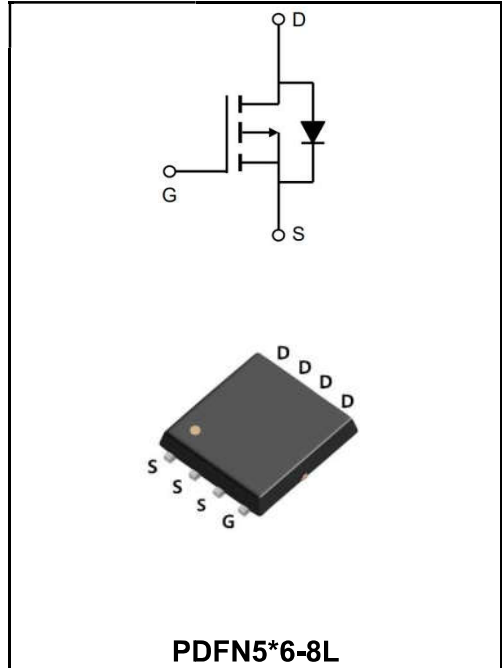


**-20V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-80A
<b>V<sub>DSS</sub></b>	-20V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-10V)</sub></b>	< 2.3mΩ ( <b>Type:1.8 mΩ</b> )



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW80P02NF	PDFN5*6-8L	YFW 80P02NF XXXXX	5000PCS/Tape

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

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V <sub>DS</sub>	-20	V
Gate - Source Voltage	V <sub>GS</sub>	±12	V
Drain Current- Continuous ( T <sub>C</sub> =25°C)	I <sub>D</sub>	-80	A
Drain Current- Continuous ( T <sub>C</sub> =70°C)	I <sub>D</sub>	-54	A
Drain Current- Pulsed <sup>1</sup>	I <sub>DM</sub>	-360	A
Power Dissipation ( T <sub>C</sub> =25°C)	P <sub>D</sub>	41.67	W
Power Dissipation – Derate above 25°C	P <sub>D</sub>	0.33	W/°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Thermal Resistance Junction-Ambient	R <sub>θJA</sub>	62	°C/W
Thermal Resistance Junction to Case	R <sub>θJC</sub>	3	°C/W

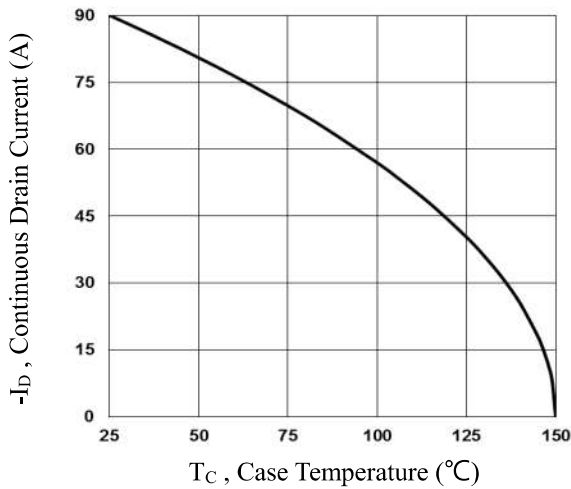
**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-20	-	-	<b>V</b>
$BV_{DSS}$ Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.008	-	<b>V/°C</b>
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.4	-0.6	-1.0	<b>V</b>
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-3.44	-	<b>mV/°C</b>
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-20A$	$R_{DS(on)}$	-	1.8	2.3	<b>mΩ</b>
	$V_{GS}=-2.5V, I_D=-20A$		-	2.1	2.6	
	$V_{GS}=-2.5V, I_D=-20A$		-	2.7	3.6	
Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	-1	<b>μA</b>
	$V_{DS}=-16V, V_{GS}=0V, T_J=125^\circ C$		-	-	-30	
Gate -Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	$I_{GSS}$	-	-	±500	<b>nA</b>
Forward Transconductance	$V_{DS}=-10V, I_D=-3A$	$g_{fs}$	-	30	-	<b>S</b>
Total Gate Charge <sup>2,3</sup>	$V_{DS}=-16V$ $V_{GS}=-4.5V$ $I_D=-5A$	$Q_g$	-	149	225	<b>nC</b>
Gate-Source Charge <sup>2,3</sup>		$Q_{gs}$	-	14.4	22	
Gate-Drain Charge <sup>2,3</sup>		$Q_{gd}$	-	42.8	65	
Turn-on delay time <sup>2,3</sup>	$V_{DD}=-15V$ $V_{GS}=-4.5V$ $I_D=-1A$ $R_G=25$	$t_{d(on)}$	-	21.2	42	<b>ns</b>
Rise Time <sup>2,3</sup>		$T_r$	-	20.6	40	
Turn-Off Delay Time <sup>2,3</sup>		$t_{d(OFF)}$	-	26	52	
Fall Time <sup>2,3</sup>		$t_f$	-	400	600	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	14000	21000	<b>pF</b>
Output Capacitance		$C_{oss}$	-	1670	2500	
Reverse Transfer Capacitance		$C_{rss}$	-	730	1100	
Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	$R_g$	-	2.6	-	<b>Ω</b>
Continuous Source Current	$V_G=V_D=0V$ , Force Current	$I_S$	-	-	-90	<b>A</b>
Pulsed Source Current		$I_{SM}$	-	-	-180	<b>A</b>
Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	-	-	-1	<b>V</b>

