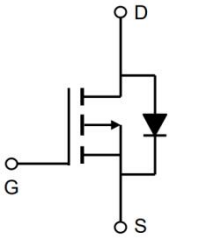
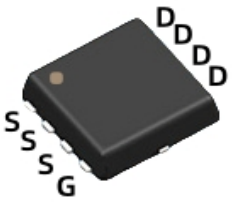
-40V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-40A
V_{DSS}	-40V
R_{DSON}-typ(@V_{GS}=-10V)	＜13mΩ(Typ:10mΩ)





PDFN3*3-8L

APPLICATIONS

- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics		Symbols	Value	Units
Drain-Source Voltage		V_{DS}	-40	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	@T_A=25℃	I_D	-40	A
Continuous Drain Current	@T_A=100℃	I_D	-24	A
Pulsed Drain Current[1]		I_{DM}	-152	A
Single Pulse Avalanche Energy[2]		E_{AS}	130	mJ
Avalanche Curent [2]		I_{AS}	51	A
Power dissipation	T_C=25 ℃	P_D	52	W
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case[1]		$R_{\theta JC}$	2.4	°C/W
Storage Temperature Range		T_{STG}	-55 to +150	°C
Operating Junction Temperature Range		T_J	-55 to +150	°C

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= -250μA	BV_{DSS}	-40	-	-	V
Zero Gate Voltage Drain Current	V_{DS}= -40, V_{GS}=0V,	I_{DSS}	-	-	-1	μA
Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	-	-	±100	nA
Static Drain-Source on-Resistance	V_{GS}= -10V, I_D= -15A	$R_{DS(ON)}$	-	10	13	mΩ
	V_{GS}= -4.5V, I_D= -8A		-	13	18	mΩ
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	$V_{GS(th)}$	-1.0	-1.6	-2.5	V
Forward Transconductance	V_{DS}=-10V , I_D=-4A	gfs	-	11	-	S
Total Gate Charge(Note3,4)	V_{DS}= -32V V_{GS}= -4.5V I_D= -10A	Q_g	-	22.2	-	nC
Gate to Source Charge(Note3,4)		Q_{gs}	-	8.2	-	
Gate to Drain Charge(Note3,4)		Q_{gd}	-	8.8	-	
Turn-on Delay Time(Note3,4)	V_{DD}=-20V , V_{GS}=-10V R_G=6Ω I_D=-1A	$t_{d(on)}$	-	23	-	ns
Turn-on Rise Time(Note3,4)		T_r	-	10	-	
Turn-off Delay Time(Note3,4)		$t_{d(OFF)}$	-	135	-	
Turn-off Fall Time(Note3,4)		t_f	-	46	-	
Input Capacitance	V_{DS}=-25V V_{GS}=0V f=1.0MHz	C_{iss}	-	2757	-	pF
Output Capacitance		C_{oss}	-	240	-	
Reverse Transfer Capacitance		C_{rss}	-	137	-	
Continuous Source Current	V_G=V_D=0V , Force Current	I_S	-	-	-40	A
Pulsed Source Current		I_{SM}	-	-	-80	A
Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -1A, T_J=25℃	V_{SD}	-	-	-1.2	V

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=51A.,R_G=25Ω,Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

