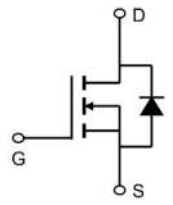
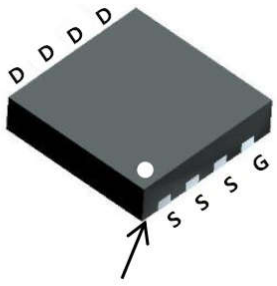
20V N-CHANNEL ENHANCEMENT MODE MOSFET

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

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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}	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

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Ratings and Characteristic Curves

Typical Characteristics

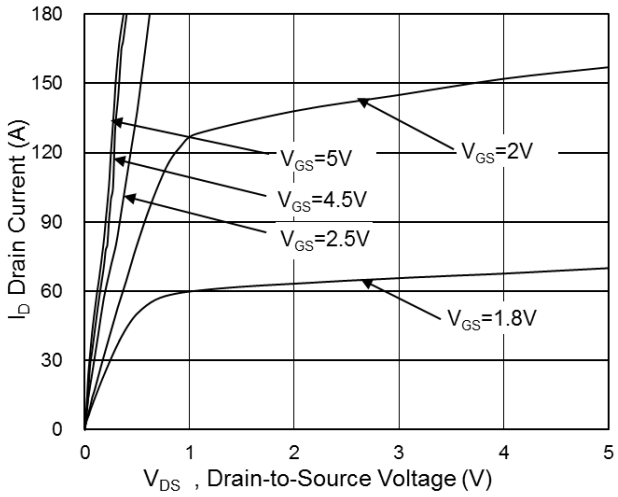

Fig.1 Typical Output Characteristics

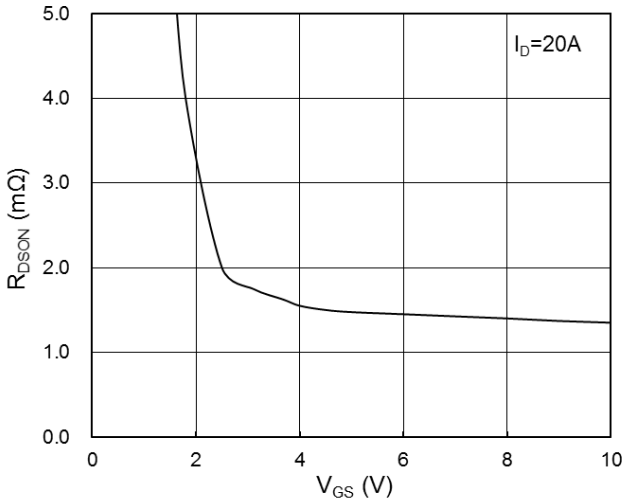

Fig.2 On-Resistance vs. Gate-Source Voltage

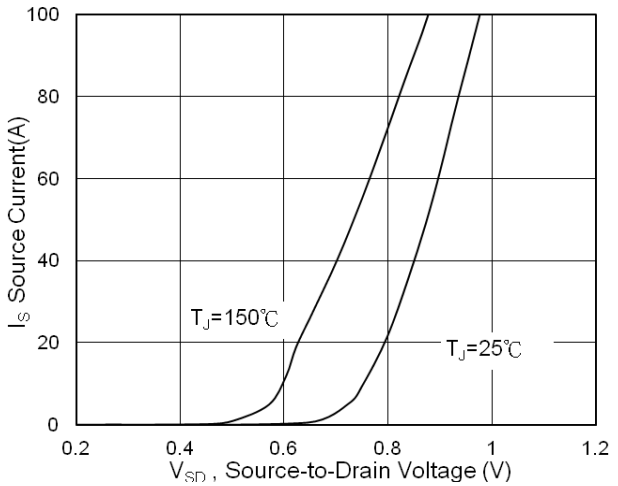

Fig.3 Forward Characteristics of Reverse

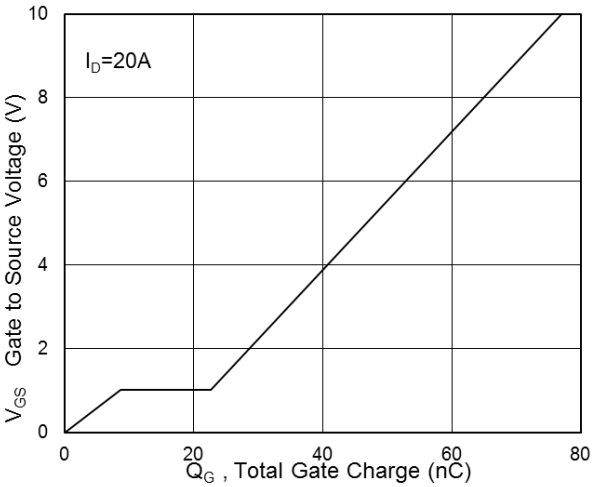

Fig.4 Gate-Charge Characteristics

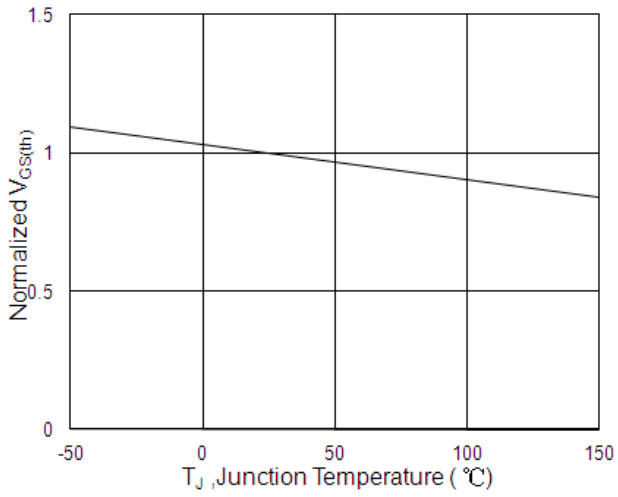

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

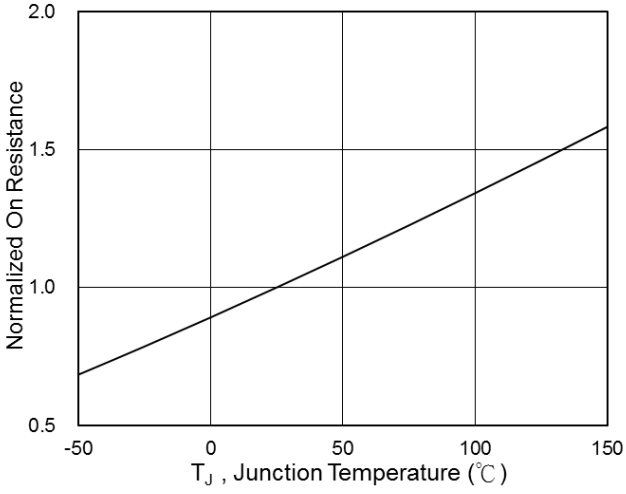

Fig.6 Normalized R_{DSON} vs. T_J

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Ratings and Characteristic Curves

