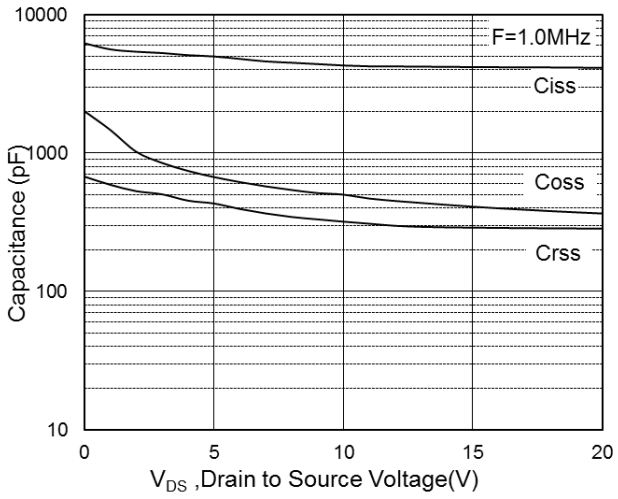


Fig.7 Capacitance

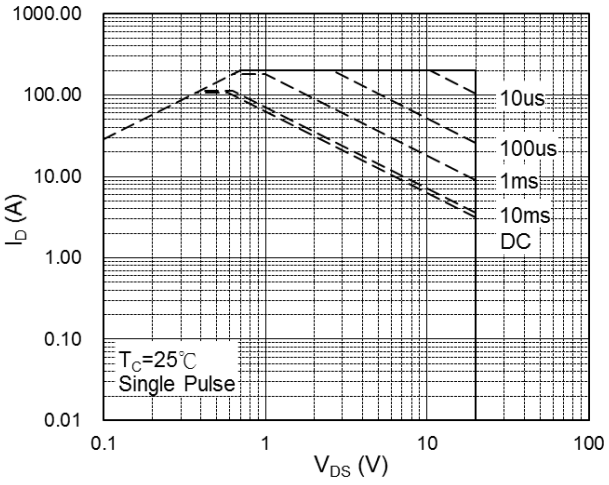


Fig.8 Safe Operating Area

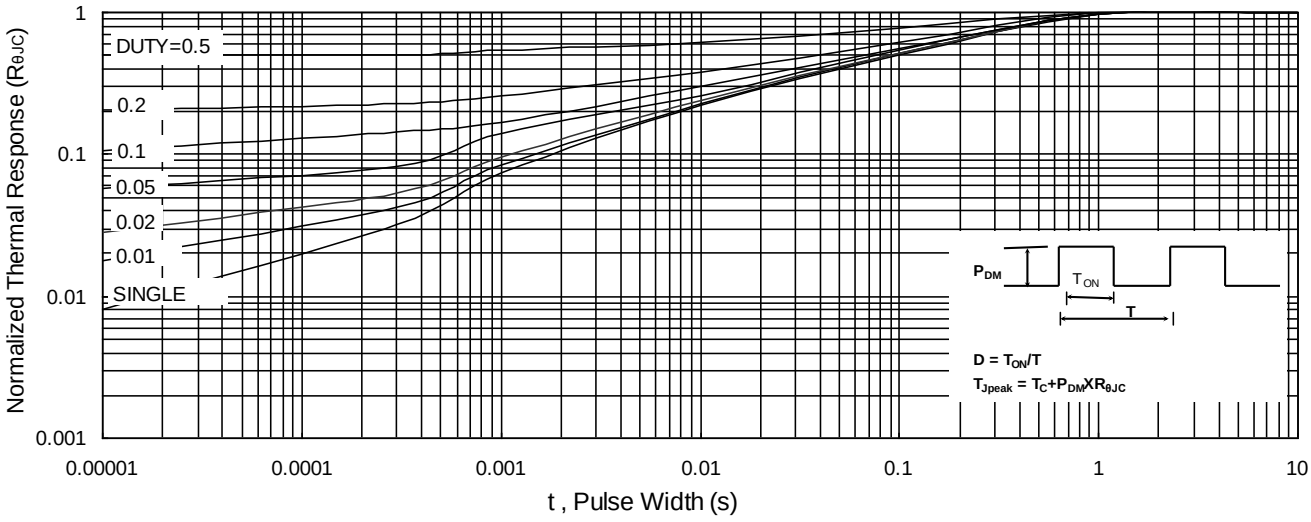


Fig.9 Normalized Maximum Transient Thermal Impedance

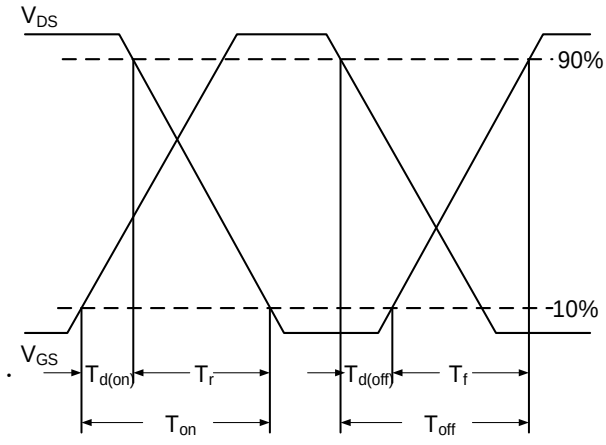


