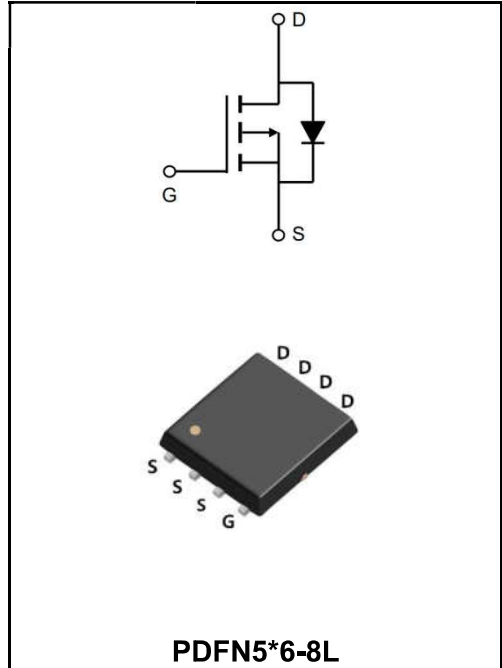


**-30V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-150A
<b>V<sub>DSS</sub></b>	-30V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-10V)</sub></b>	< 3.2mΩ ( <b>Type:2.5 mΩ</b> )



**Application**

- ◆Lithium battery protection
- ◆Wireless impact
- ◆Mobile phone fast charging

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW150P03NF	PDFN5*6-8L	YFW 150P03NF XXXXX	5000PCS/Tape

**Maximum Ratings at T<sub>c</sub>=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	-30	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>C</sub> =25°C	<b>I<sub>D</sub></b>	-150	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>C</sub> =100°C	<b>I<sub>D</sub></b>	-75	<b>A</b>
Pulsed Drain Current 2	<b>I<sub>DM</sub></b>	-450	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	576	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	-70	<b>A</b>
Total Power Dissipation <sup>4</sup> @T <sub>C</sub> =25°C	<b>P<sub>D</sub></b>	150	<b>W</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150	<b>°C</b>
Operating Junction Temperature Range	<b>T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance Junction-Ambient <sup>1</sup>	<b>R<sub>θJA</sub></b>	25	<b>°C/W</b>
Thermal Resistance Junction-Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	1.06	<b>°C/W</b>

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

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	<b>BVDSS</b>	-30	-35	-	<b>V</b>
Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	<b>I<sub>DSS</sub></b>	-	-	-1	<b>μA</b>
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	<b>V<sub>GS(th)</sub></b>	-1	-1.7	-2.5	<b>V</b>
Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-20A$	<b>R<sub>DS(ON)</sub></b>	-	2.5	3.2	<b>mΩ</b>
	$V_{GS}=-4.5V, I_D=-20A$		-	4.0	5.2	
Forward Transconductance	$V_{DS}=-5V, I_D=-20A$	<b>g<sub>fs</sub></b>	-	65	-	<b>S</b>
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	<b>C<sub>iss</sub></b>	-	7000	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	820	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	540	-	
Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	<b>R<sub>g</sub></b>	-	2.2	-	<b>Ω</b>
Turn-on delay time	$V_{DS}=-15V$ $V_{GS}=-10V$ $R_L=0.75\Omega$ $R_{GEN}=3\Omega$	<b>t<sub>d(on)</sub></b>	-	14	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	13	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	65	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	37	-	
Total Gate Charge	$V_{DS}=-15V$ $V_{GS}=-10V$ $I_D=-20A$	<b>Q<sub>g</sub></b>	-	130	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	12	-	
Gate-Drain Charge		<b>Q<sub>gd</sub></b>	-	31	-	
Source-Drain Current (Body Diode)		<b>I<sub>S</sub></b>	-	-	-150	<b>A</b>
Forward on Voltage <sup>(Note 3)</sup>	$V_{GS}=0V, I_S=-20A$	<b>V<sub>SD</sub></b>	-	-	-1.3	<b>V</b>
Reverse Recovery Time	$I_F=-20A, dI/dt=100A/\mu s,$	<b>t<sub>rr</sub></b>	-	30	-	<b>ns</b>
Reverse Recovery Charge		<b>Q<sub>rr</sub></b>	-	10	-	<b>nC</b>

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 T<sub>J</sub> =25°C, V<sub>DD</sub>=-15V, V<sub>G</sub>=-10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=-30A
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

