

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

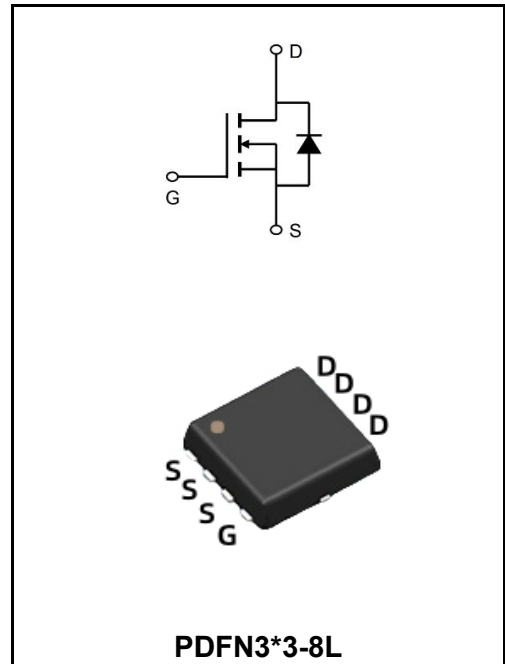
I_D	10A
V_{DS}	100V
R_{DS(on)-typ}(@V_{GS}=10V)	< 110mΩ(Typ:86mΩ)
R_{DS(on)-typ}(@V_{GS}=4.5V)	< 125mΩ(Typ:96mΩ)

DESCRIPTION

The YFW10N10DF 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

- ♣Automotive lighting
- ♣Load switch
- ♣PSE



Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current, V _{GS} @ 10V@T _C =25°C		I_D	10	A
Drain Current, V _{GS} @ 10V@ T _C =100°C		I_D	6.5	A
Pulsed Drain Current ¹		I_{DM}	24	A
Total Power Dissipation	T _C =25°C	P_D	35	W
Total Power Dissipation ³	T _A =25°C	P_D	2	W
Operating Junction Temperature Range		T_J	-55 to 150	°C
Storage Temperature Range		T_{STG}	-55 to 150	°C
Maximum Thermal Resistance, Junction-case		R_{θJC}	3.5	°C/W
Maximum Thermal Resistance, Junctionambient		R_{θJA}	62	°C/W

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

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	BV_{DSS}	100	107	-	V
Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	I_{DSS}	-	-	1.0	μA
Gate to 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	1.5	2.5	V
Static Drain-Source on-Resistance	V _{GS} =10V, I _D =5A	R_{DS(ON)}	-	86	110	mΩ
	V _{GS} =4.5V, I _D =3A		-	96	125	mΩ
Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	C_{iss}	-	645	-	pF
Output Capacitance		C_{oss}	-	38	-	
Reverse Transfer Capacitance		C_{rss}	-	33	-	
Total Gate Charge	V _{DS} =30V, I _D =5A, V _{GS} =10V	Q_g	-	12	-	nC
Gate-Source Charge		Q_{gs}	-	2.2	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	2.5	-	
Turn-on Delay Time	V _{DS} =30V, I _D =10A, R _G =1.8Ω, V _{GS} =10V	t_{d(on)}	-	7	-	ns
Turn-on Rise Time		T_r	-	5	-	
Turn-off Delay Time		t_{d(OFF)}	-	16	-	
Turn-off Fall Time		t_f	-	6	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	10	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	24	A
Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	I _F =10A, di/dt=100A/μs	trr	-	21	-	ns
Body Diode Reverse Recovery Charge		Qrr	-	21	-	nC

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 power dissipation is limited by 150°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