Fig.10 Switching Time Waveform

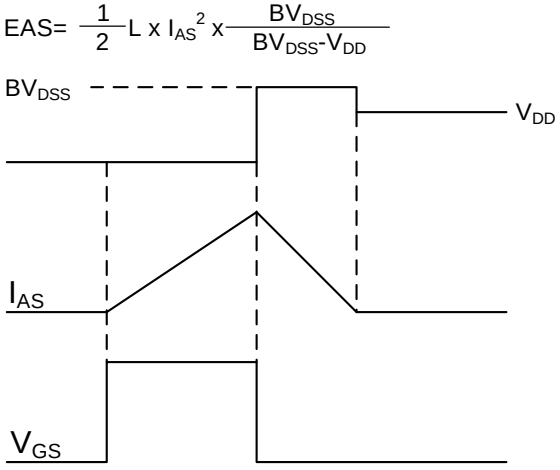
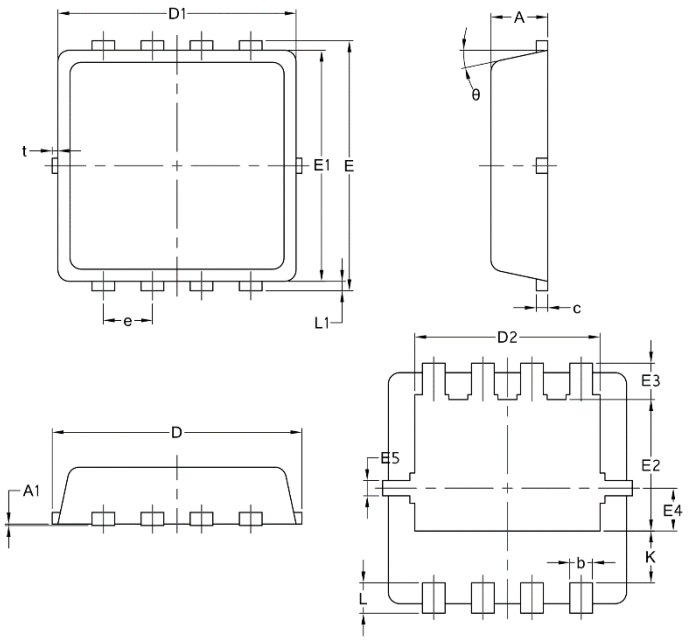


Fig.11 Unclamped Inductive Switching Waveform

Package Outline Dimensions Millimeters

DFN3*3-8L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14