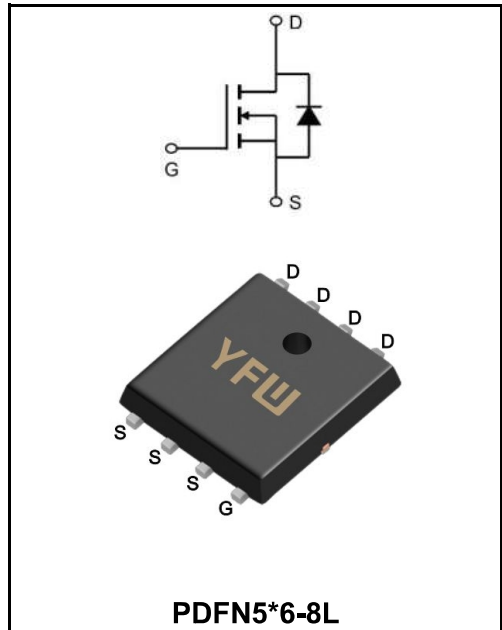


30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	150A
V_{DSS}	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 2mΩ (Type: 1.4 mΩ)



Application

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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, $V_{GS} @ 10V^{1.6} @ T_C=25^\circ C$	I_D	150	A
Continuous Drain Current, $V_{GS} @ 10V^{1.6} @ T_C=100^\circ C$	I_D	78	A
Pulsed Drain Current ²	I_{DM}	500	A
Single Pulsed Avalanche Energy ³	E_{AS}	240	mJ
Avalanche Current	I_{AS}	55	A
Total Power Dissipation ⁴ @Tc=25°C	P_D	48	W
Total Power Dissipation ⁴ @Ta=25°C	P_D	2.6	W
Storage Temperature Range	T_{STG}	-55 to +175	°C
Operating Junction Temperature Range	T_J	-55 to +175	°C
Thermal Resistance Junction-ambient ¹	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Ambient 1 (t ≤ 10s)	$R_{\theta JA}$	25	°C/W
Thermal Resistance, Junction - Case ¹	$R_{\theta JC}$	2.6	°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}	30	33	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$		0.0213		V/°C
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	-	1.4	2.0	mΩ
	$V_{GS}=4.5V, I_D=20A$		-	2.3	3.2	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-5.73	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	1	μA
	$V_{DS}=24V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	-	1.4	-	Ω
Total Gate Charge(4.5V)	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=30A$	Q_g	-	70	-	nC
Gate-Source Charge		Q_{gs}	-	12	-	
Gate-Drain Charge		Q_{gd}	-	17	-	
Turn-on delay time	$V_{DD}=15V$ $V_{GS}=10V$ $I_D=30A$ $R_G=3\Omega$	$t_{d(on)}$	-	10	-	ns
Rise Time		T_r	-	6.5	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	75	-	
Fall Time		t_f	-	18	-	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	4930	-	pF
Output Capacitance		C_{oss}	-	682	-	
Reverse Transfer Capacitance		C_{rss}	-	566	-	
Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{Force Current}$	I_S	-	-	120	A
Pulsed Source Current ^{2,5}		I_{SM}	-	-	480	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=30A, T_J=25^\circ C$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Charge	$I_F=20A, di/dt=100A/\mu s$	Q_{rr}	-	30	-	ns
Body Diode Reverse Recovery Time		t_{rr}	-	15	-	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 $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is $V_{DD}=24V, V_{GS}=10V, L=0.1mH, I_{AS}=55A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 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

