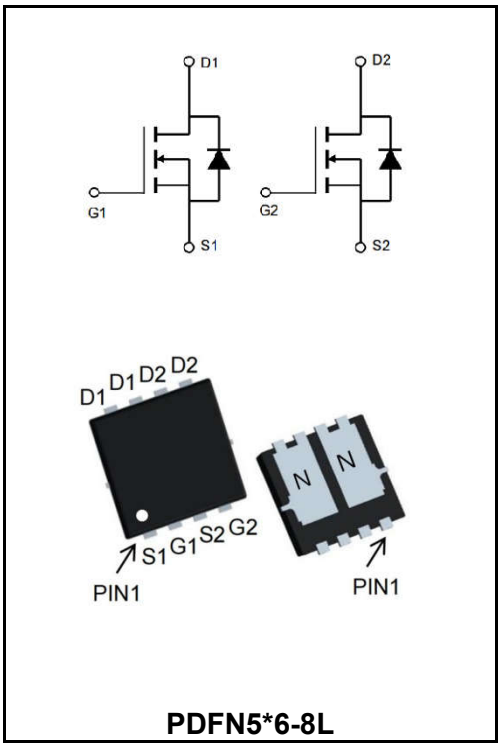
40V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	40V
R_{DSON}-typ(@V_{GS}=10V)	＜5.5mΩ(Typ:3.8 mΩ)



PDFN5*6-8L

DESCRIPTION

The YFW60H04NF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

APPLICATION

- Battery protection
- Load switch
- Uninterruptible power supply

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ 10V[1] @T_A=25℃	I_D	60	A
Continuous Drain Current, V_{GS} @ 10V[1] @T_A=100℃	I_D	42	A
Pulsed Drain Current[2]	I_{DM}	100	A
Single Pulse Avalanche Energy[3]	E_{AS}	410	mJ
Avalanche Current	I_{AS}	35	A
Total Power Dissipation[4] @T_C=25℃	P_D	23	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	5.4	°C/W
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	62	°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	B_{VDSS}	40	47	-	V
Static Drain-Source On Resistance[2]	V_{GS}=10V, I_D=10A	$R_{DS(ON)}$	-	3.8	5.5	mΩ
	V_{GS}=4.5V, I_D=5A		-	5.7	7.5	
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	1.0	1.9	2.5	V
Drain-Source Leakage Current	V_{DS}=32V, V_{GS}=0V T_J=25℃	I_{DSS}	-	-	1	uA
	V_{DS}=32V , V_{GS}=0V , T_J=55℃		-	-	5	
Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Forward Transcond uctance	V_{DS} = 10V, I_D = 5A	g_{fs}	-	27	-	S
Total Gate Charge（4.5V）	V_{DS}=20V V_{GS}=4.5V I_D=10A	Q_g	-	20	-	nC
Gate-Source Charge		Q_{gs}	-	5.8	-	
Gate-Drain Charge		Q_{gd}	-	9.5	-	
Turn-on delay time	V_{DD} =15V V_{GS}=10V R_G = 3.3Ω I_D= 1A	$t_{d(on)}$	-	15.2	-	ns
Rise Time		T_r	-	8.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	74	-	
Fall Time		t_f	-	7	-	
Input Capacitance	V_{DS}=20V V_{GS}=0V f=1.0MHz	C_{iss}	-	3850	-	pF
Output Capacitance		C_{oss}	-	272	-	
Reverse Transfer Capacitance		C_{rss}	-	215	-	
Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	I_S	-	-	60	A
Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	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 EAS data shows Max. rating . The test condition is V_{DD} =32V,V_{GS} =10V,L=0.5mH,IA_S =35A
4、The power dissipation is limited by 150℃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.