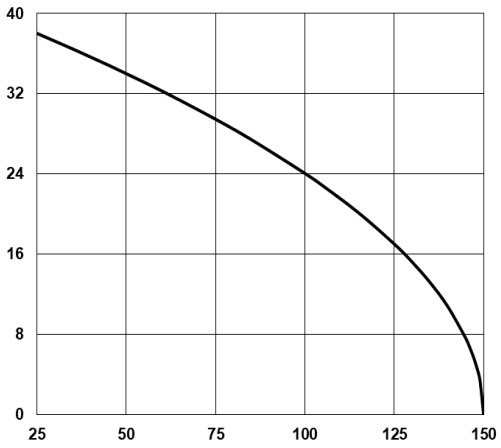


Fig-1. Continuous Drain Current vs. Tc

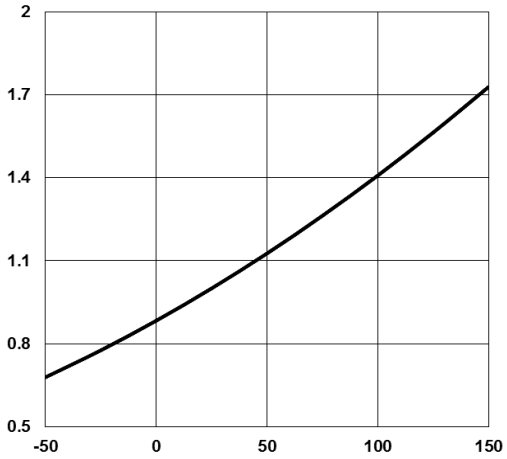


Fig.2 Normalized RDSON vs. T_J

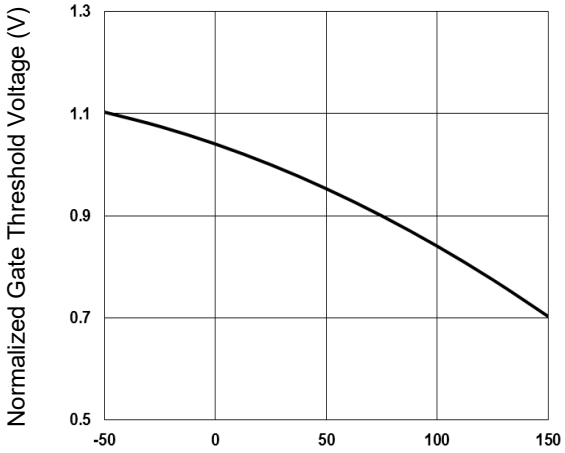


Fig.3 Normalized V_{th} vs. T_J

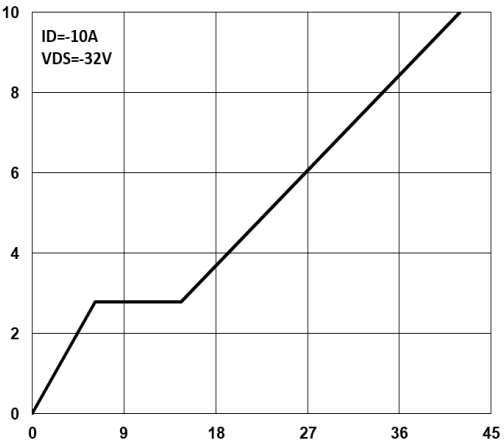


Fig.4 Gate Charge Waveform

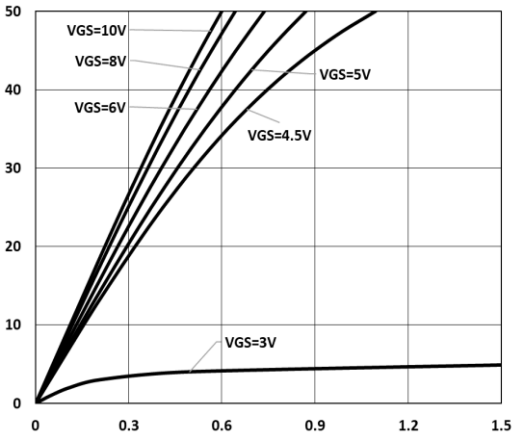
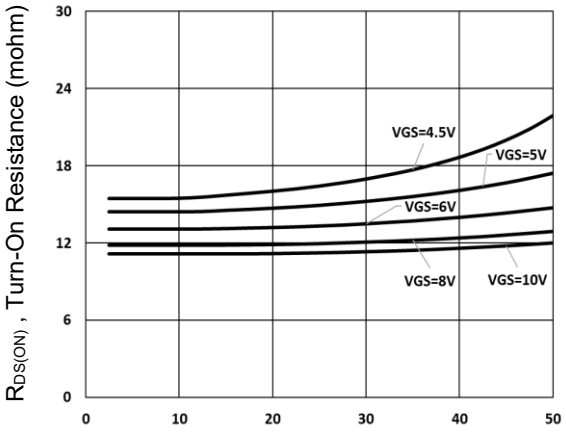
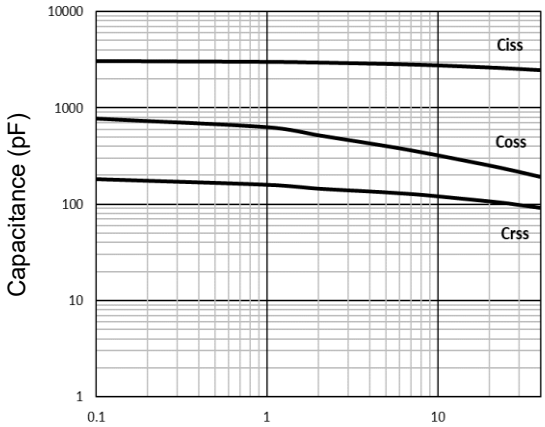


Fig.5 Typical Output Characteristics



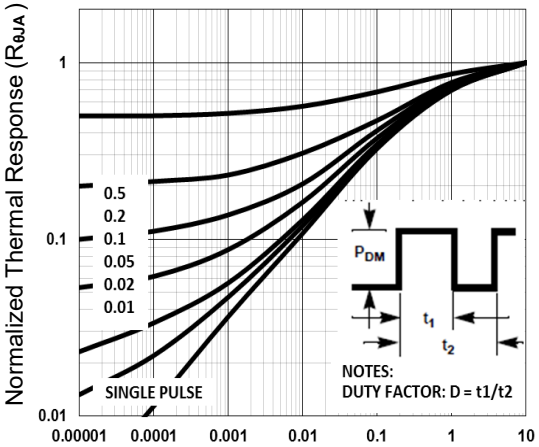
I_D , Drain Current (A)

