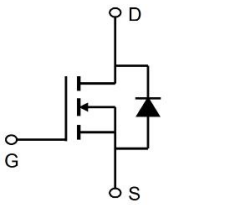
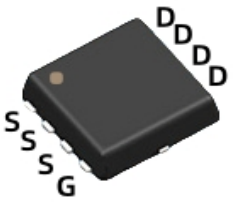
30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	＜6.0 mΩ(Typ:4.7 mΩ)
R_{DSON}-typ(@V_{GS}=4.5V)	＜9.6 mΩ(Typ:7.4 mΩ)





PDFN3*3-8L

Description

The YFW60N03DF 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}	30	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	@T_A=25℃	I_D	60	A
Continuous Drain Current	@T_A=100℃	I_D	35	A
Pulsed Drain Current[1]		I_{DM}	160	A
Single Pulse Avalanche Energy[2]		E_{AS}	64	mJ
Power dissipation	T_C=25 ℃	P_D	35	W
Thermal Resistance, Junction to Ambient[3]		$R_{\theta JA}$	43	°C/W
Thermal Resistance Junction-Case		$R_{\theta JC}$	3.6	°C/W
Storage Temperature Range		T_{STG}	-55 to +150	°C
Operating Junction Temperature Range		T_J	-55 to +150	°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}	30	-	-	V
Drain-Source Leakage Current	V_{DS}=30V , V_{GS}=0V	I_{DSS}	-	-	1.0	μA
Gate-Source Leakage Current	V_{DS}=0V,V_{GS}=±20V	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	1.0	1.6	2.5	V
Drain-source on-state resistance[4]	V_{GS}=10V, I_D=20A	$R_{DS(ON)}$	-	4.7	6.0	mΩ
	V_{GS}=4.5V, I_D=10A		-	7.4	9.6	
Input Capacitance	V_{DS}=15V V_{GS}=0V f=1MHz	C_{iss}	-	1788	-	pF
Output Capacitance		C_{oss}	-	225	-	
Reverse Transfer Capacitance		C_{rss}	-	180	-	
Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 15V, I_D = 30A	Q_g	-	34	-	nC
Gate-Source Charge		Q_{gs}	-	6.5	-	
Gate Drain("Miller") Charge		Q_{gd}	-	7.5	-	
Turn-On Delay Time	V_{GS} = 10V, V_{DD} = 15V I_D= 30A, R_{GEN} = 3Ω	$t_{d(on)}$	-	7	-	ns
Rise Time		T_r	-	14	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	34	-	
Fall Time		t_f	-	11	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	60	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	160	A
Diode Forward Voltage	V_{GS} = 0V, I_S = 30A	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	I_F = 20A, di/dt = 100A/us	trr		10		ns
Body Diode Reverse Recovery Charge		Qrr		1.7		nC

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25℃, V_{DD}=15V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=16A
3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Characteristics

