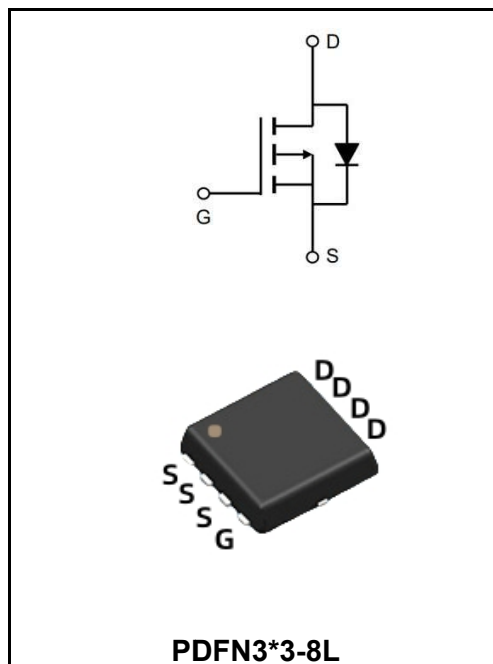


-20V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-30A
V_{DSS}	-20V
$R_{DS(on)-typ}(@V_{GS}=-4.5V)$	< 20mΩ (Type:16 mΩ)



Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

Maximum Ratings at $T_c=25^{\circ}C$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate - Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, $V_{GS} @ -4.5V^1 @ T_C=25^{\circ}C$	I_D	-30	A
Continuous Drain Current, $V_{GS} @ -4.5V^1 @ T_C=70^{\circ}C$	I_D	-15	A
Pulsed Drain Current ²	I_{DM}	-48	A
Total Power Dissipation ³ @ $T_C=25^{\circ}C$	P_D	24	W
Total Power Dissipation ³ @ $T_C=70^{\circ}C$	P_D	21.5	W
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}C$
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	75	$^{\circ}C/W$
Thermal Resistance Junction to Case ¹	$R_{\theta JC}$	4.2	$^{\circ}C/W$

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-20	-24	-	V
BV_{DSS} Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.012	-	V/°C
Static Drain-Source On-Resistance ²	$V_{GS}=-4.5V, I_D=-20A$	$R_{DS(on)}$	-	16	20	mΩ
	$V_{GS}=-2.5V, I_D=-10A$		-	22	28	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.5	-0.6	-1.2	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	2.94	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
Gate -Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Total Gate Charge(-4.5V)	$V_{DS}=-10V$ $V_{GS}=-4.5V$ $I_D=-6A$	Q_g	-	15.3	-	nC
Gate-Source Charge		Q_{GS}	-	2.2	-	
Gate-Drain Charge		Q_{gd}	-	4.4	-	
Turn-on delay time	$V_{DD}=-10V$ $V_{GS}=-4.5V$ $I_D=-10A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	10	-	ns
Rise Time		T_r	-	31	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	28	-	
Fall Time		t_f	-	8	-	
Input Capacitance	$V_{DS}=-10V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2000	-	pF
Output Capacitance		C_{oss}	-	242	-	
Reverse Transfer Capacitance		C_{rss}	-	231	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V$, Force Current	I_S	-	-	-20	A
Pulsed Source Current ^{2,4}		I_{SM}	-	-	-48	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	V_{SD}	-	-	-1.2	V

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 $\leq 300\mu s$, duty cycle $\leq 2\%$

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.