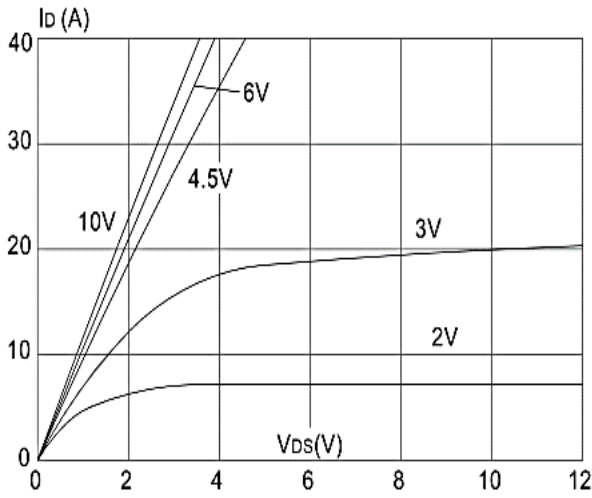


Figure 1: Output Characteristics

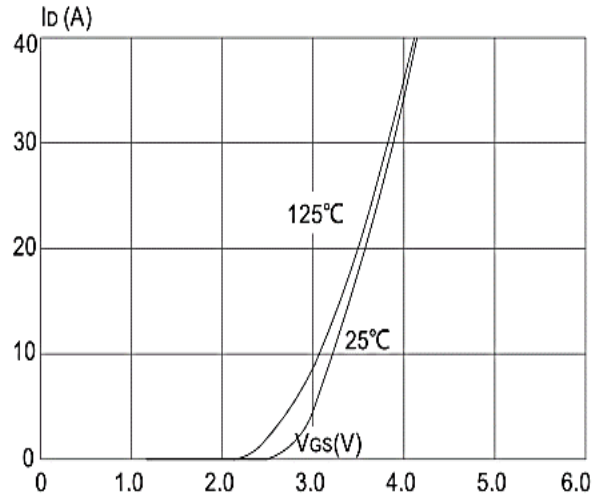


Figure 2: Typical Transfer Characteristics

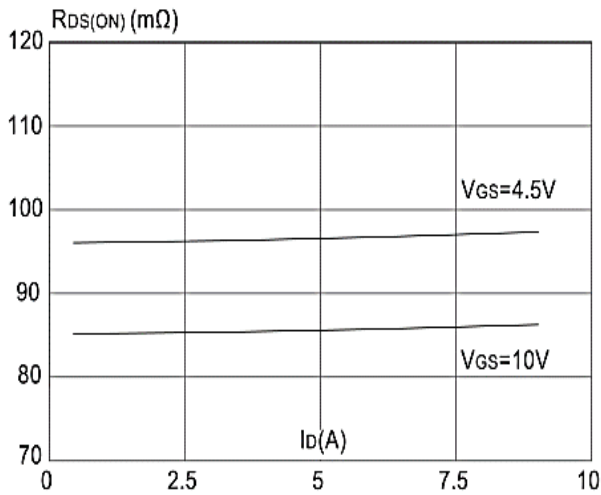


Figure 3: On-resistance vs. Drain Current

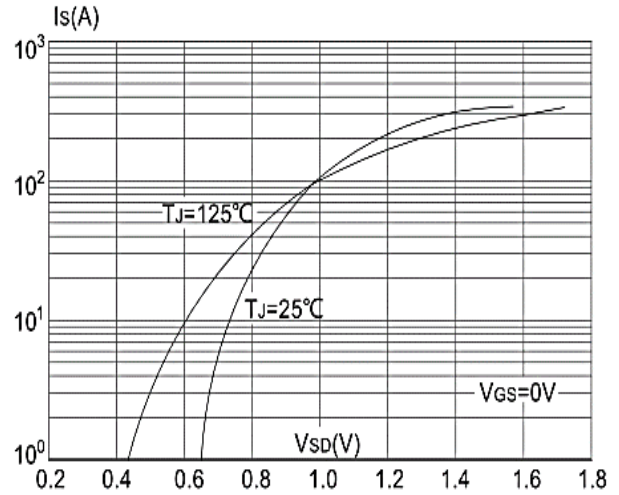


Figure 4: Body Diode Characteristics

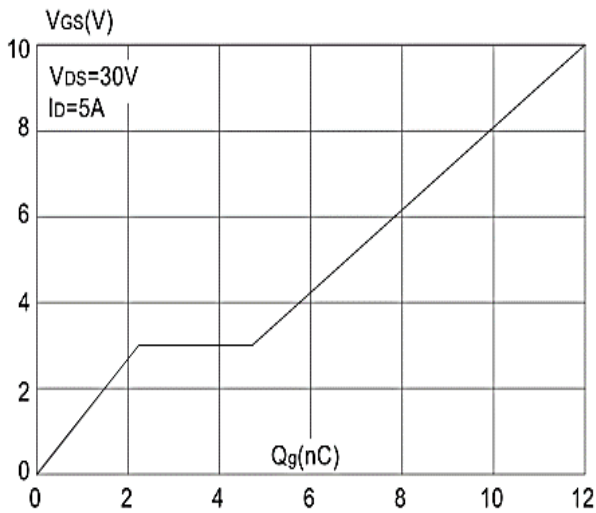