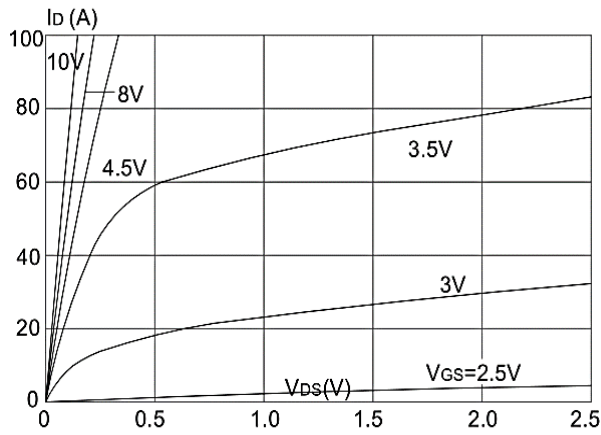


Figure 1: Output Characteristics

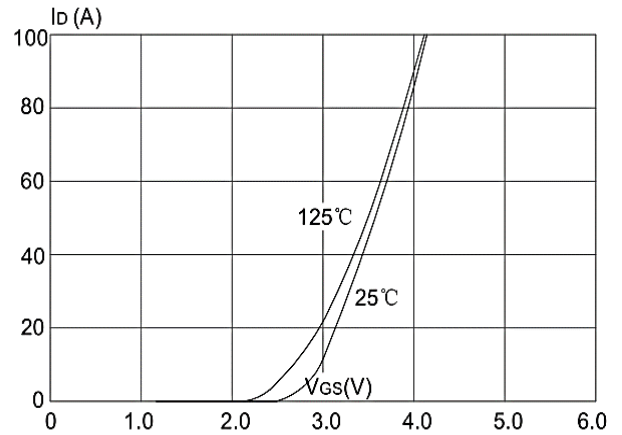


Figure 2: Typical Transfer Characteristics

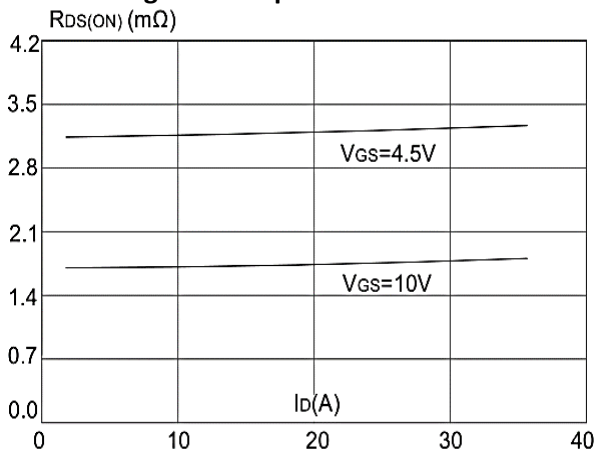


Figure 3: On-resistance vs. Drain Current

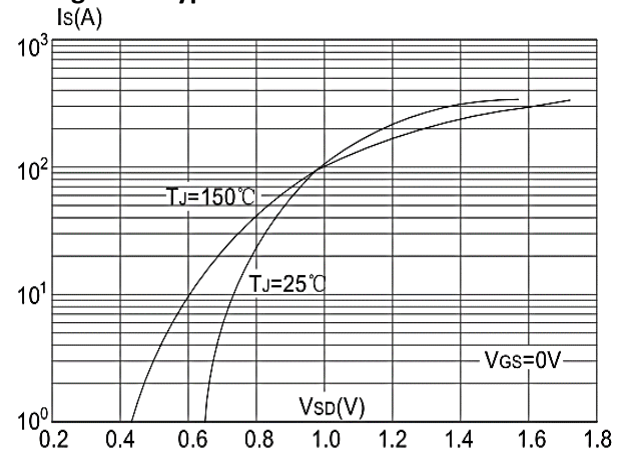


Figure 4: Body Diode Characteristics

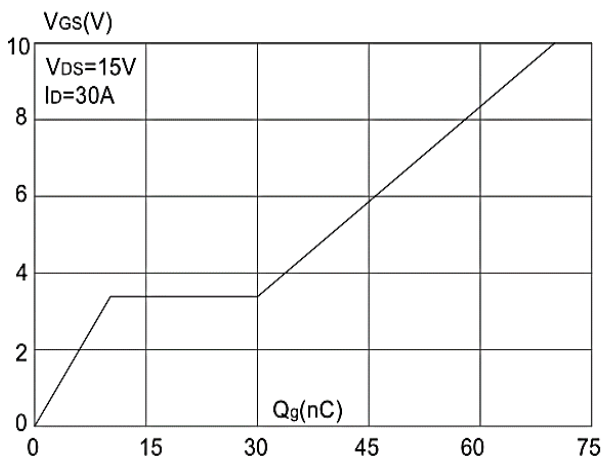


Figure 5: Gate Charge Characteristics

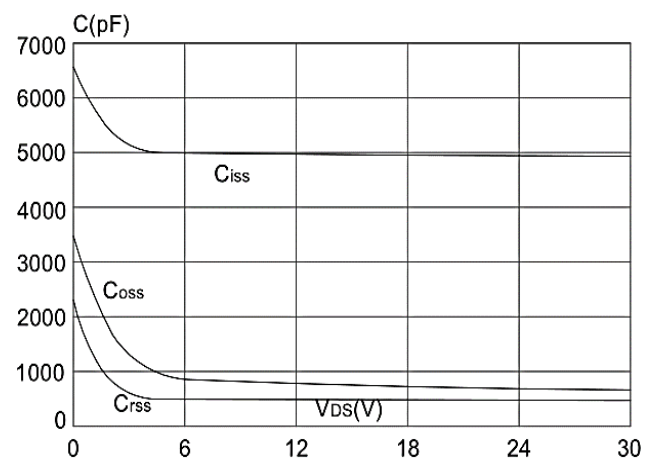


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

