

30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

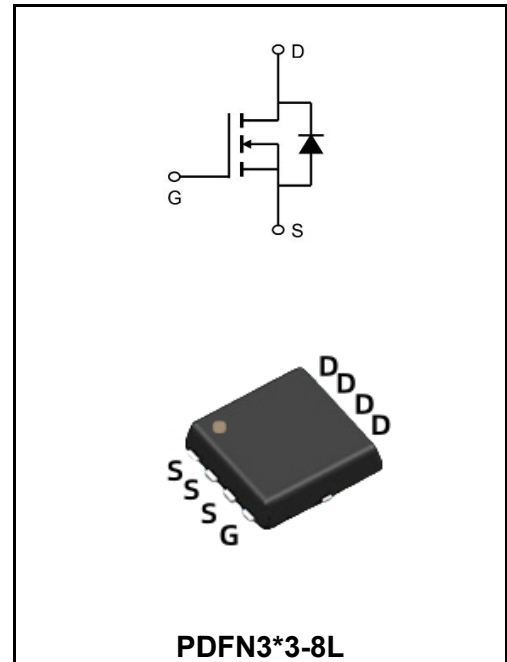
I_D	50A
V_{DSS}	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$< 12\text{ m}\Omega$ (Typ: 9.4 mΩ)
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	$< 20\text{ m}\Omega$ (Typ: 15.8 mΩ)

Description

The YFW50N03DF 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

- ♦Lithium battery protection
- ♦Wireless impact
- ♦Mobile phone fast chargin



Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Characteristics		Symbols	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate - Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	@ $T_C=25^\circ\text{C}$	I_D	50	A
Continuous Drain Current ¹	@ $T_C=100^\circ\text{C}$	I_D	23	A
Pulsed Drain Current ²		I_{DM}	75	A
Single Pulse Avalanche Energy ³		E_{AS}	24.2	mJ
Avalanche Current		I_{AS}	22	A
Total PowerDissipation ⁴	$T_C=25^\circ\text{C}$	P_D	26	W
Total PowerDissipation ⁴	$T_A=25^\circ\text{C}$	P_D	1.67	W
Thermal Resistance, Junction to Ambient ¹		$R_{\theta JA}$	75	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹		$R_{\theta JC}$	4.8	$^\circ\text{C/W}$
Storage Temperature Range		T_{STG}	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range		T_J	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (T_c=25°C unless otherwise noted)

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} =24V, V _{GS} =0V T _J =25°C	I_{DSS}	-	-	1.0	μA
	V _{DS} =24V, V _{GS} =0V T _J =55°C		-	-	5.0	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)}	1.2	1.7	2.2	V
Drain-source on-state resistance ²	V _{GS} =10V, I _D =6A	R_{DS(ON)}	-	9.4	12	mΩ
	V _{GS} =4.5V, I _D =5A		-	15.8	20	
Forward Transconductance	V _{DS} =5V, I _D =12A	g_{fs}		32	-	S
Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	R_g		2.1		Ω
Input Capacitance	V _{DS} =15V V _{GS} =0V f=1MHz	C_{iss}	-	870	-	pF
Output Capacitance		C_{oss}	-	135	-	
Reverse Transfer Capacitance		C_{rss}	-	87	-	
Total Gate Charge(4.5V)	V _{DS} =15V V _{GS} =4.5V I _D =6A	Q_g	-	4.2	-	nC
Gate-Source Charge		Q_{gs}	-	2.6	-	
Gate Drain("Miller") Charge		Q_{gd}	-	1.4	-	
Turn-On Delay Time	V _{DD} =15V V _{GS} =10V R _G =1.5Ω I _D =1A	t_{d(on)}	-	13.1	-	ns
Rise Time		T_r	-	6.3	-	
Turn-Off Delay Time		t_{d(OFF)}	-	21	-	
Fall Time		t_f	-	7	-	
Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	I_S	-	-	37	A
Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	V_{SD}	-	-	1	V

Note :