Ratings and Characteristic Curves

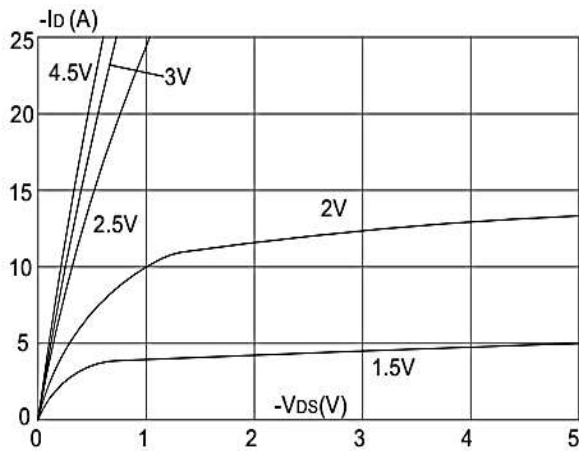


Figure1: Output Characteristics

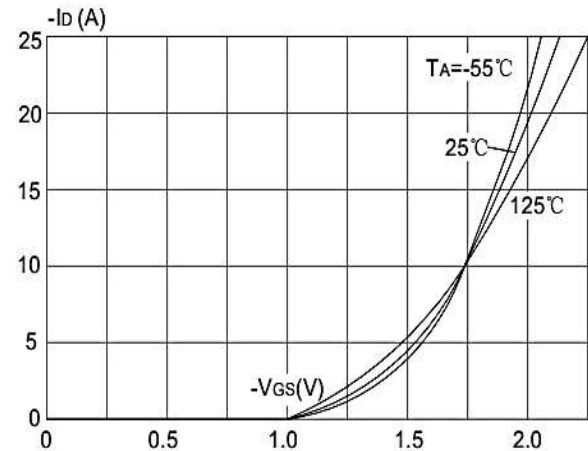


Figure 2: Typical Transfer Characteristics

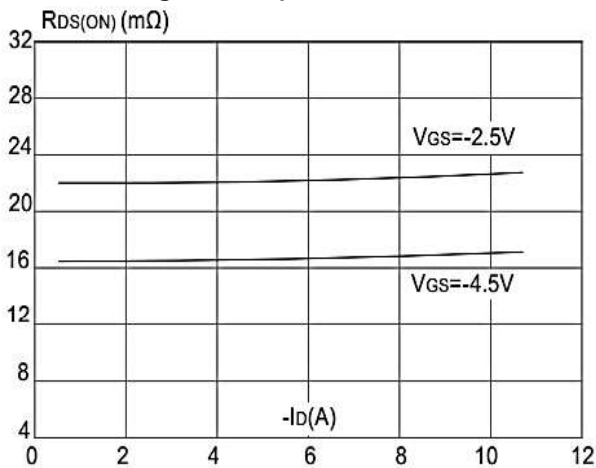


Figure 3: On-resistance vs. Drain Current

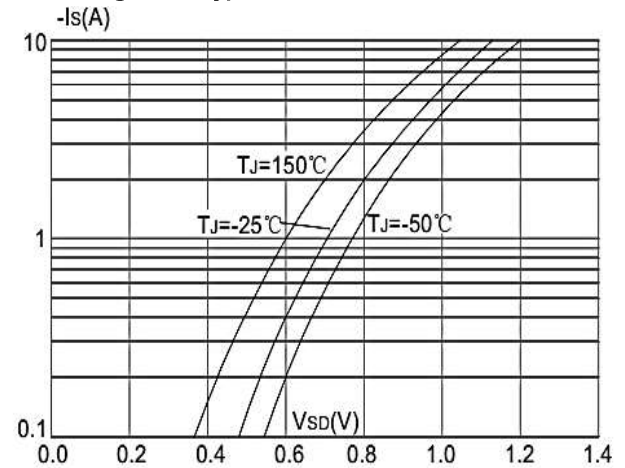


Figure 4: Body Diode Characteristics

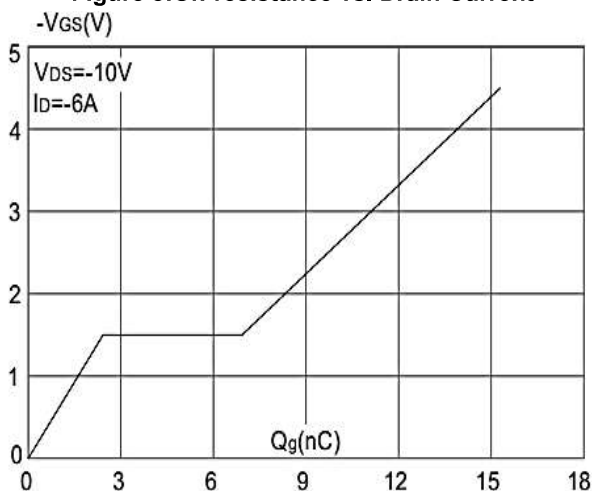