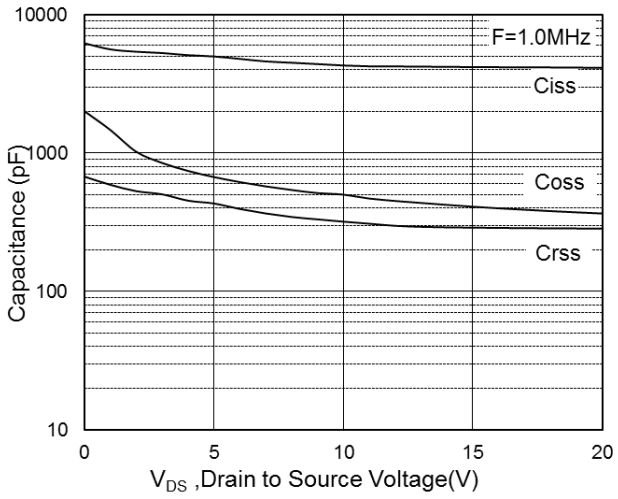

Fig.7 Capacitance

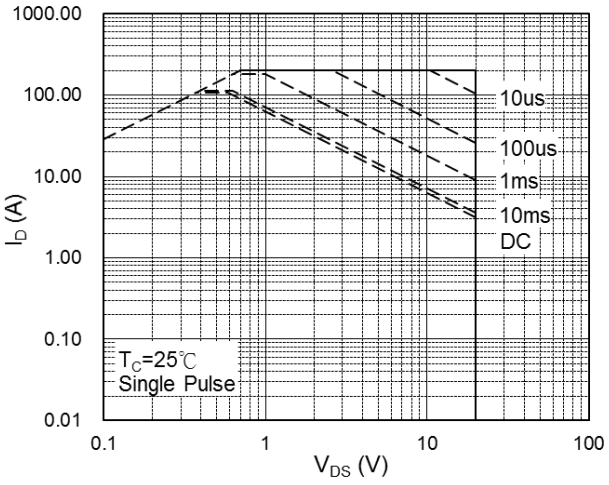

Fig.8 Safe Operating Area

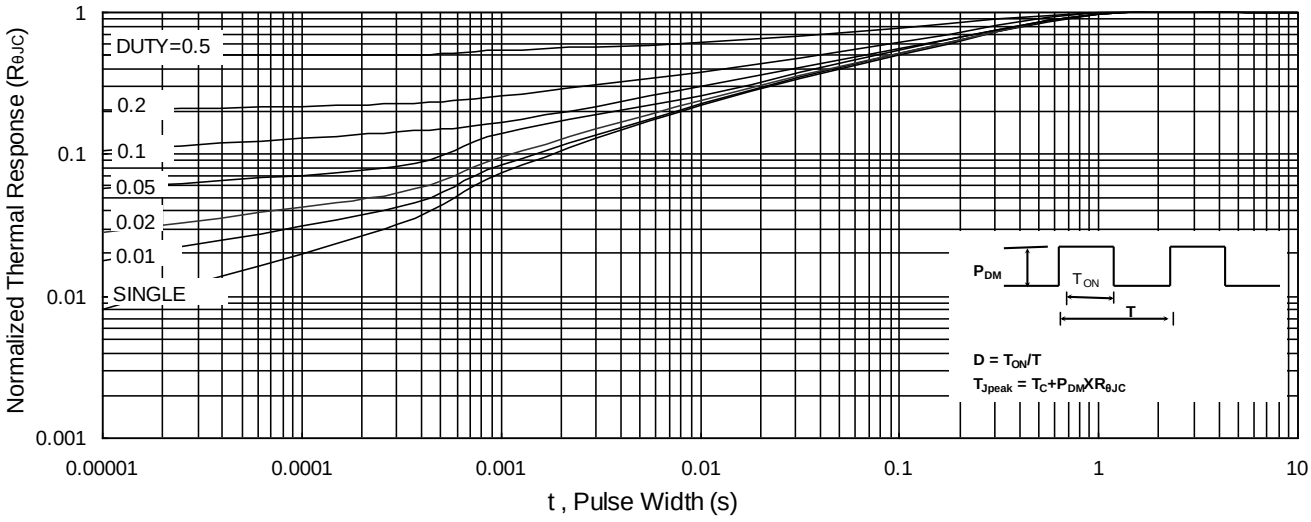

Fig.9 Normalized Maximum Transient Thermal Impedance

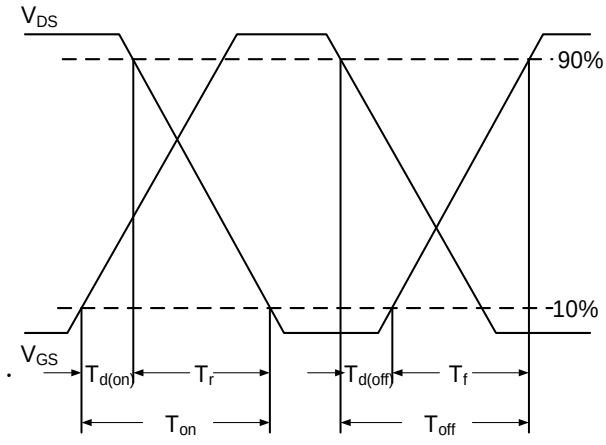

Fig.10 Switching Time Waveform

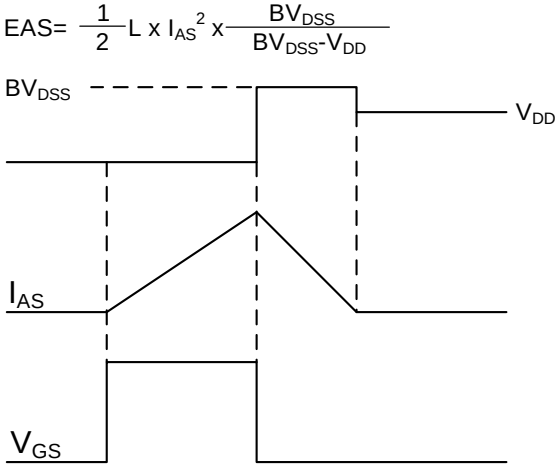

Fig.11 Unclamped Inductive Switching Waveform