Typical Characteristics

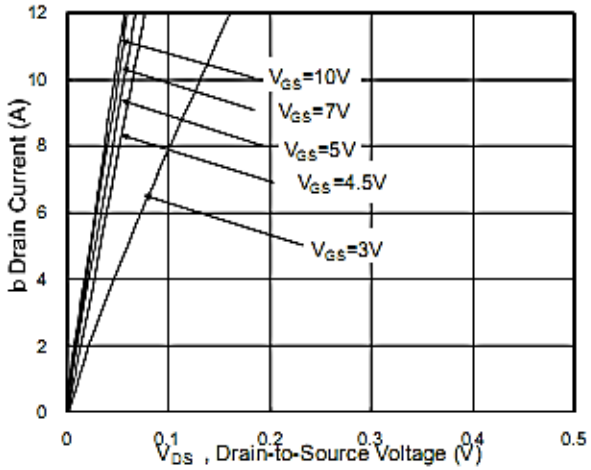


Fig.1 Typical Output Characteristics

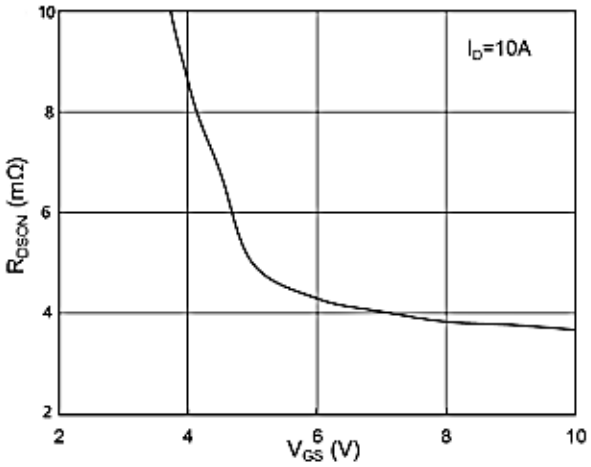


Fig.2 On-Resistance vs. G-S Voltage

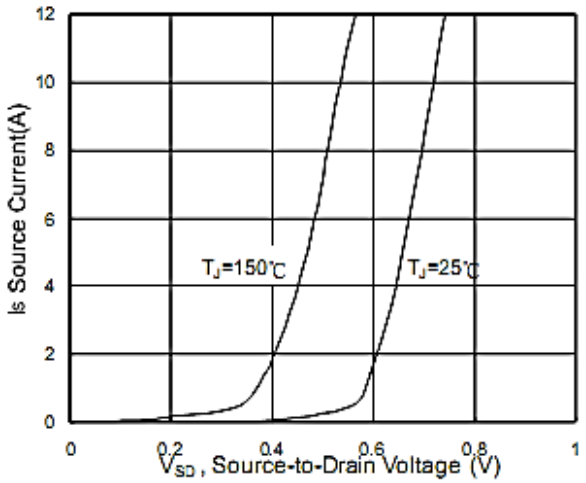


Fig.3 Forward Characteristics of Reverse

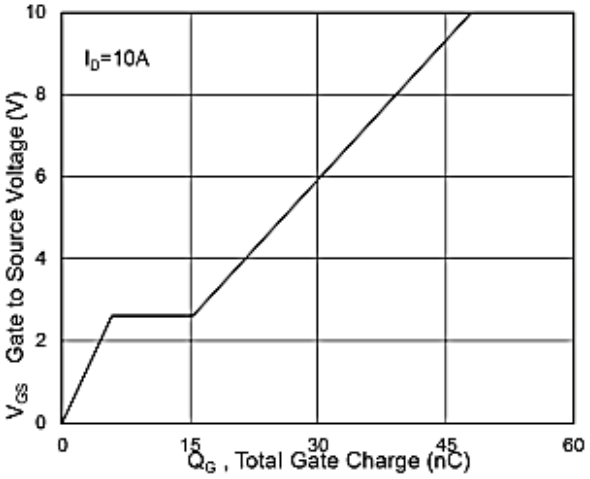


Fig.4 Gate-Charge Characteristics

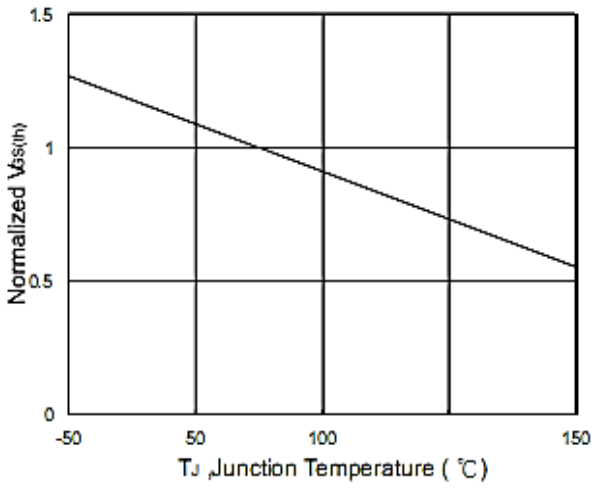