Figure 5: Gate Charge Characteristics

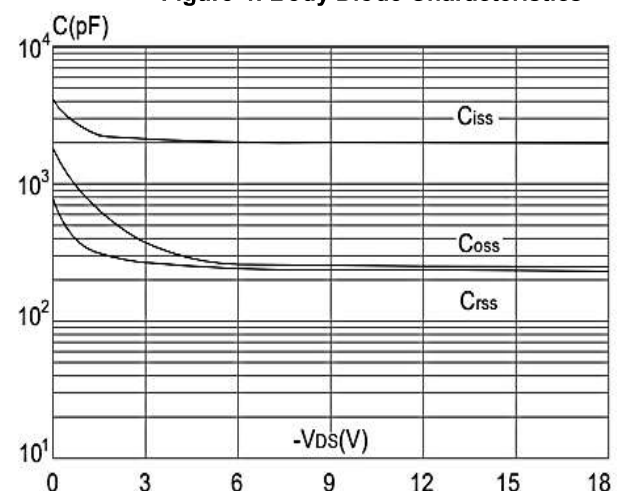


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

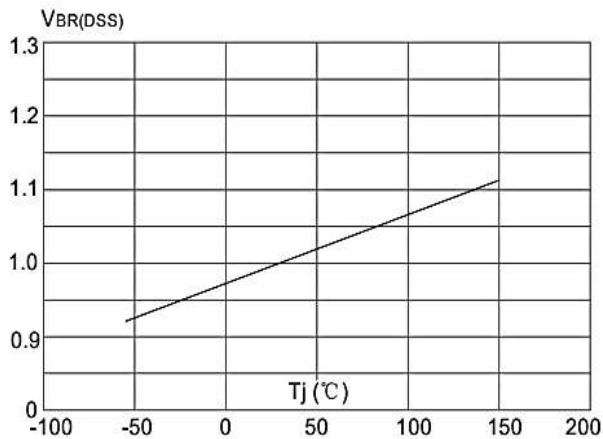


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

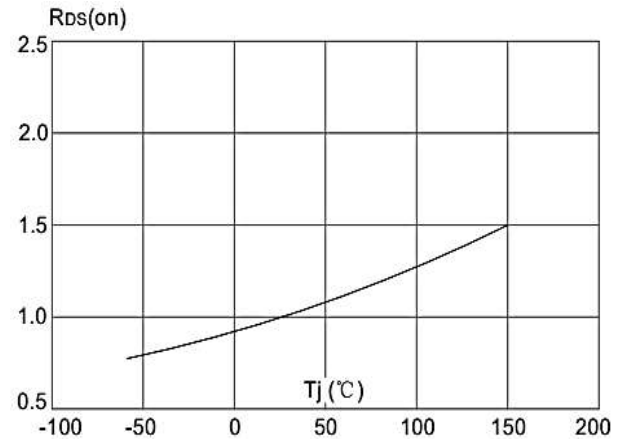


Figure 8: Normalized on Resistance vs. Junction Temperature

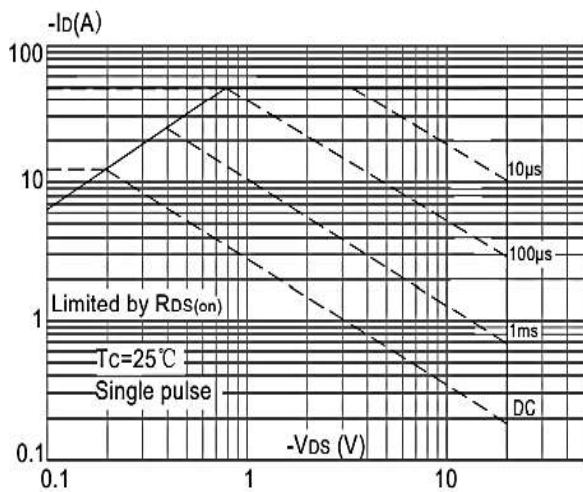