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Package Outline Dimensions Millimeters

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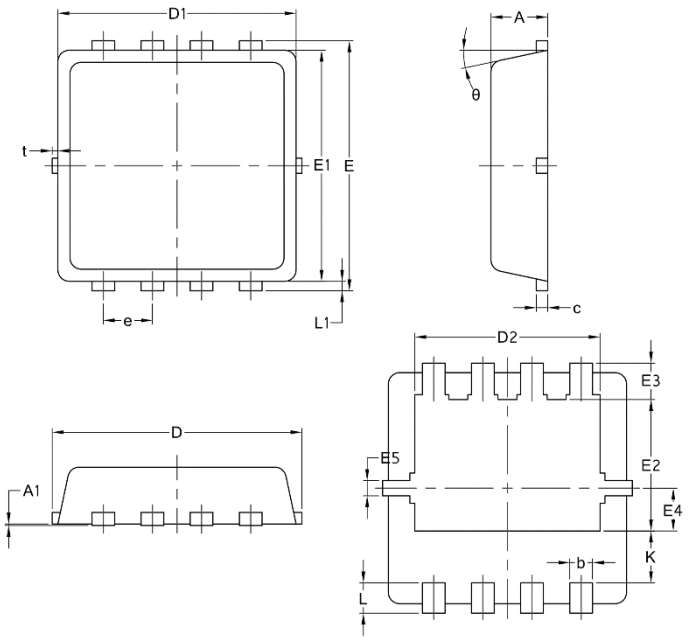

Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40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

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