Figure 5: Gate Charge Characteristics

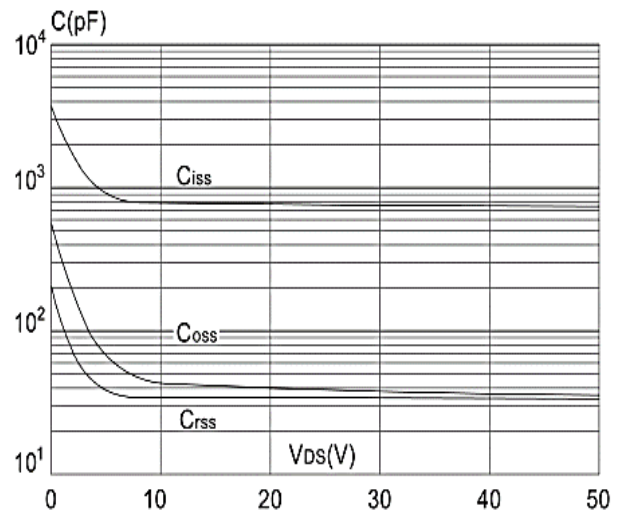


Figure 6: Capacitance Characteristics

Typical Characteristics

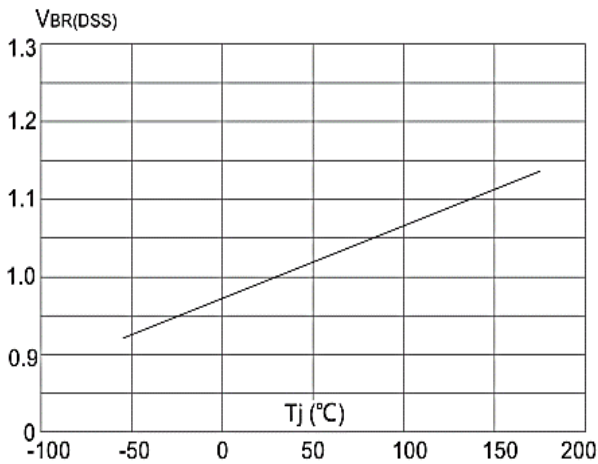


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

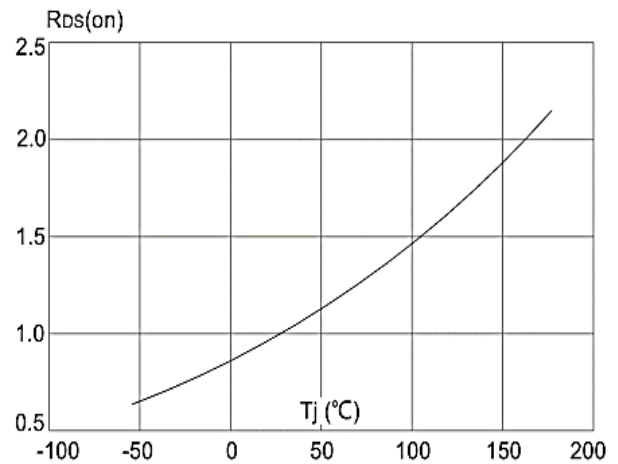


Figure 8: Normalized on Resistance vs. Junction Temperature

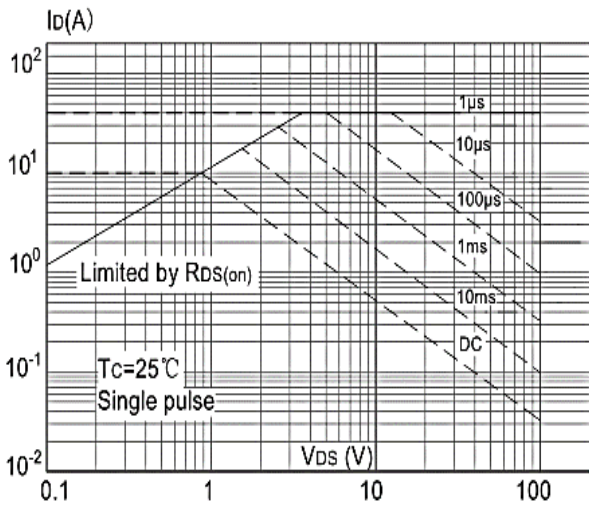