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

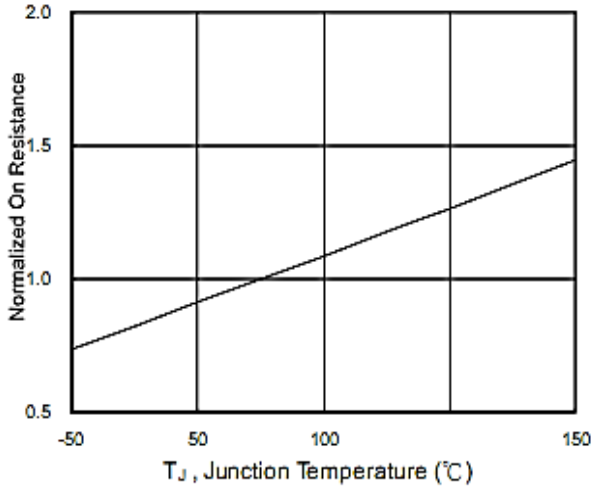


Fig.6 Normalized R_{DSON} vs. T_J

Typical Characteristics

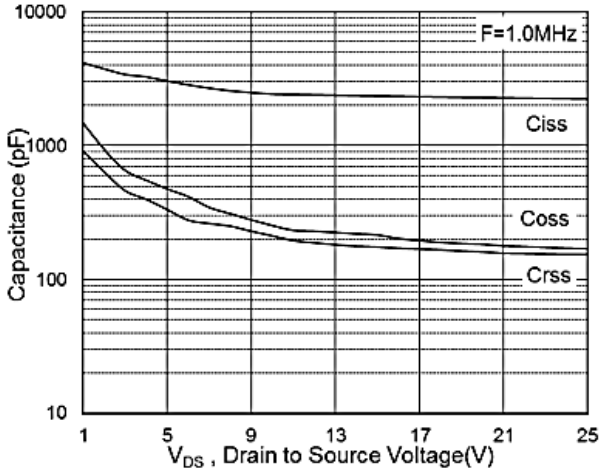


Fig.7 Capacitance

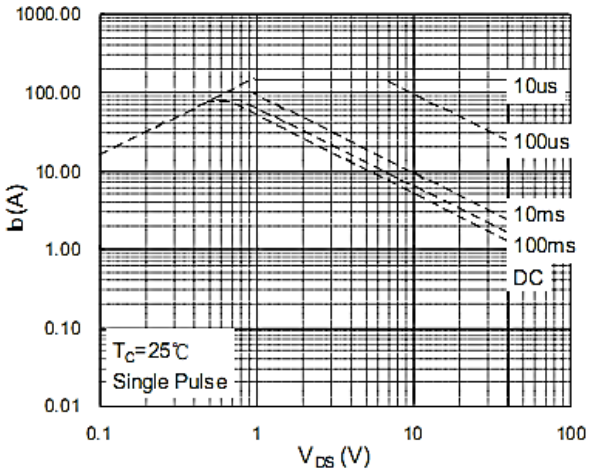


Fig.8 Safe Operating Area

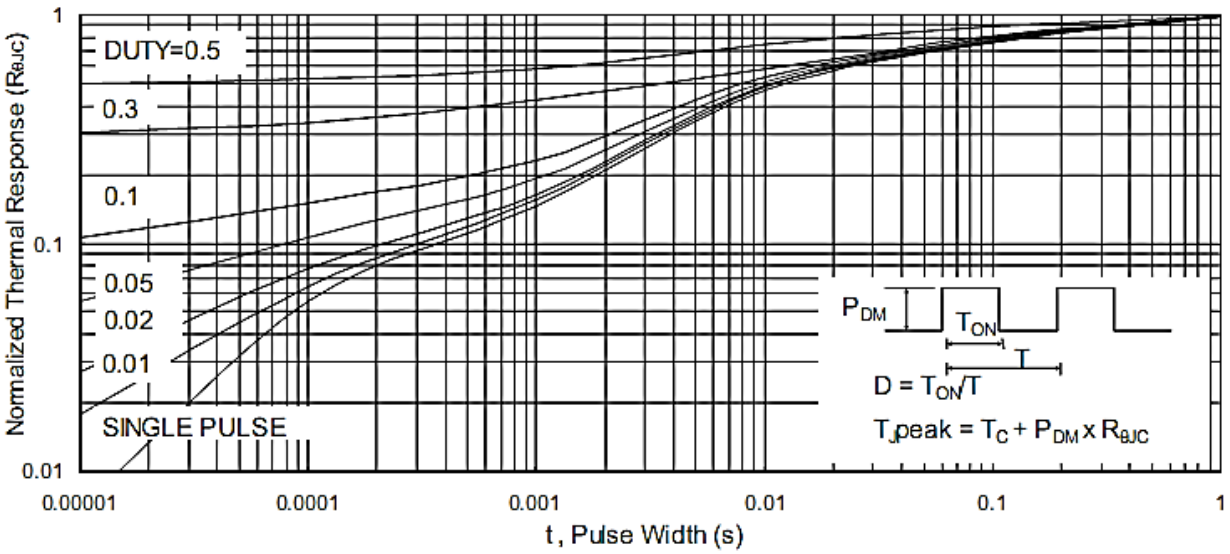


Fig.9 Normalized Maximum Transient Thermal Impedance

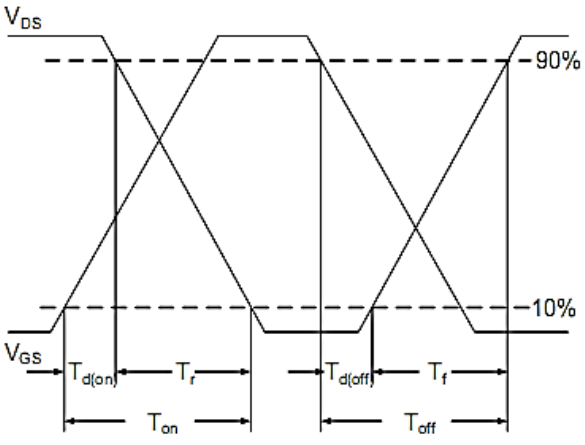


