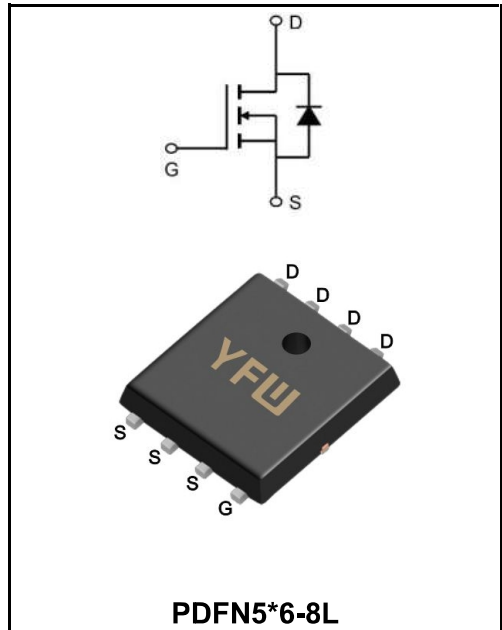


**60V N- Channel Advanced Power MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	120A
<b>V<sub>DS</sub></b>	60V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	<4.4mΩ( <b>Typ:3.5mΩ</b> )



**FEATURES**

- ◆Advanced Trench Technology
- ◆Excellent RDS(ON) and Low Gate Charge

**Application**

- ◆Load Switch
- ◆PWM Application
- ◆Power Management

**MECHANICAL DATA**

- ◆Case: PDFN5X6-8L/NF
- ◆Mounting Position: Any
- ◆Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆Lead free in compliance with EU RoHS 2011/65/EU directive
- ◆Solder bath temperature 275°C maximum,10s per JESD 22-B106

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	60	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous drain current	<b>I<sub>D</sub></b>	120	<b>A</b>
Pulsed Drain Current (Note1)	<b>I<sub>DM</sub></b>	480	<b>A</b>
Power dissipation	<b>P<sub>D</sub></b>	96	<b>W</b>
Single Pulse Avalanche Energy	<b>E<sub>AS</sub></b>	290	<b>mJ</b>
Operating Temperature Range	<b>T<sub>J</sub></b>	150	<b>°C</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance, Junction-case	<b>R<sub>θJC</sub></b>	1.3	<b>°C/W</b>
Thermal Resistance, Junction to Ambient	<b>R<sub>θJA</sub></b>	62	<b>°C/W</b>

**Note1:Pulse test: 300 μs pulse width, 2 % duty cycle**

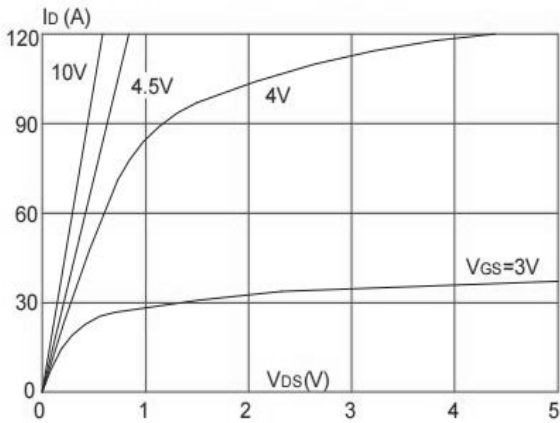
**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	60	-	-	V
Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V$	$I_{DSS}$	-	-	1	$\mu A$
Gate-Source Leakage Current	$V_{DS} = \pm 20V, V_{GS} = 0V$	$I_{GSS}$	-	-	$\pm 100$	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	-	4.0	V
Drain-Source On-State Resistance	$V_{GS} = 10V, I_D = 30A$	$R_{DS(on)}$	-	3.5	4.4	m $\Omega$
	$V_{GS}=8V, I_D=30A$		-	4.2	5.3	m $\Omega$
Input Capacitance	$V_{GS}=0V$ $V_{DS}=30V$ $f=1MHz$	$C_{iss}$	-	5040	-	pF
Output Capacitance		$C_{oss}$	-	405	-	
Reverse Transfer Capacitance		$C_{rss}$	-	365	-	
Turn-on delay time	$V_{DS}=30V$ $V_{GS}=10V$ $R_G=1.8\Omega$ $I_D=30A$	$t_{d(on)}$	-	12	-	ns
Rise Time		$T_r$	-	8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	50	-	
Fall Time		$t_f$	-	15	-	
Total Gate Charge	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=30A$	$Q_g$	-	105	-	nC
Gate-Source Charge		$Q_{gs}$	-	15	-	
Gate-Drain Charge		$Q_{gd}$	-	32	-	
Maximun Body-Diode Continuous Current (Note 2)		$I_S$	-	-	120	A
Maximun Body-Diode Pulsed Current		$I_{SM}$	-	-	480	A
Drain-Source Diode Forward Voltage	$I_{SD} = 30A$	$V_{SD}$	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F$ $I_{SD}=30A$ $V_{GS} = 0V$ $di / dt = 500 A/\mu s$	$trr$	-	28	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	48	-	nC

