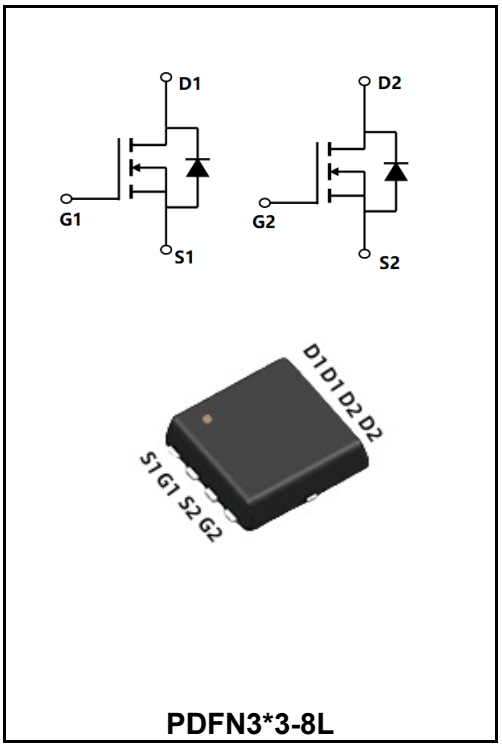
30V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	40A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	＜7.5mΩ(Typ:5.8mΩ)
R_{DSON}-typ(@V_{GS}=4.5V)	＜14mΩ(Typ:10mΩ)



PDFN3*3-8L

DESCRIPTION

The YFW40H03DF uses advanced trench technology to provide excellent Ros(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

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ 10V[1]@T_C=25℃	I_D	40	A
Continuous Drain Current, V_{GS} @ 10V1@T_C=100℃	I_D	22	A
Pulsed Drain Current[2]	I_{DM}	160	A
Single Pulse Avalanche Energy[3]	E_{AS}	40	mJ
Avalanche Current	I_{AS}	12.6	A
Total Power Dissipation[4]@T_C=25℃	P_D	13	W
Operating Junction Temperature Range	T_J	-55 to 150	℃
Storage Temperature Range	T_{STG}	-55 to 150	℃
Thermal Resistance Junction-ambient [1]	$R_{\theta JA}$	62.5	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	9.2	℃/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	BV_{DSS}	30	-	-	V
Zero Gate Voltage Drain Current	V_{DS} = 30V, V_{GS} = 0V	I_{DSS}	-	-	1.0	μA
Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	$V_{GS(th)}$	1.0	1.6	2.5	V
Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 10A	$R_{DS(ON)}$	-	5.8	7.5	mΩ
	V_{GS} = 4.5V, I_D = 5A		-	10	14	mΩ
Gate Resistance	f = 1MHz	R_g	-	3.3	-	Ω
Input Capacitance	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	C_{iss}	-	1209	-	pF
Output Capacitance		C_{oss}	-	170	-	
Reverse Transfer Capacitance		C_{rss}	-	137	-	
Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 15V, I_D = 15A	Q_g	-	24	-	nC
Gate Source Charge		Q_{gs}	-	4.7	-	
Gate Drain("Miller") Charge		Q_{gd}	-	5.4	-	
Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 15V I_D= 15A, R_{GEN} = 3Ω	$t_{d(on)}$	-	6.5	-	ns
Turn-On Rise Time		T_r	-	15	-	
Turn-Off DelayTime		$t_{d(OFF)}$	-	25	-	
Turn-Off Fall Time		t_f	-	5.9	-	
Maximum Continuous Body Diode Forward Current		I_S	-	-	40	A
Maximum Pulsed Body Diode Forward Current		I_{SM}	-	-	160	A
Body Diode Forward Voltage	V_{GS} = 0V, I_S = 25A	V_{SD}	-		1.2	V
Body Diode Reverse Recovery Time	I_F = 20A, di/dt = 100A/us	t_{rr}	8	11	15	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	4.1	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2.EAS condition: Starting T_J=25C, V_{DD}=15V, V_{GS}=10V, R_G=25ohm, L=0.5mH, I_{AS}=12.6A, V_{DD}=0V during time in avalanche.