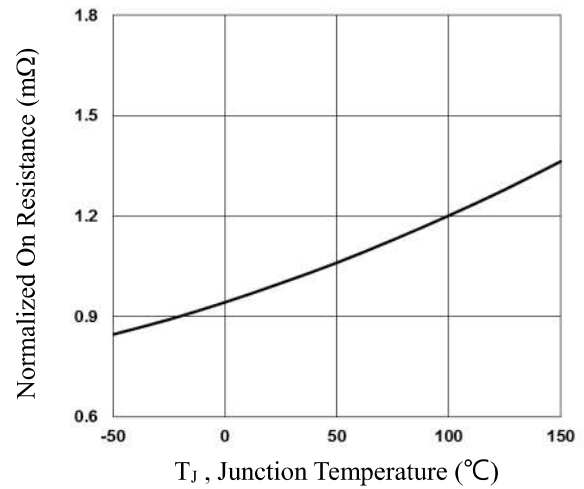
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

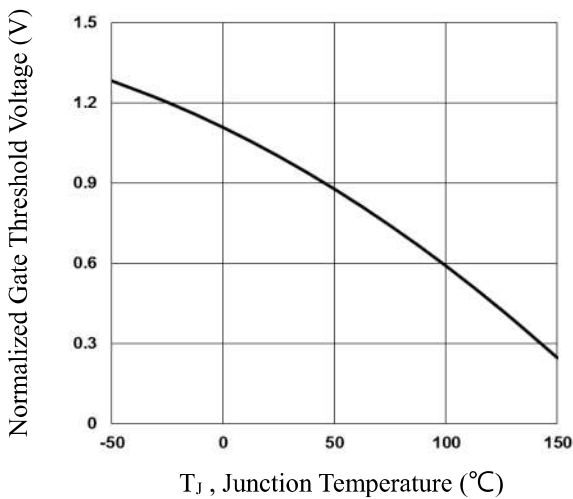
**Ratings and Characteristic Curves**



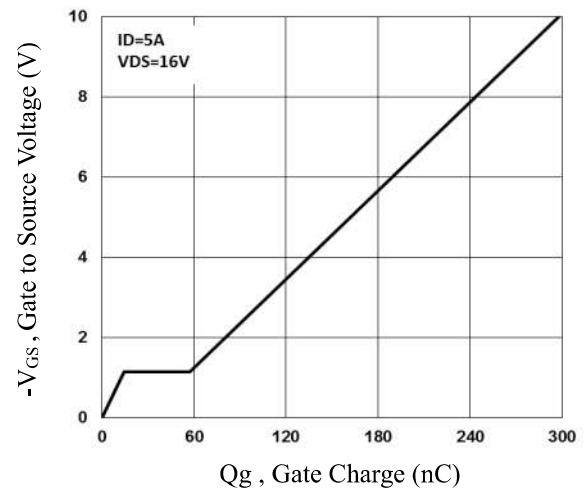
**Fig.1 Continuous Drain Current**



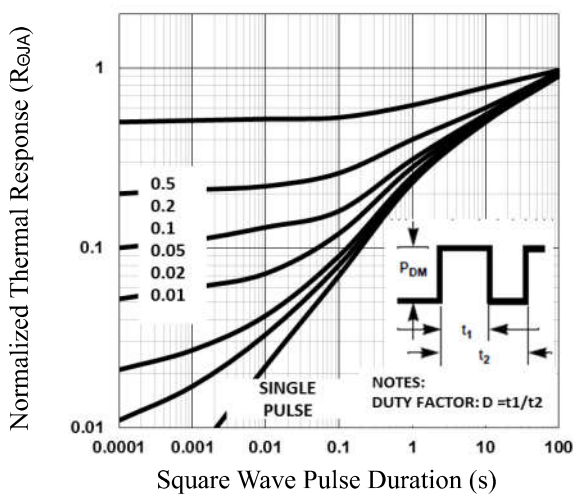