Fig.6 Turn-On Resistance vs. I_D



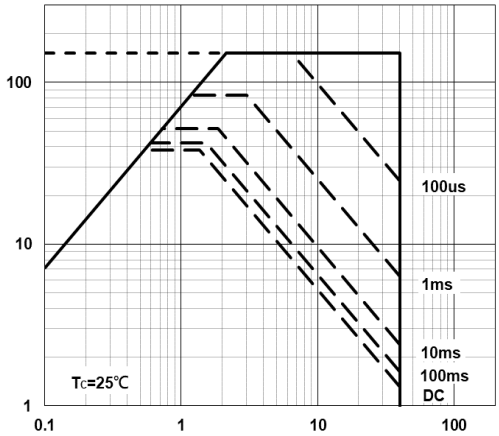
V_{DS} , Drain to Source Voltage (V)

Fig.7 Capacitance Characteristics



Square Wave Pulse Duration (s)

Fig.8 Normalized Transient Impedance



$-V_{DS}$, Drain to Source Voltage (V)

Fig.9 Maximum Safe Operation Area

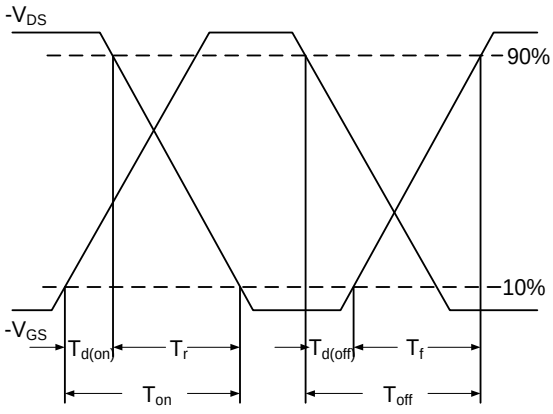


Fig.10 Switching Time Waveform

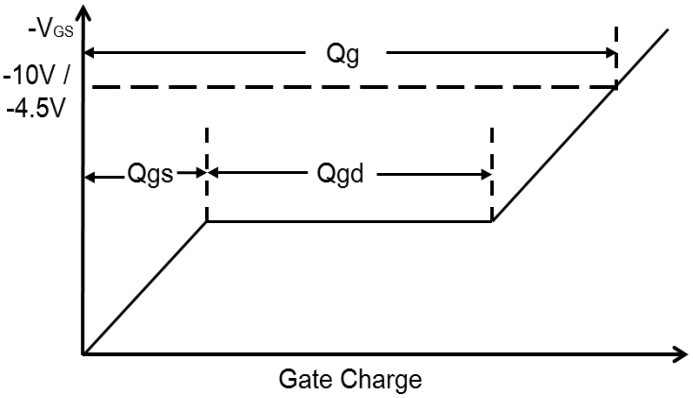
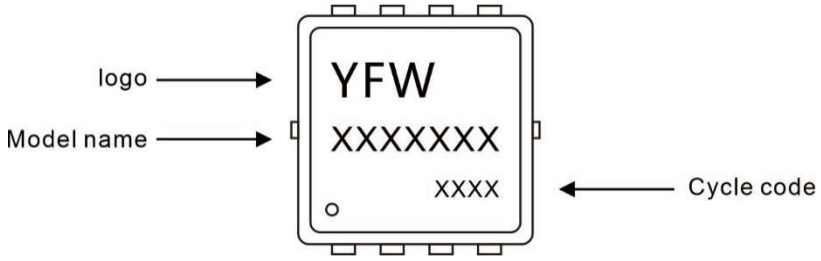


Fig.11 Gate Charge Waveform

Marking Diagram

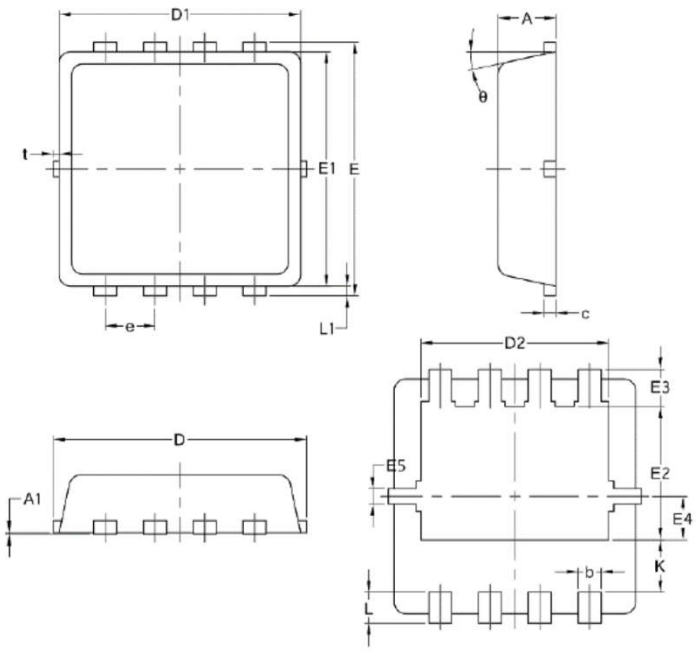


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW40P04DF	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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