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 Performance Characteristics

Figure 1: Output Characteristics

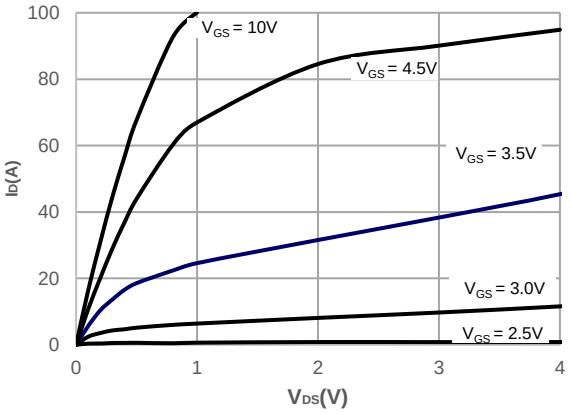


Figure 2: Typical Transfer Characteristics

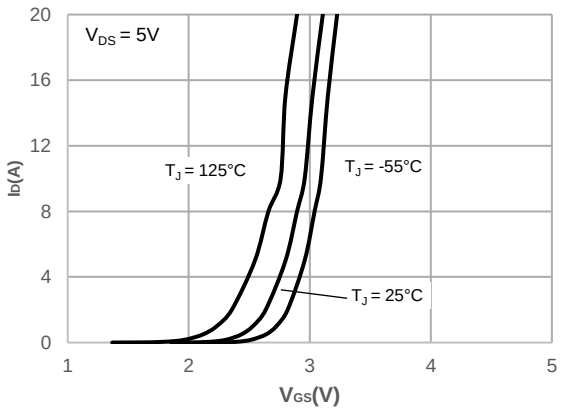


Figure 3: On-resistance vs. Drain Current

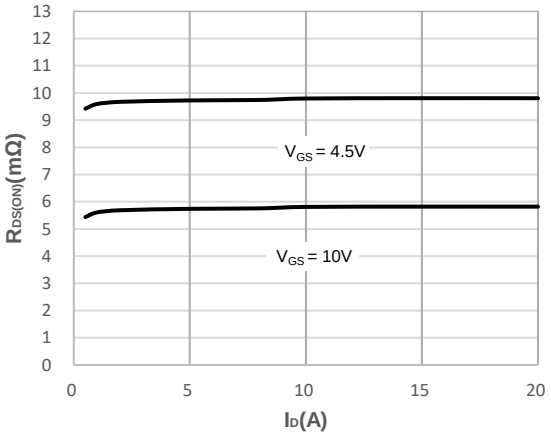


Figure 4: Body Diode Characteristics

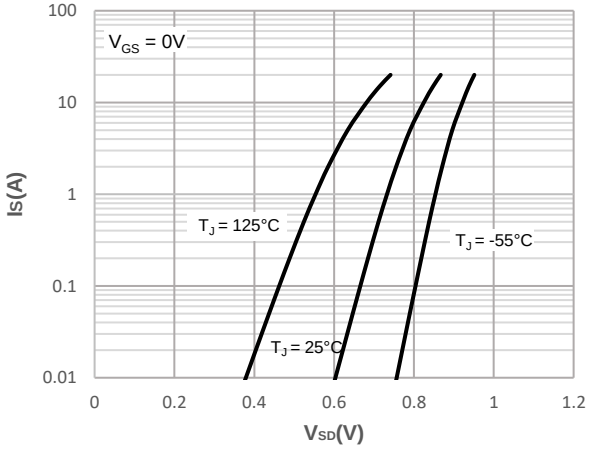


Figure 5: Gate Charge Characteristics

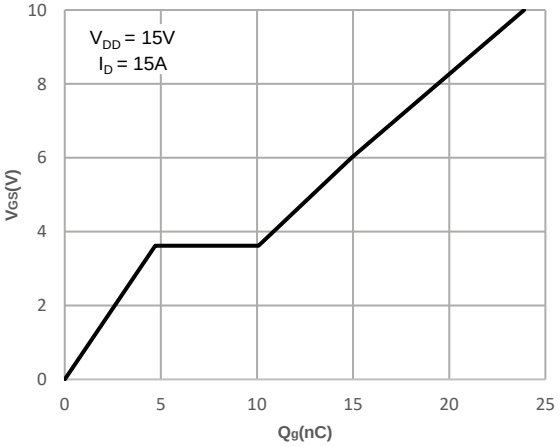
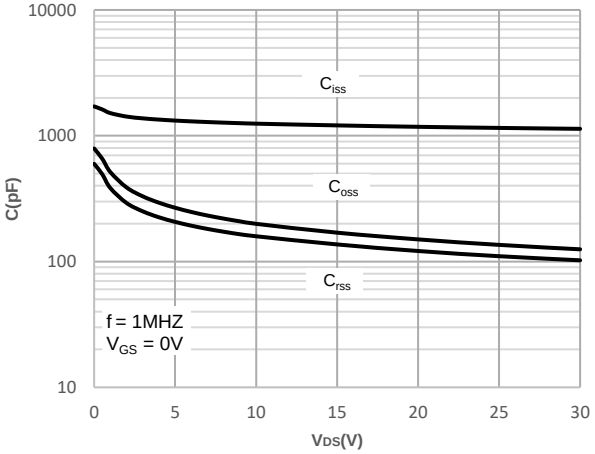