**Fig.2 Normalized RDSON vs. Tj**



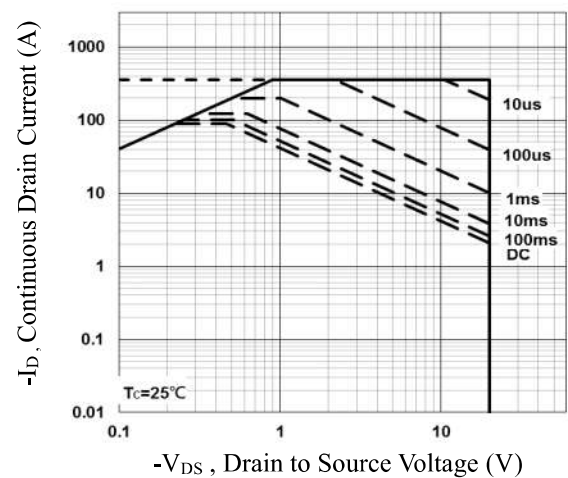
**Fig.3 Normalized Vth vs. Tj**



**Fig.4 Gate Charge Waveform**



**Fig.5 Normalized Transient Response**



**Fig.6 Maximum Safe Operation Area**

Ratings and Characteristic Curves

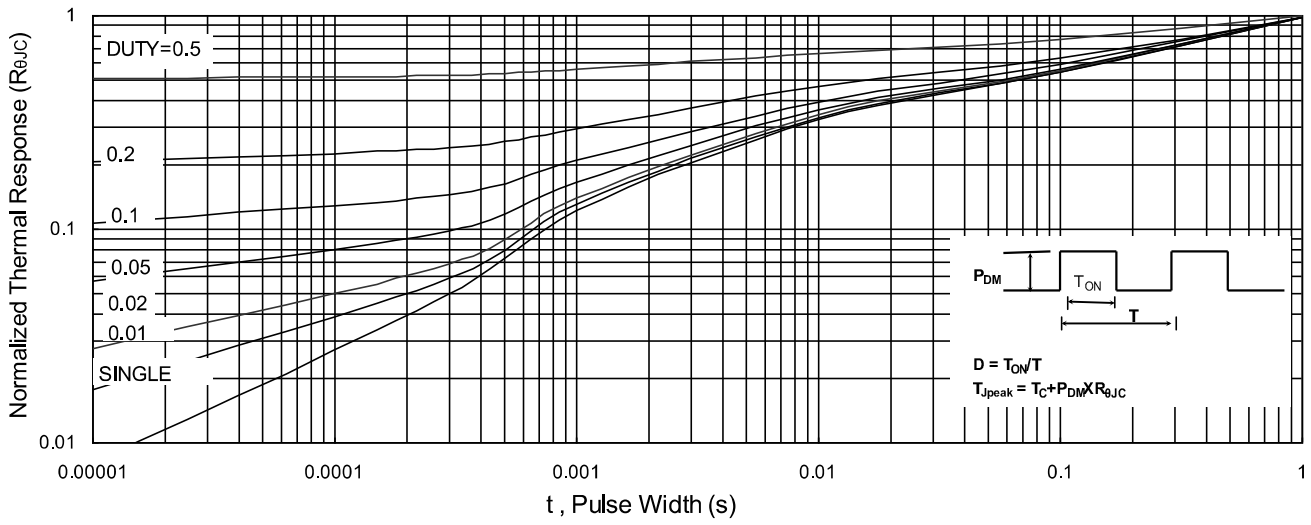


Fig.9 Normalized Maximum Transient Thermal Impedance