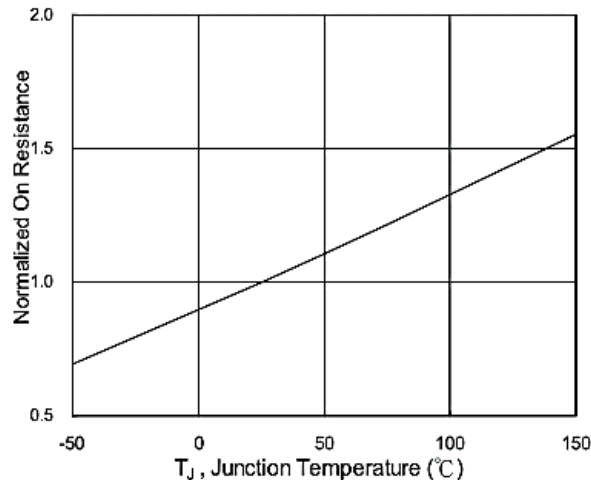
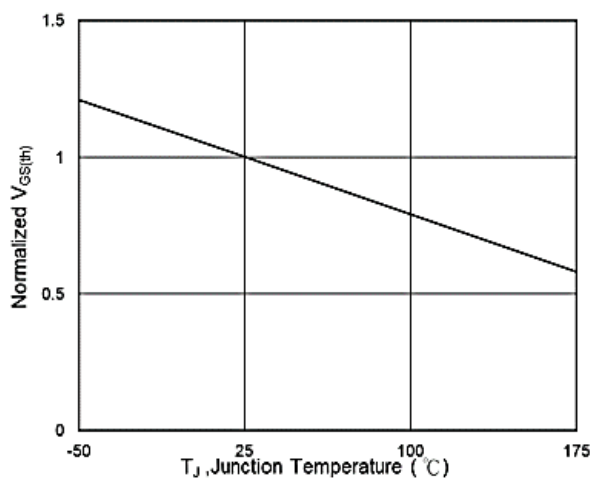
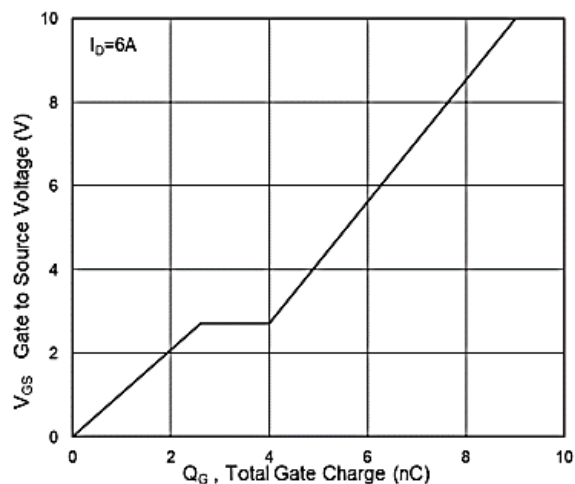
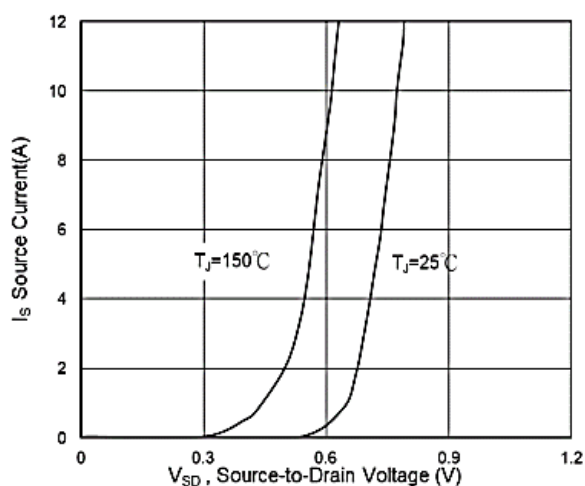
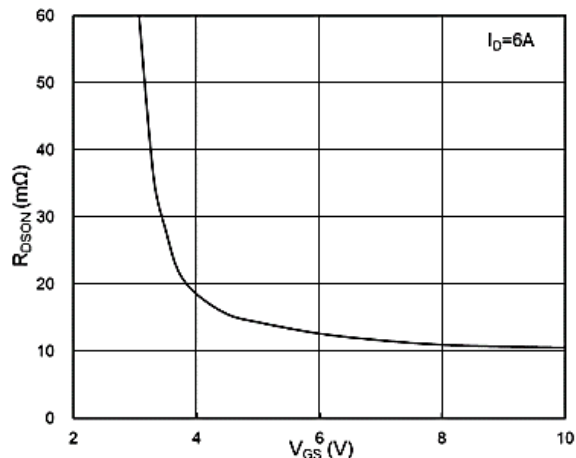
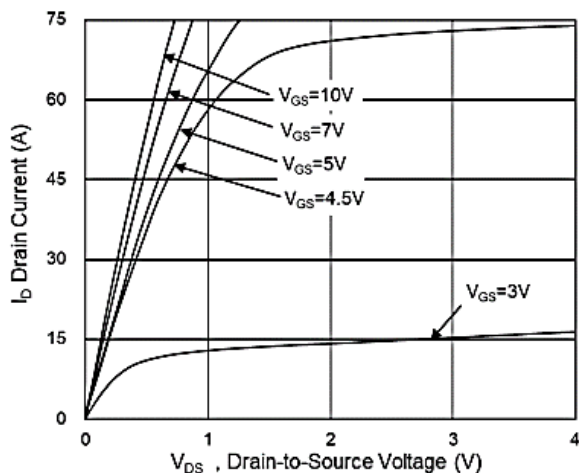
1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