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Power De-rating

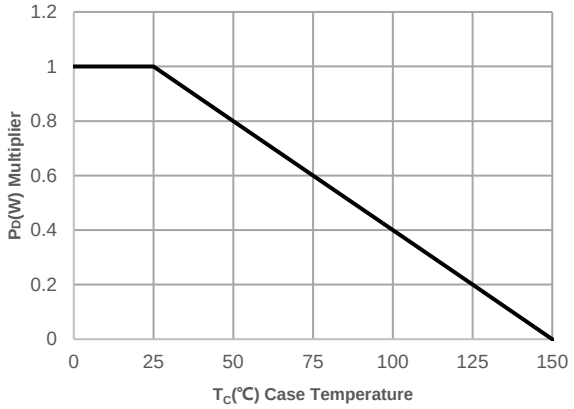


Figure 8: Current De-rating

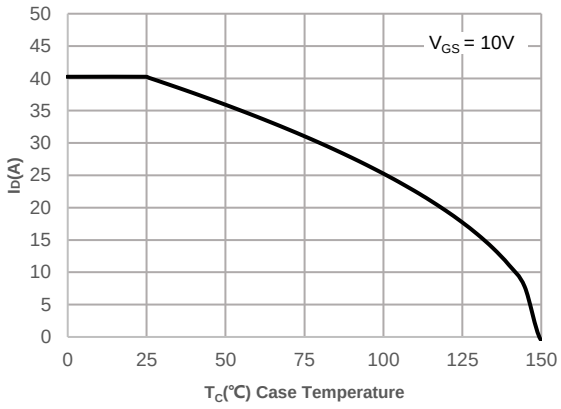


Figure 9: Normalized Maximum Transient Thermal Impedance

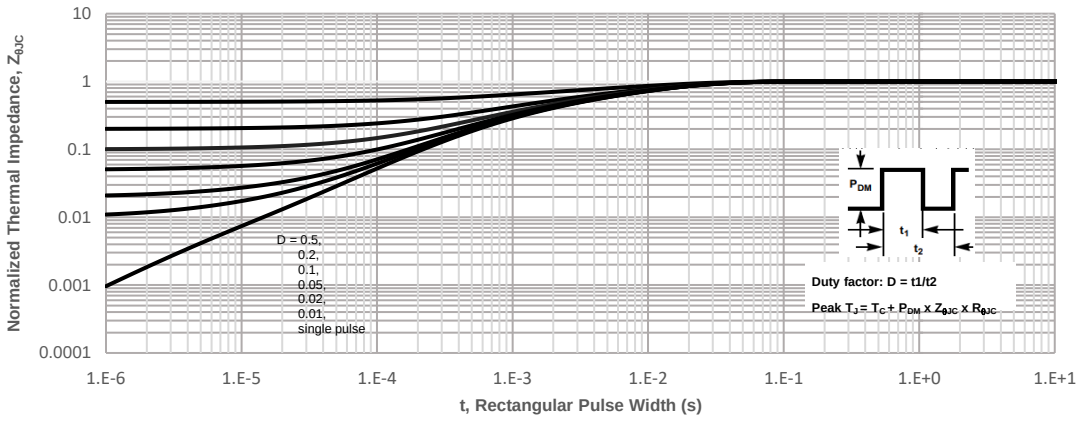
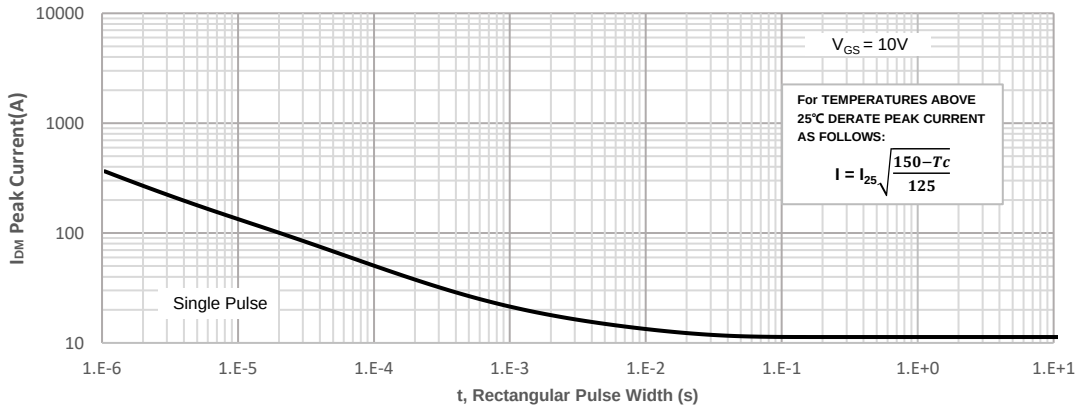
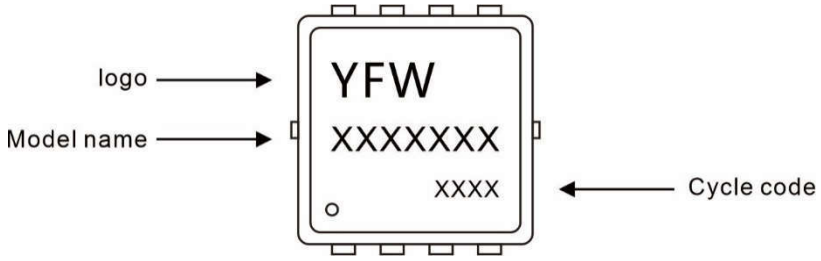