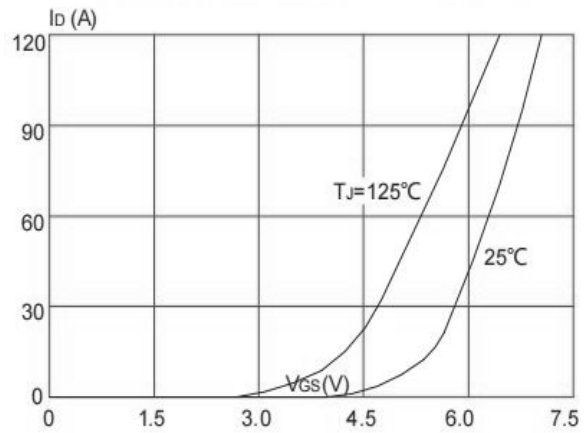
**Note2:Pulse test: 300  $\mu s$  pulse width, 2 % duty cycle**

**Ratings and Characteristic Curves**

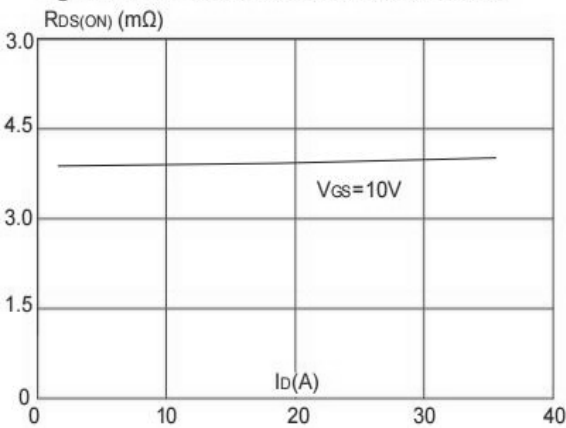
**Figure 1: Output Characteristics**



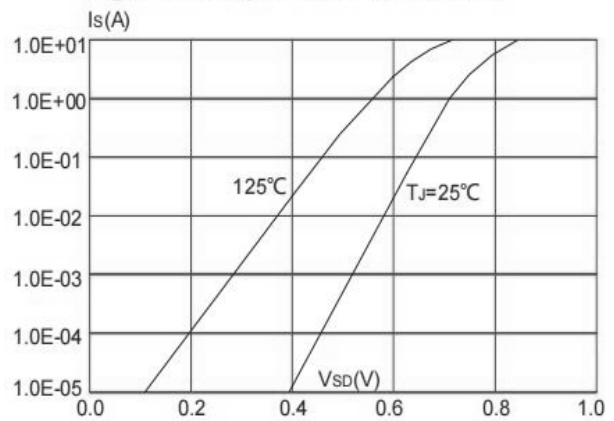
**Figure 2: Typical Transfer Characteristics**



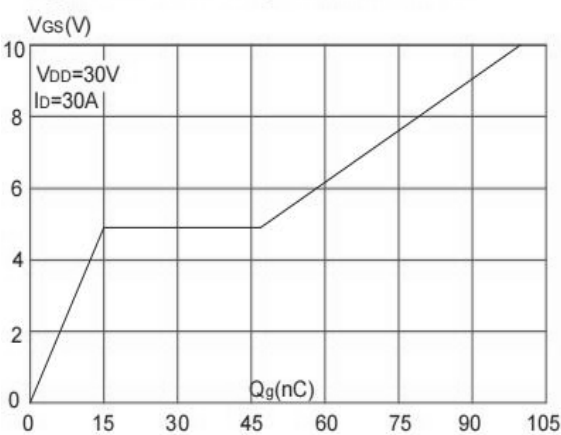
**Figure 3: On-resistance vs. Drain Current**



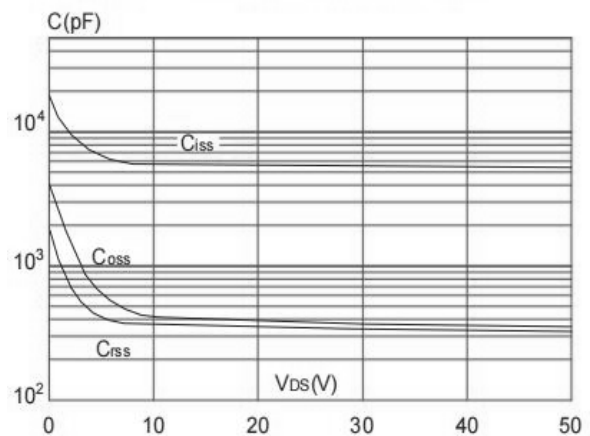
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