Figure 9: Maximum Safe Operating Area

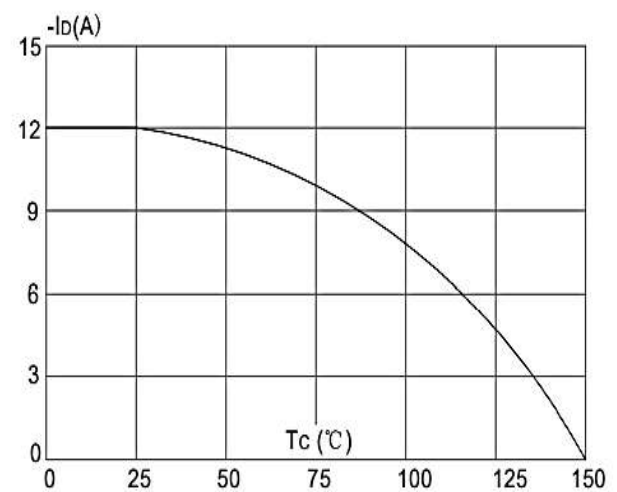


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

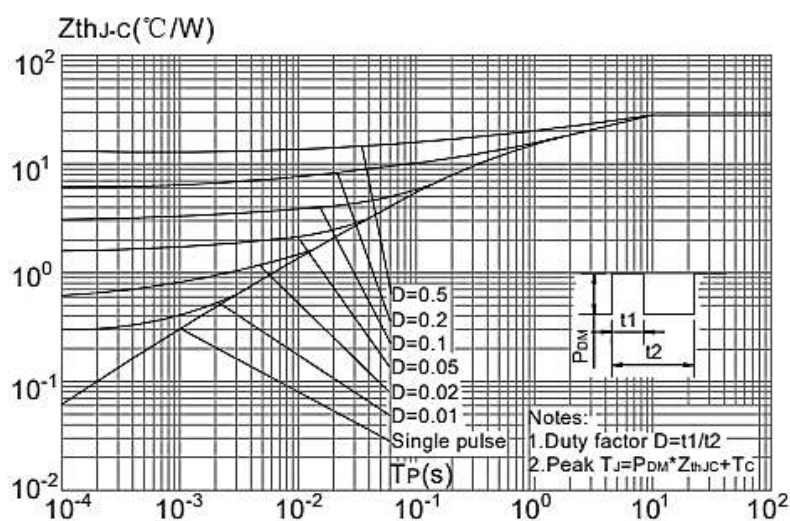
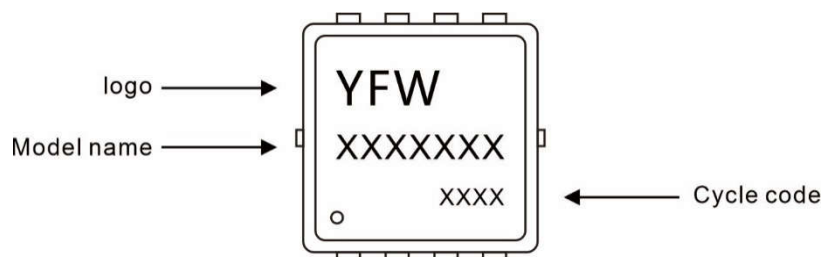


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW30P02DF	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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