Figure 1: Output Characteristics

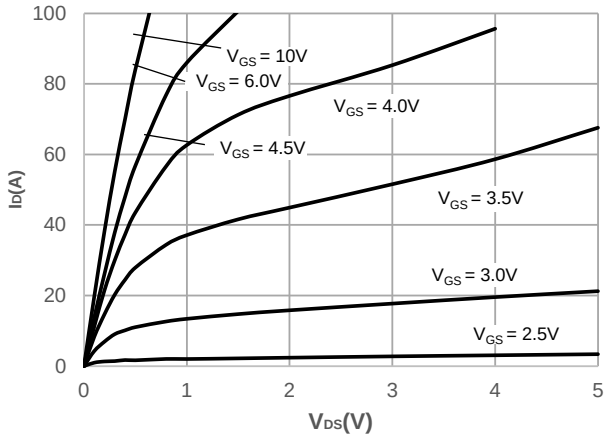


Figure 2: Typical Transfer Characteristics

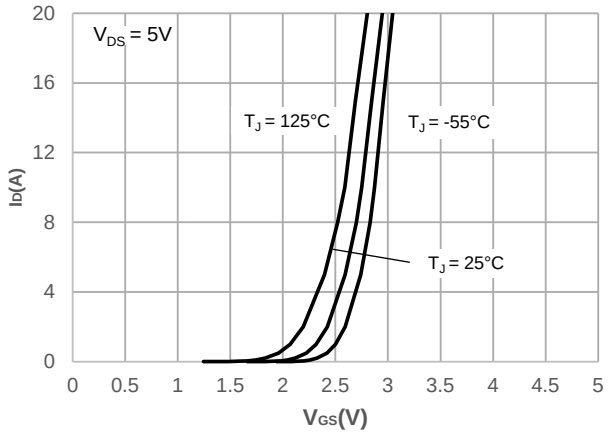


Figure 3: On-resistance vs. Drain Current

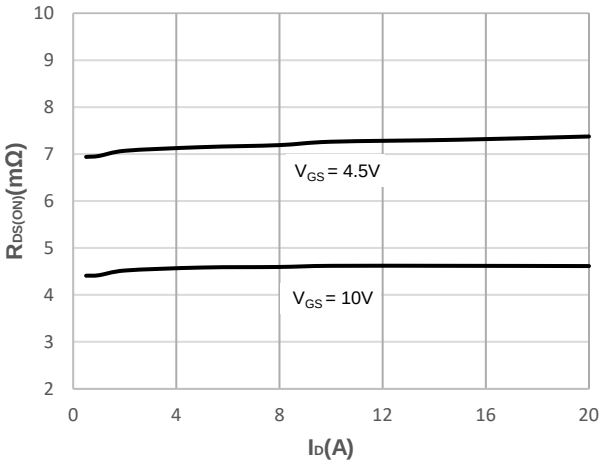


Figure 4: Body Diode Characteristics

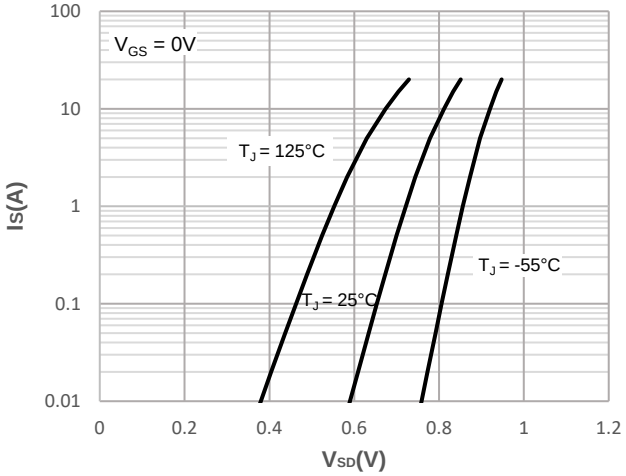


Figure 5: Gate Charge Characteristics

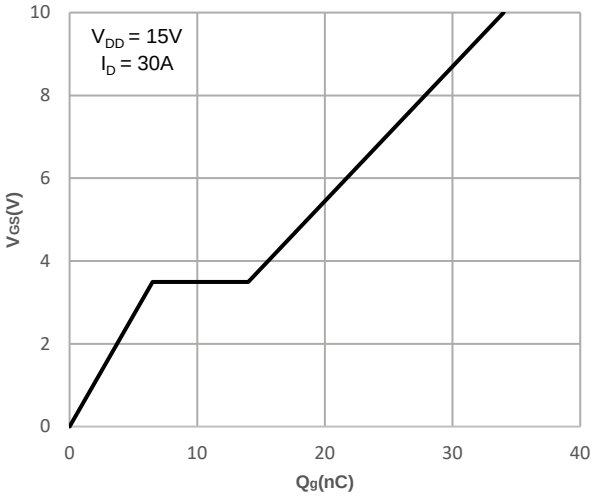
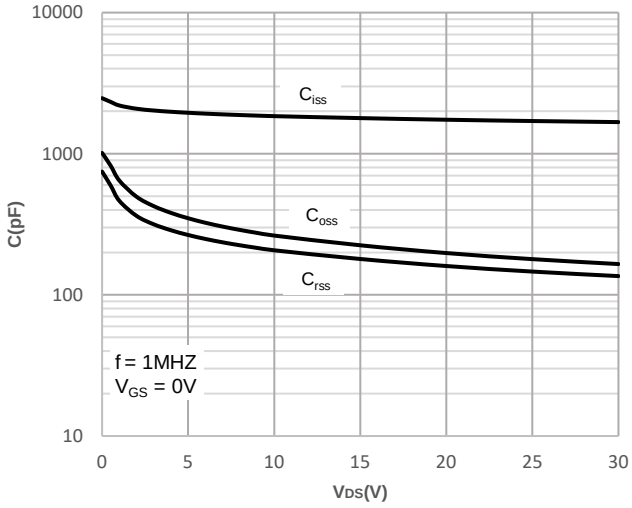