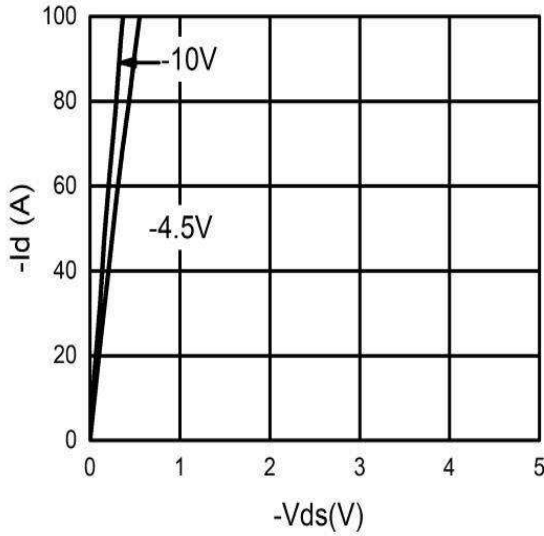


Figure 1. Output Characteristics

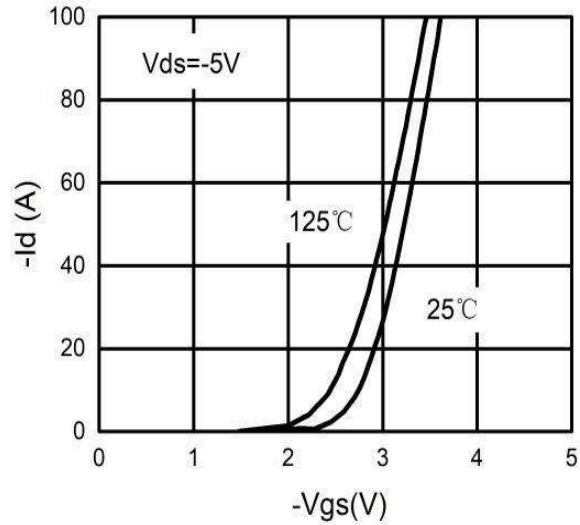


Figure 2. Transfer Characteristics

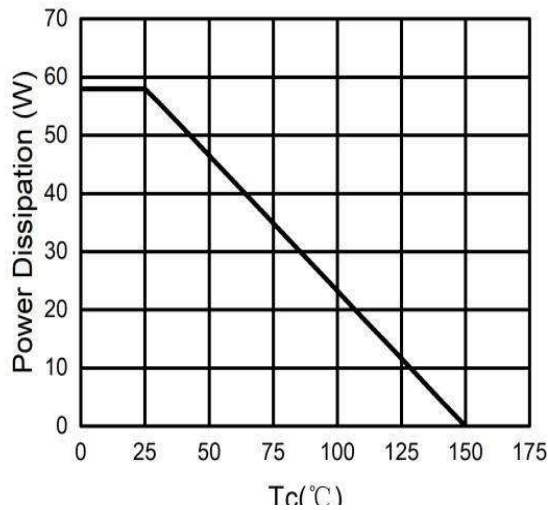


Figure 3. Power Dissipation

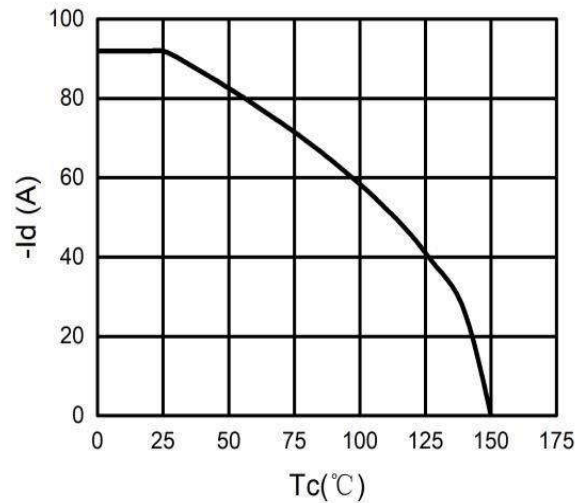