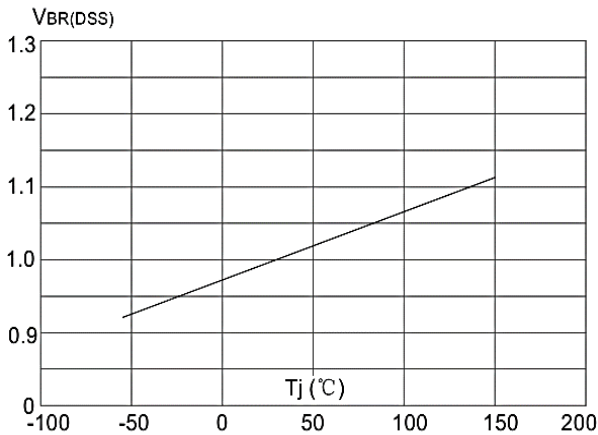


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

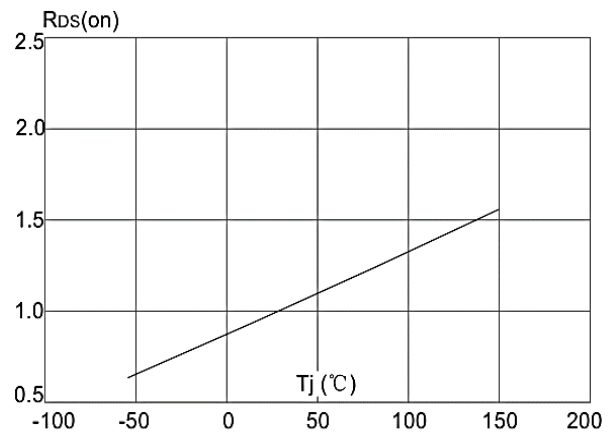


Figure 8: Normalized on Resistance vs. Junction Temperature

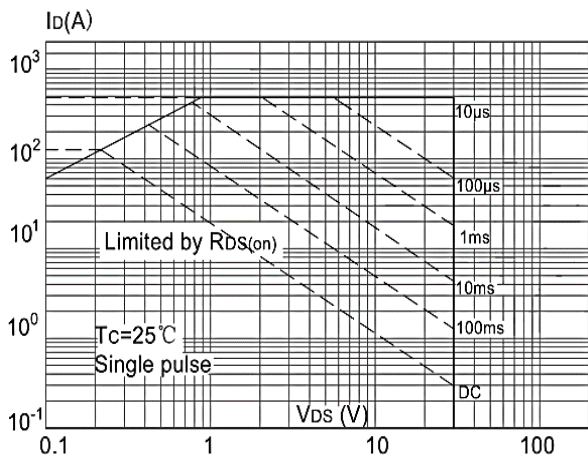


Figure 9: Maximum Safe Operating Area vs. Case Temperature

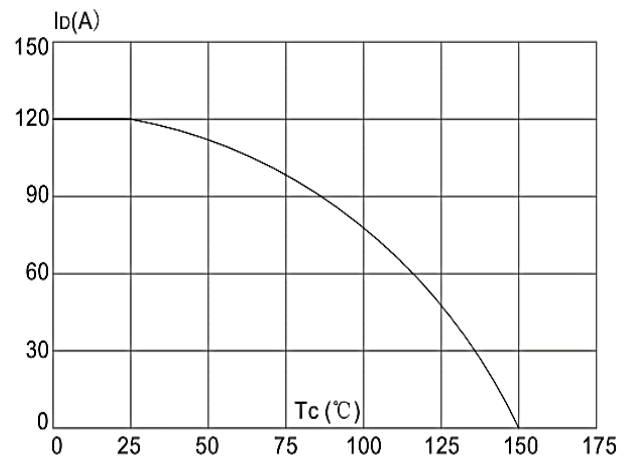


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

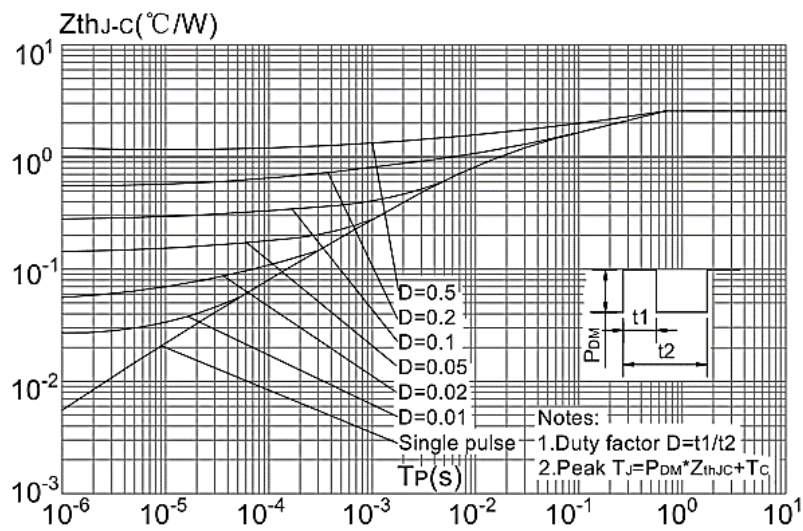
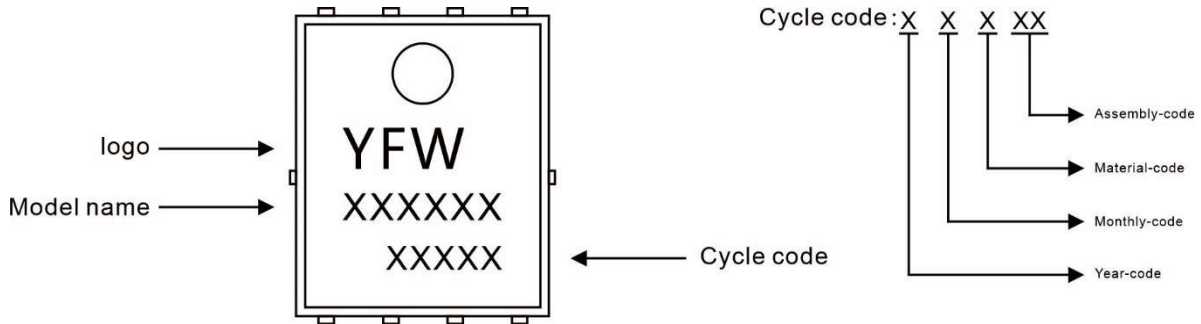


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW150N03NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L

Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.2	35	45
A2	0.204	0.304	8	12
b	0.4ref.		16ref.	
b1	0.2	0.4	8	16
D	5.0	5.3	197	209
D1	4.84	5.24	191	206
E	5.95	6.35	234	250
E1	3.275	3.675	129	145
E2	5.69	6.09	224	232
e	1.27typ.		50typ.	
K	1.29typ.		51typ.	
L	0.585	0.785	23	27
L1	0.7typ.		28typ.	

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