Figure 9: Maximum Safe Operating Area

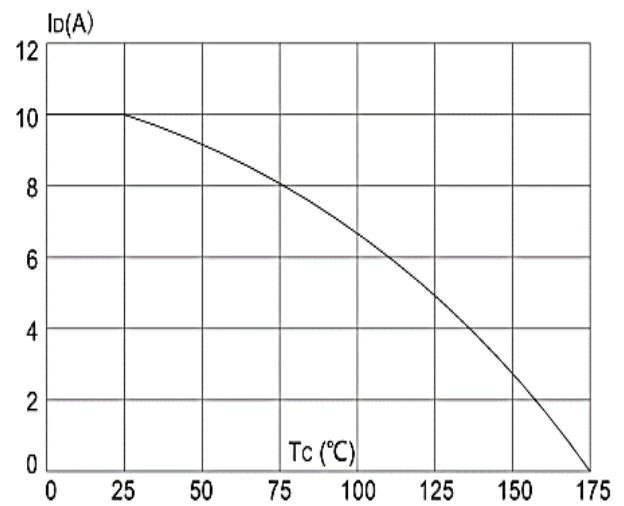


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

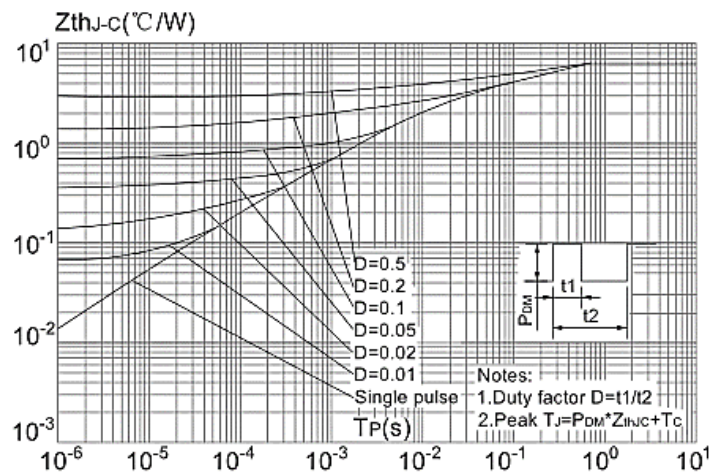
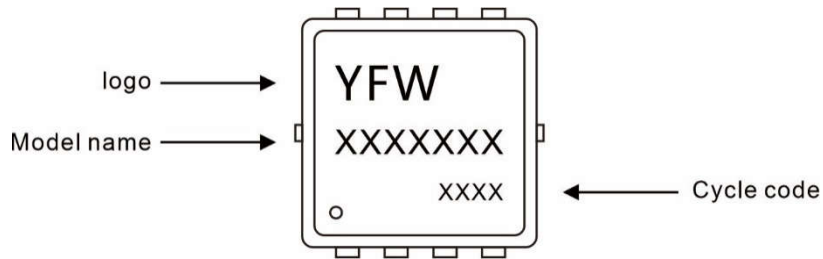


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW10N10DF	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°C	14°C	10°C	14°C

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