Figure 4. Drain Current

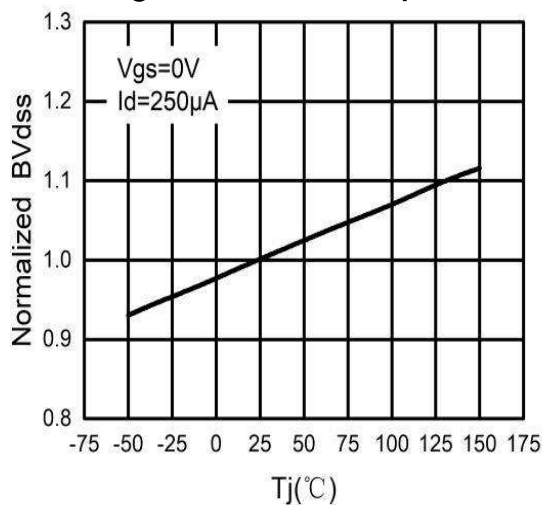


Figure 5.  $BV_{DSS}$  vs Junction Temperature

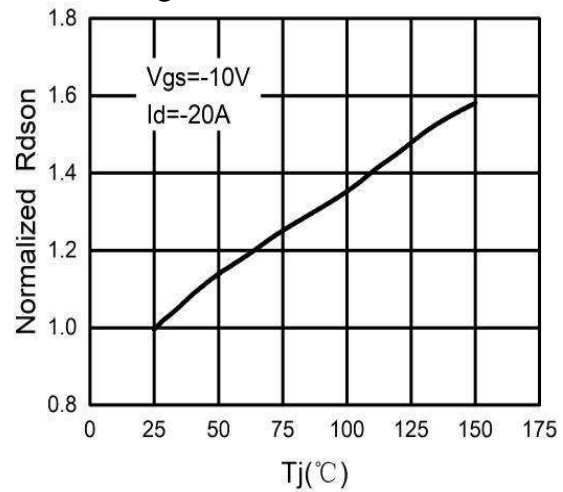
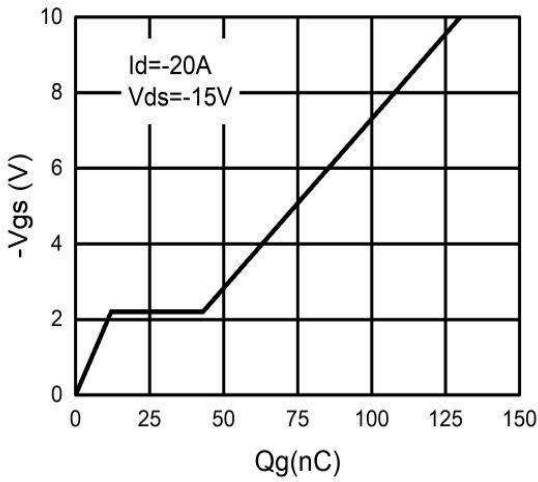
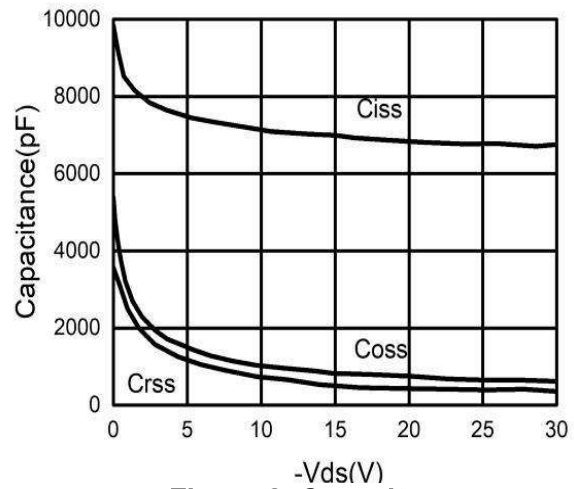