Figure 10: Peak Current Capacity



Marking Diagram

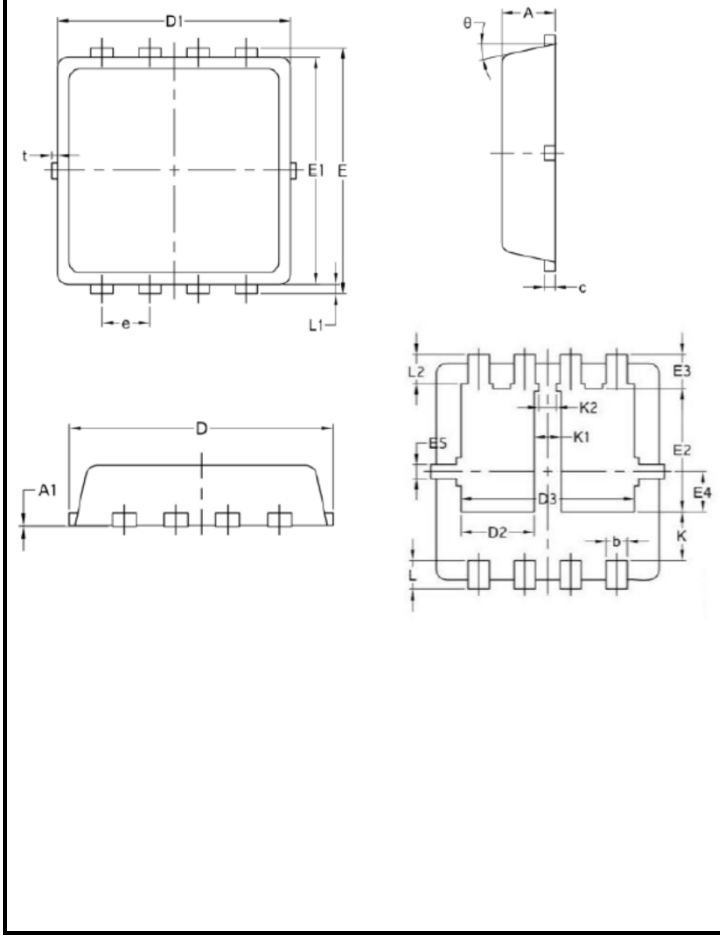


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW40H03DF	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	0.028	0.034
A1	-	0.05	-	0.002
b	0.25	0.39	0.010	0.015
c	0.14	0.20	0.006	0.008
D	3.20	3.45	0.126	0.136
D1	3.05	3.25	0.120	0.128
D2	0.84	1.24	0.033	0.049
D3	2.30	2.60	0.091	0.102
E	3.20	3.40	0.126	0.134
E1	2.95	3.15	0.116	0.124
E2	1.60	1.90	0.063	0.075
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	0.50	0.80	0.020	0.032
K1	0.30	0.53	0.012	0.021
K2	0.15	0.35	0.006	0.014
L	0.30	0.50	0.012	0.020
L1	0.06	0.20	0.002	0.008
L2	0.27	0.57	0.011	0.022
t	0	0.13	0	0.005
Φ	10°	14°	10°	14°

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