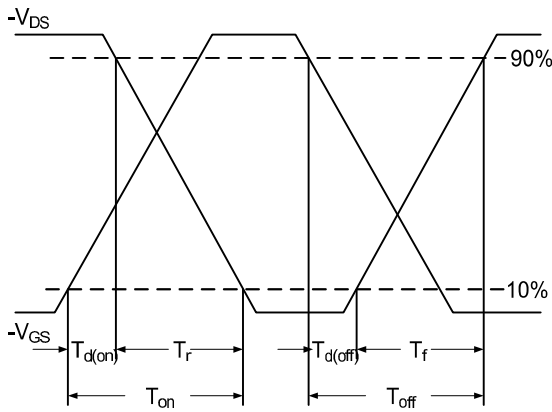


Fig.10 Switching Time Waveform

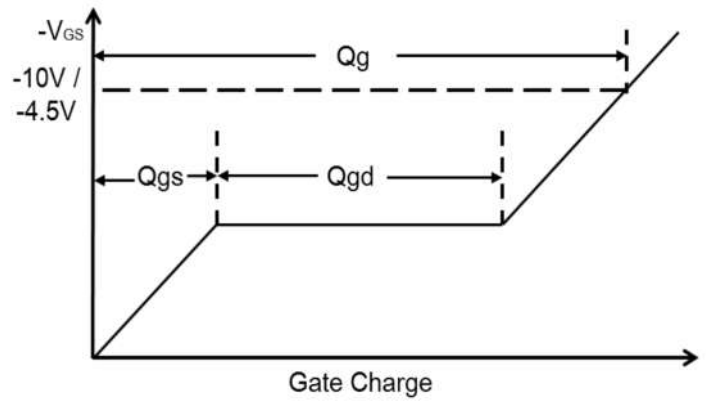
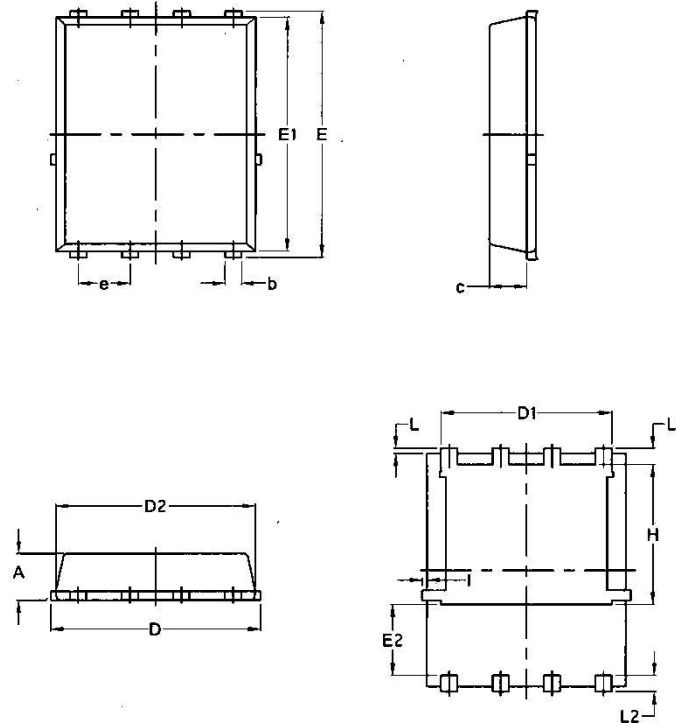


Fig.11 Unclamped Inductive Switching Waveform

**PDFN5\*6-8L**



Symbol	Common			
	mm		Inch	
	Mim	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