Figure 6.  $R_{DS(ON)}$  vs Junction Temperature

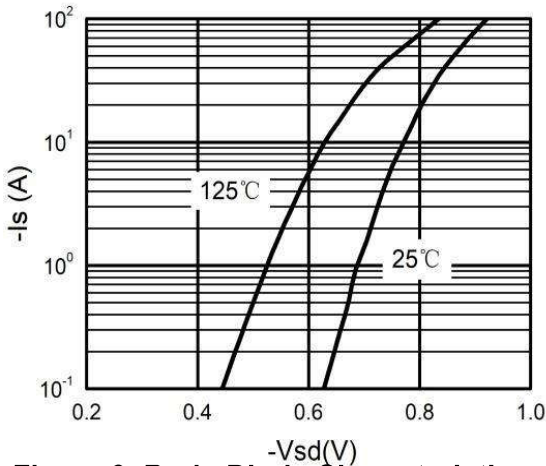
**Ratings and Characteristic Curves**



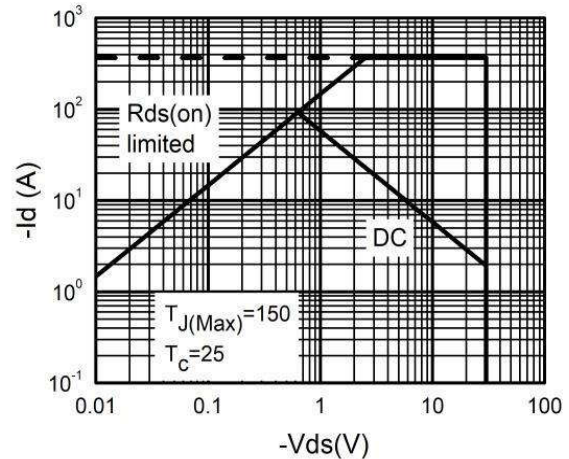
**Figure 7. Gate Charge Waveforms**



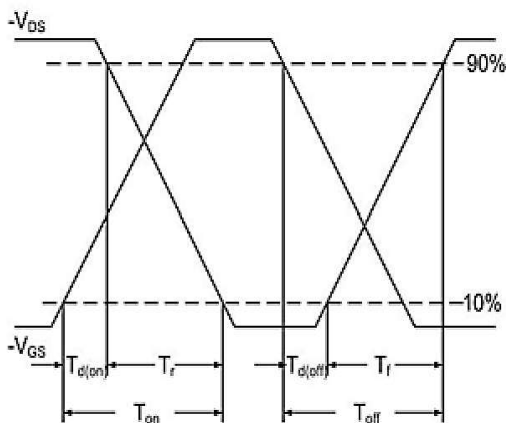
**Figure 8. Capacitance**



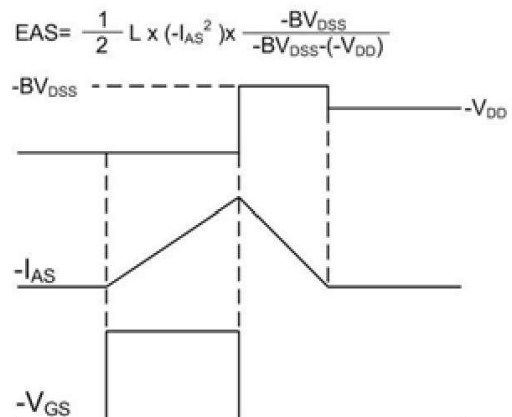
**Figure 9. Body-Diode Characteristics**



**Figure 10. Maximum Safe Operating Area**

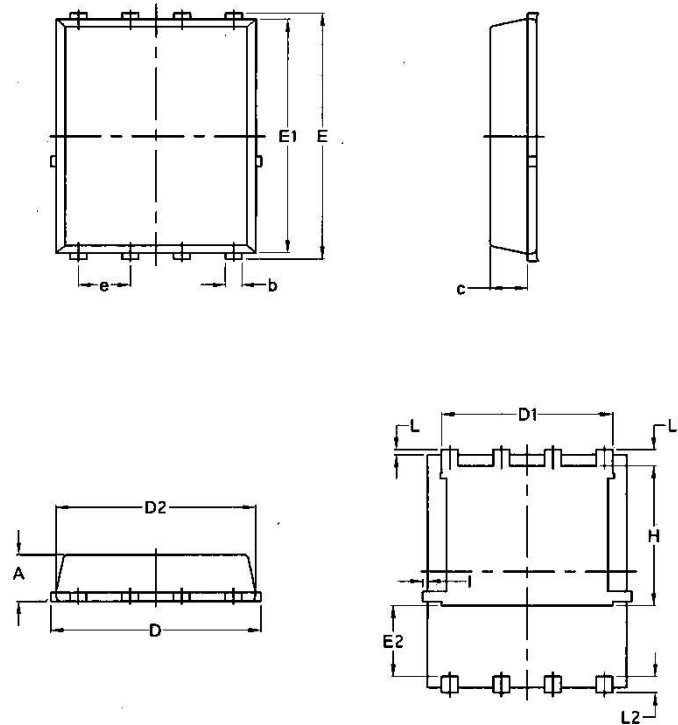


**Figure.11 Switching Time Waveform**



**Figure.12 Unclamped Inductive Switching Waveform**

PDFN5\*6-8L



Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070