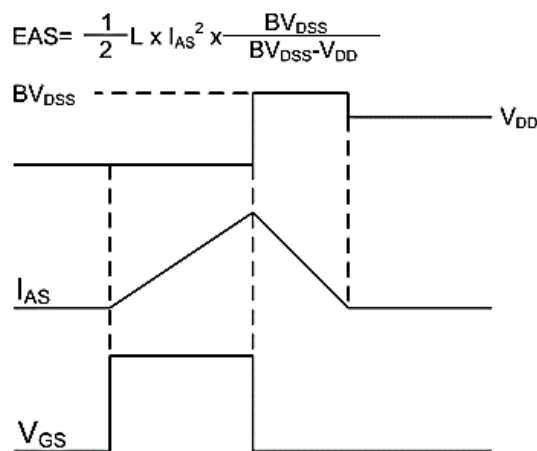
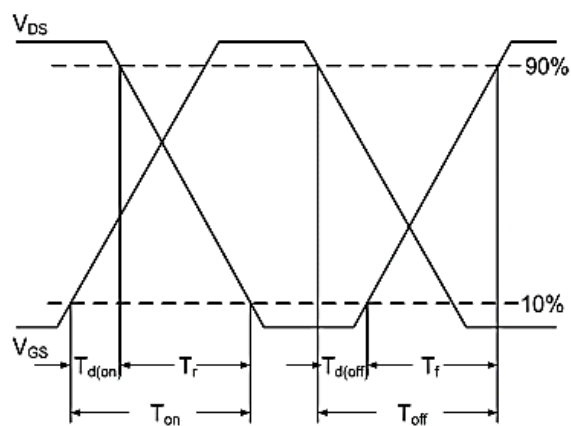
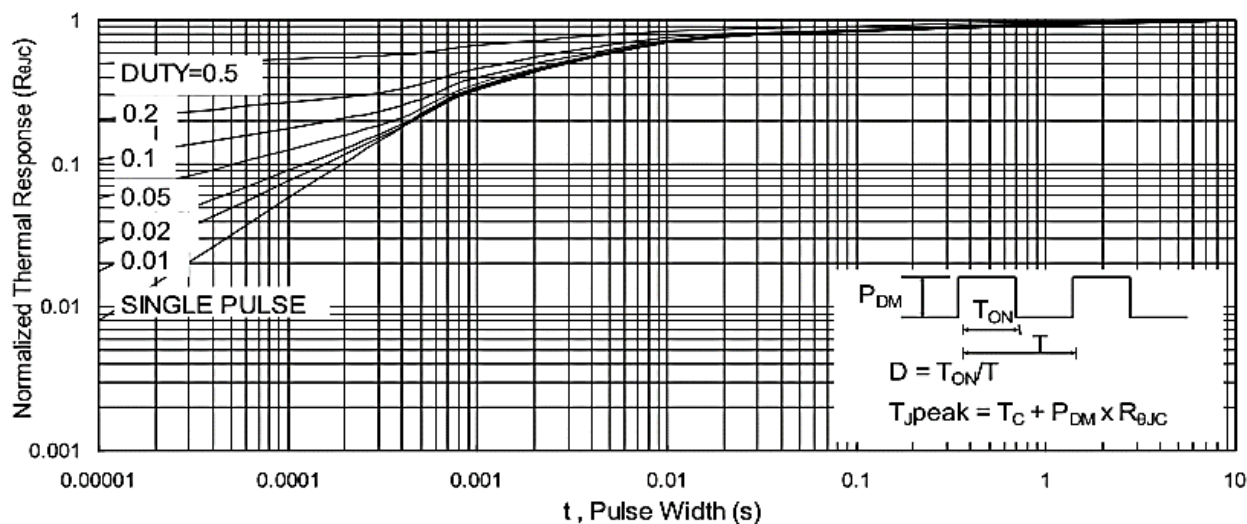
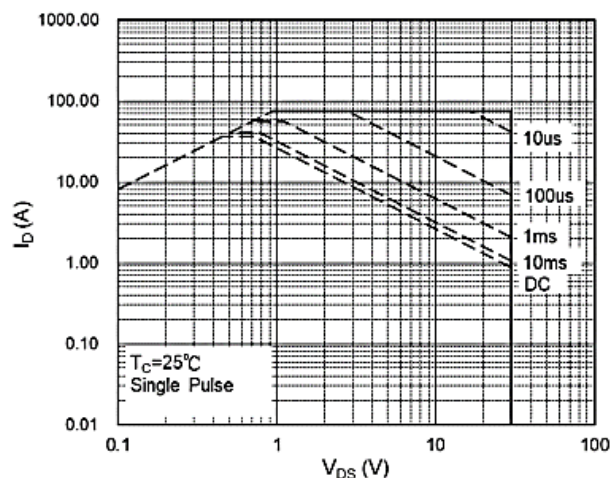
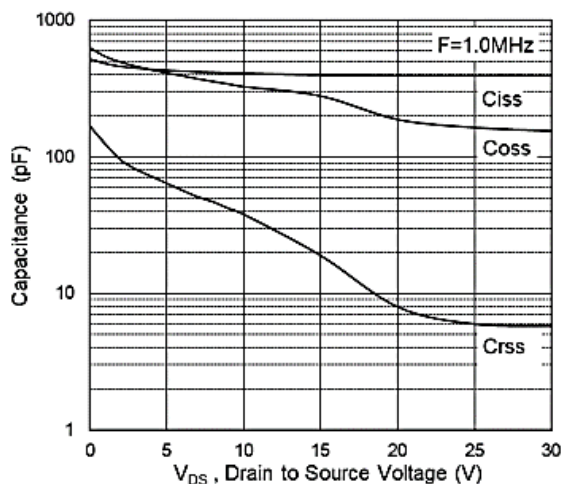
3、The power dissipation is limited by 175°C junction temperature

4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

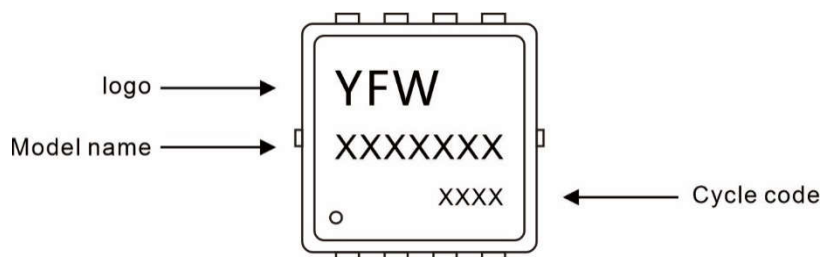
Typical Characteristics



Typical Characteristics



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW50N03DF	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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