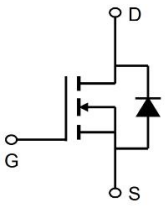
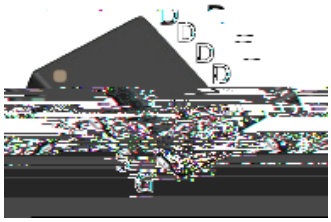
30V N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	<4.5mΩ(Typ:3.5mΩ)
R_{DSON}-typ(@V_{GS}=4.5V)	<9.0mΩ(Typ:5.8mΩ)





PDFN3*3-8L

Description

The YFW80N03DF 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.

Applications

- Automative lighting
- Load switch
- Uninterruptible power supply

Absolute Maximum Ratings (T_C=25 unless otherwise noted)

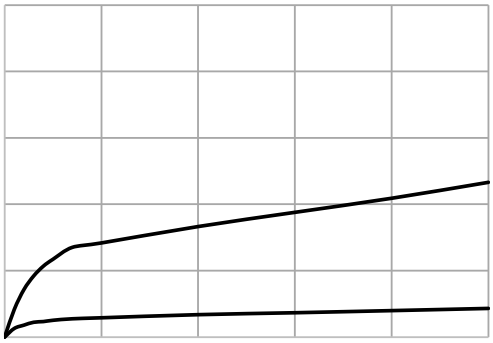
Parameter		Symbol	Value	Units
Drain-to-Source Voltage		V_{DS}	30	V
Gate-to-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25°C	I_D	80	A
	T_C = 100°C		51	
Pulsed Drain Current (1)		I_{DM}	240	A
Single Pulsed Avalanche Energy (2)		E_{AS}	121	mJ
Power Dissipation	T_C = 25°C	P_D	39	W
Thermal Resistance, Junction to Ambient(3)		$R_{\theta JA}$	41	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	3.2	
Storage Temperature Range		T_{STG}	-55 to 150	
Operating Junction Temperature Range		T_J	-55 to 150	

Electrical Characteristics (T_J=25 , unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
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	A
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	1.9	2.5	V
Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 30A	$R_{DS(ON)}$	-	3.5	4.5	mΩ
	V_{GS} = 4.5V, I_D = 20A		-	5.8	9.0	mΩ
Input Capacitance	V_{GS} = 0V V_{DS} = 15V f = 1MHz	C_{iss}	-	3089	-	pF
Output Capacitance		C_{oss}	-	372	-	pF
Reverse Transfer Capacitance		C_{rss}	-	302	-	pF
Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 15V I_D = 30A	Q_g	-	58	-	nC
Gate Source Charge		Q_{gs}	-	12	-	nC
Gate Drain("Miller") Charge		Q_{gd}	-	13	-	nC
Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 15V I_D= 30A R_{GEN} = 3Ω	$t_{d(on)}$	-	11	-	ns
Turn-On Rise Time		t_r	-	29	-	ns
Turn-Off DelayTime		$t_{d(off)}$	-	47	-	ns
Turn-Off Fall Time		t_f	-	18	-	ns
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	80	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	240	A
Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 30A	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	I_F = 30A, di/dt = 100A/us	trr	-	16	-	ns
Body Diode Reverse Recovery Charge		Qrr	-	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}=22A
3.R $_{JA}$ 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