Fig.10 Switching Time Waveform

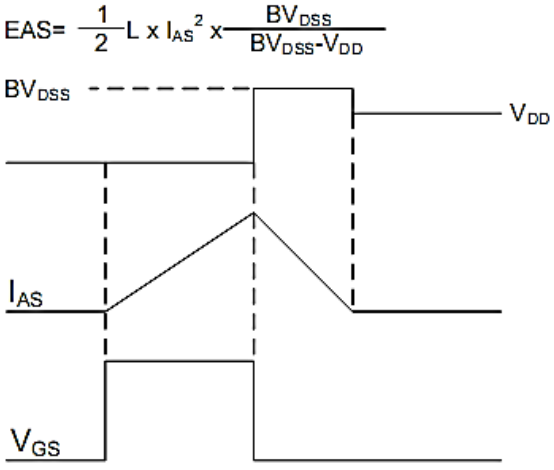
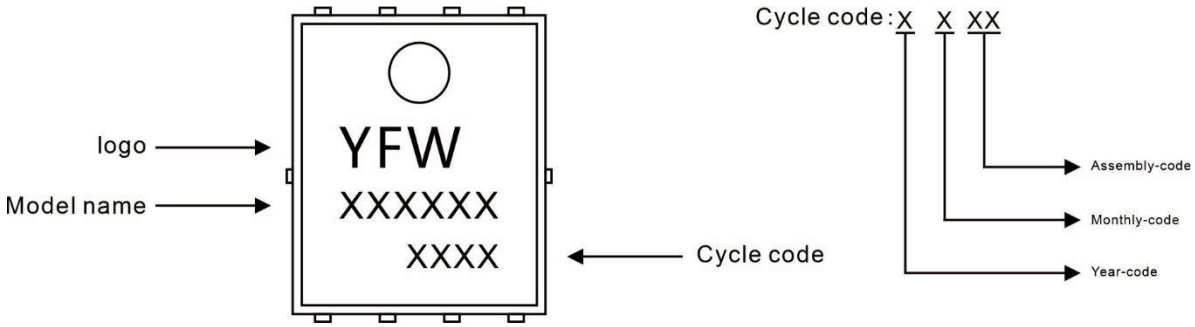


Fig.11 Unclamped Inductive Switching Wave

Marking Diagram

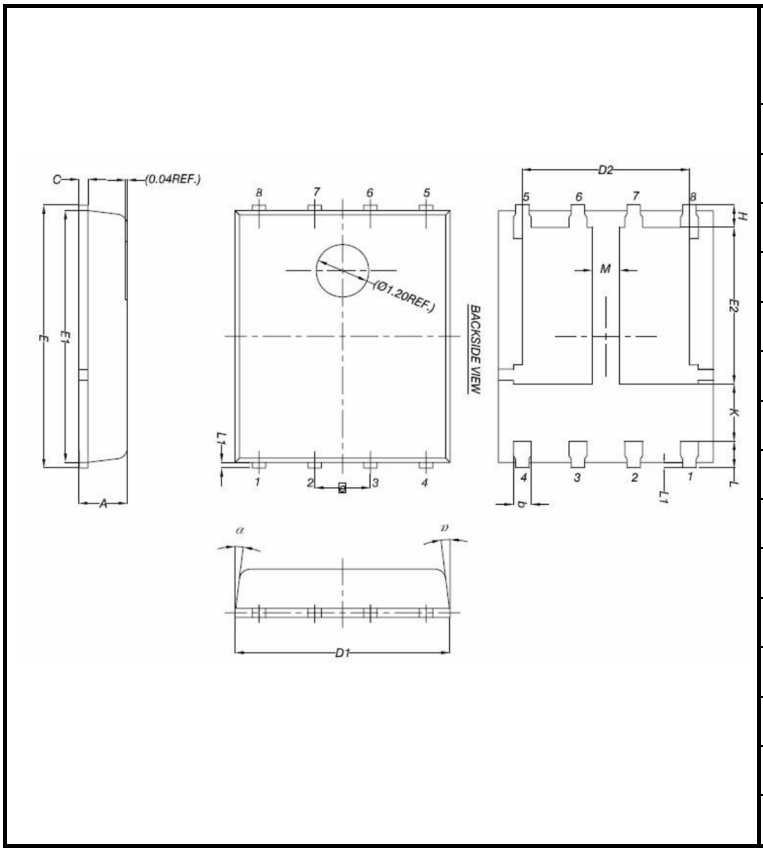


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW60H04NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L



Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.90	1.10	35.43	43.31
b	0.33	0.51	12.99	20.08
C	0.20	0.30	7.87	11.81
D1	4.80	5.00	188.98	196.85
D2	3.61	3.96	142.13	155.91
E	5.90	6.10	232.28	240.16
E1	3.45	5.70	135.83	224.41
E2	3.05	3.38	120.08	133.07
e	1.27BSC		50BSC	
H	0.41	0.61	16.14	24.02
K	1.10	-	43.31	-
L	0.51	0.71	20.08	27.95
L1	0.06	0.20	2.46	7.87
M	0.50	-	19.69	-
a	0°	12°	0°	12°

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