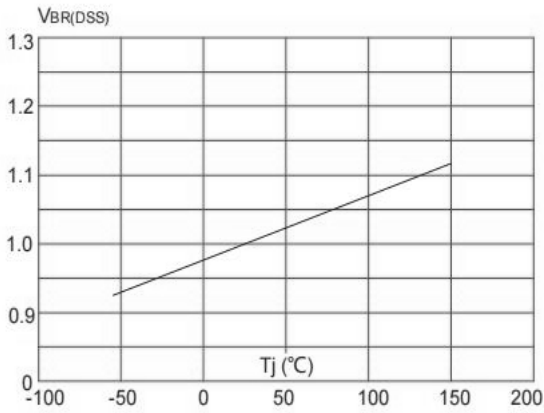


**Figure 6: Capacitance Characteristics**

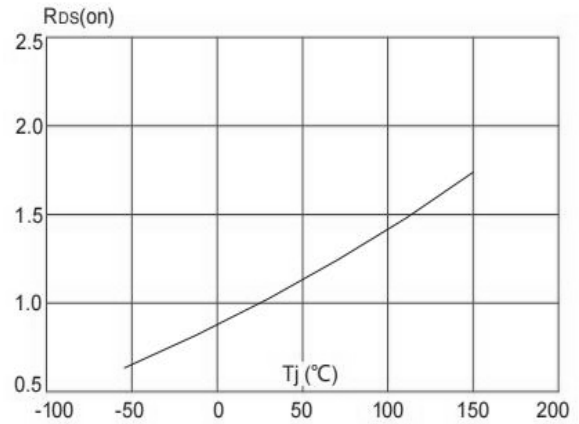


**RATINGS AND CHARACTERISTIC CURVES**

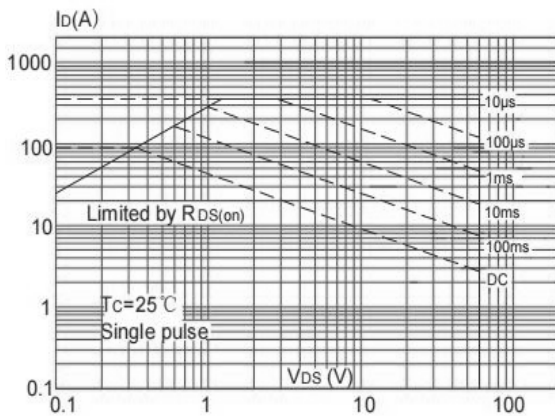
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



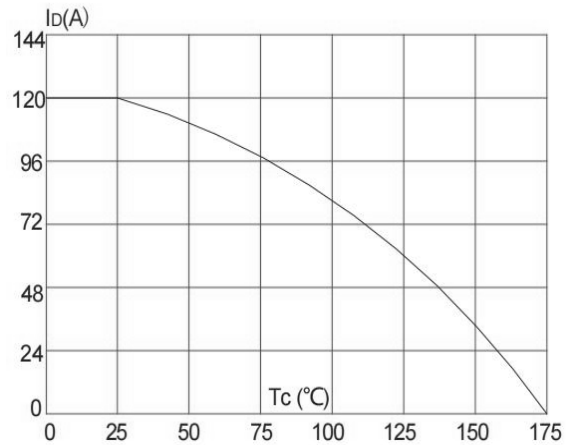
**Figure 8: Normalized on Resistance vs. Junction Temperature**



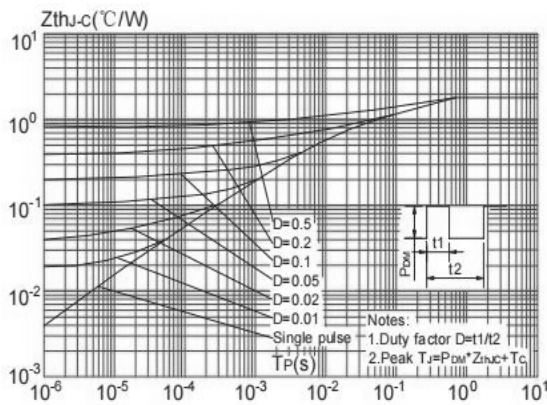
**Figure 9: Maximum Safe Operating Area**



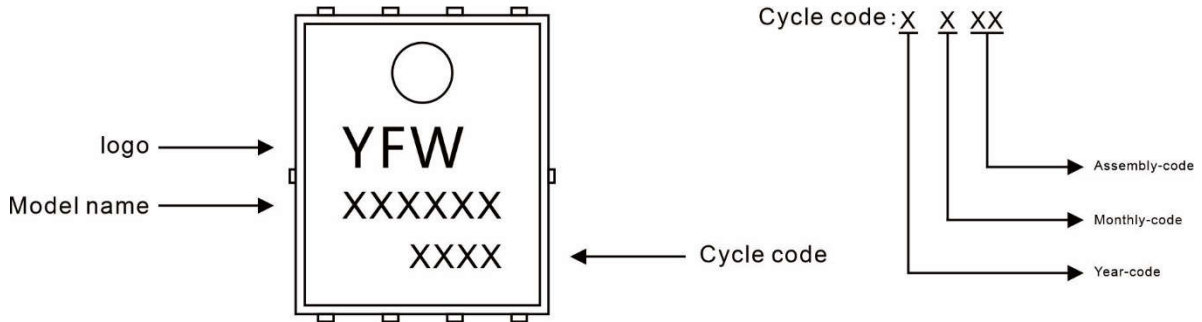
**Figure 10: Maximum Continuous Drain Current vs. Case Temperature**



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



**Marking Diagram**



**Ordering information**

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW120N06NF	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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