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

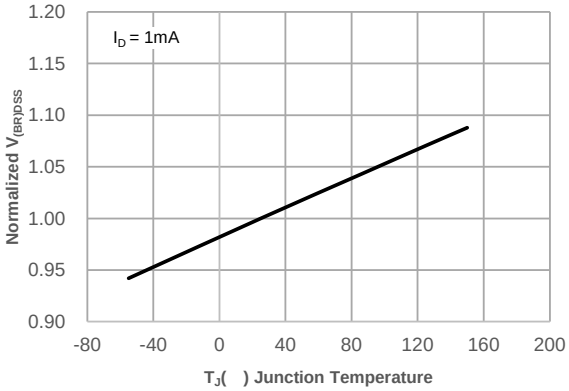


Figure 8: Normalized on Resistance vs. Junction Temperature

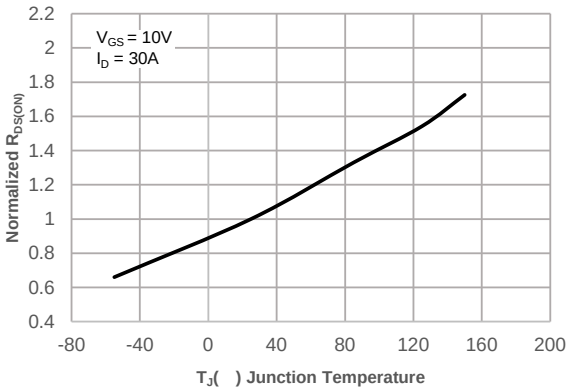
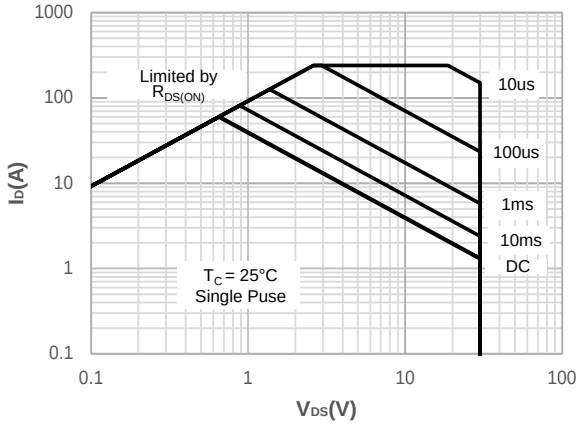
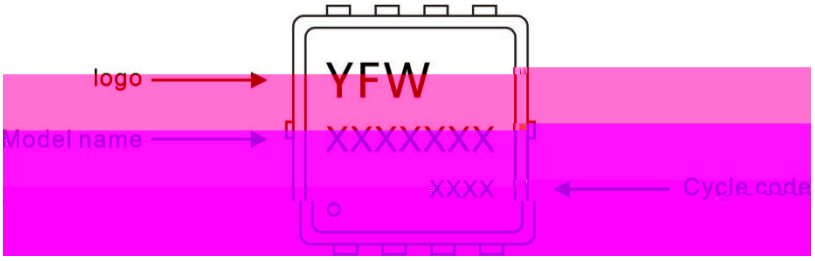


Figure 9: Maximum Safe Operating Area



Marking Diagram

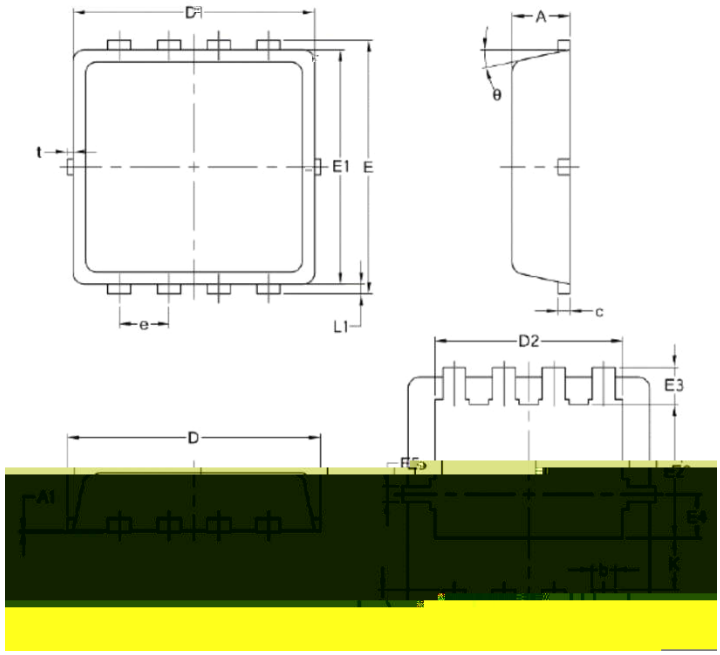


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW80N03DF	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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