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

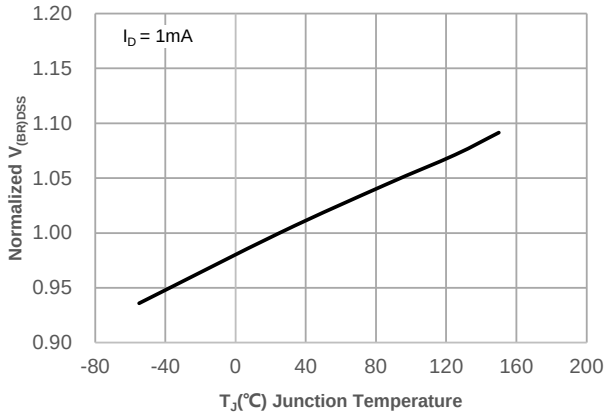


Figure 8: Normalized on Resistance vs. Junction Temperature

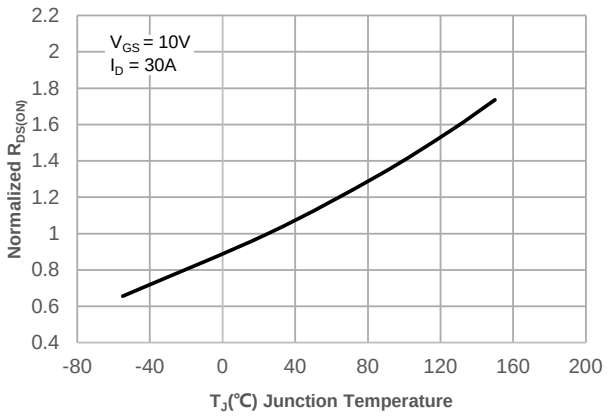


Figure 9: Maximum Safe Operating Area

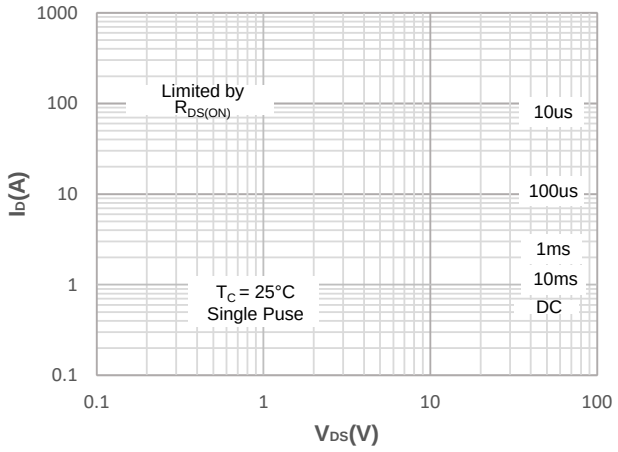


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

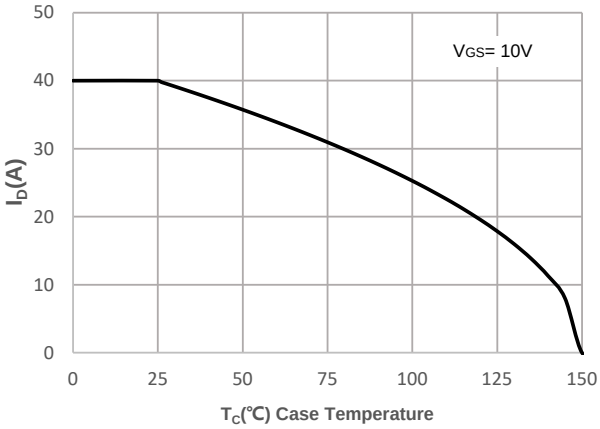


Figure 11: Normalized Maximum Transient Thermal Impedance

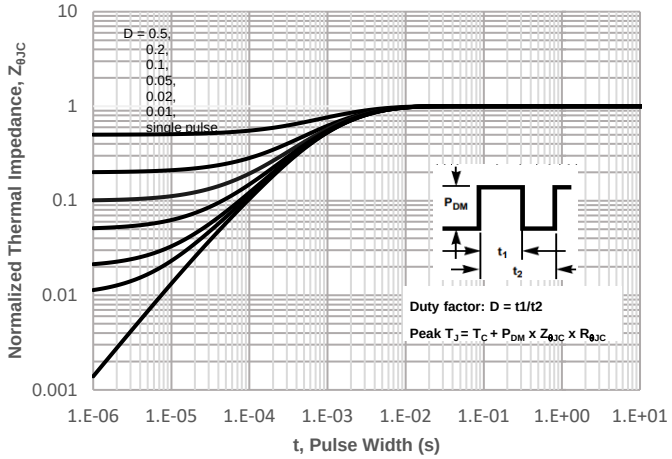
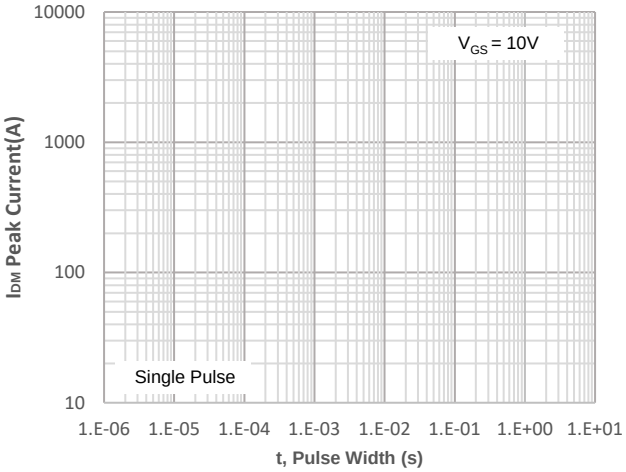
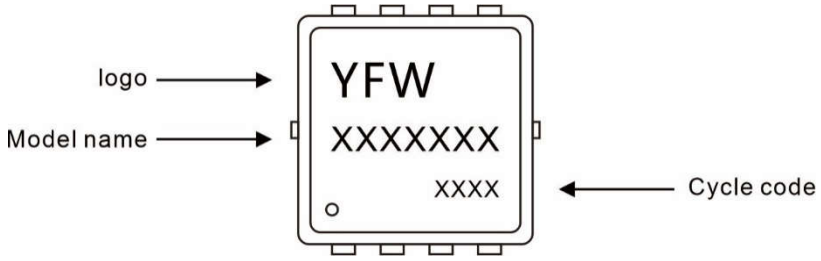


Figure 12: Peak Current Capacity



Marking Diagram

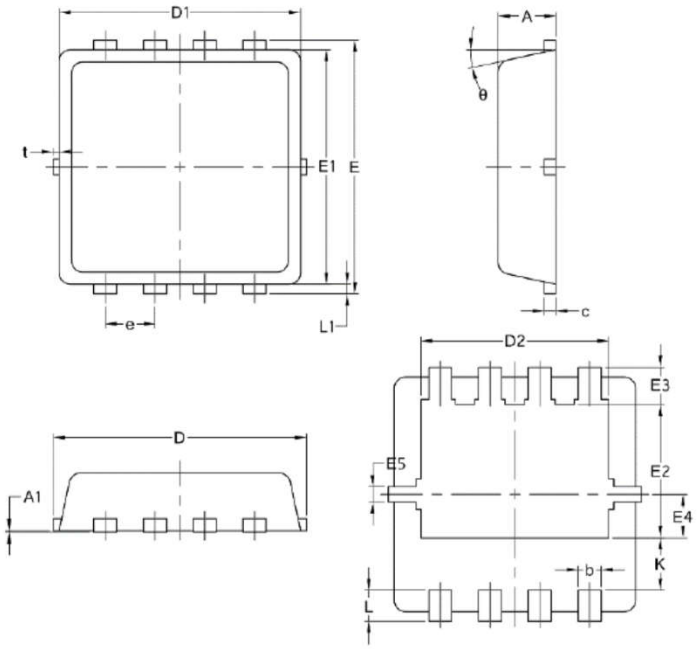


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW60N03DF	PDFN3*3-8L	0.0023oz(0.065g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN3*3-8L



Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.70	0.85	0.0276	0.0335
A1	-	0.05	-	0.002
b	0.20	0.40	0.008	0.016
c	0.10	0.25	0.004	0.010
D	3.15	3.45	0.124	0.136
D1	3.00	3.25	0.118	0.128
D2	2.29	2.65	0.09	0.104
E	3.15	3.45	0.124	0.136
E1	2.90	3.20	0.114	0.126
E2	1.54	1.94	0.061	0.076
E3	0.28	0.65	0.011	0.026
E4	0.37	0.77	0.015	0.030
E5	0.10	0.30	0.004	0.012
e	0.60	0.70	0.024	0.028
K	0.59	0.89	0.023	0.035
L	0.30	0.50	0.012	0.020
L1	0.06	0.20	0.002	0.008
t	-	0.13	-	0.005
Φ	10℃	14℃	10℃	14℃

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