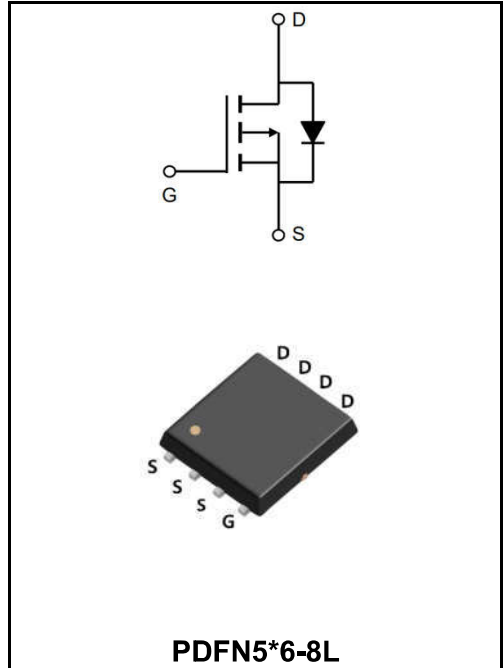


**-40V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-80A
<b>V<sub>DSS</sub></b>	-40V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-10V)</sub></b>	< -10mΩ ( <b>Type:7.0 mΩ</b> )



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW80P04NF	PDFN5*6-8L	YFW 80P04NF 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>	-40	<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>	-80	<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>	-56	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	-280	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	500	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	-50	<b>A</b>
Total Power Dissipation <sup>4</sup> @T <sub>c</sub> =25°C	<b>P<sub>D</sub></b>	52.1	<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>	2.4	<b>°C/W</b>

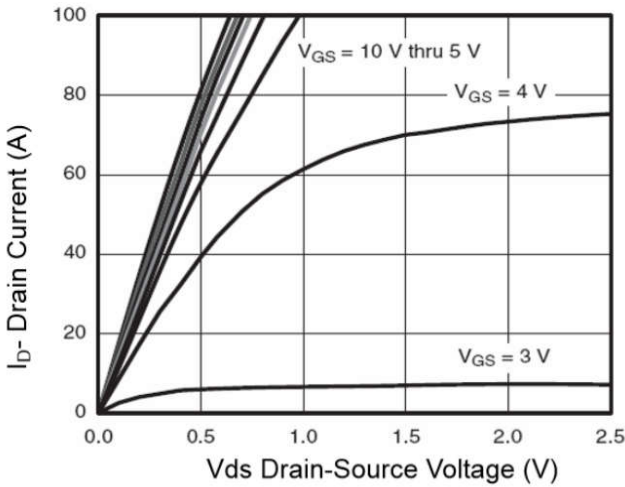
**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-40	-44	-	V
$BV_{DSS}$ Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.023	-	V/°C
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-10V, I_D=-12A$	$R_{DS(ON)}$	-	7.0	10	mΩ
	$V_{GS}=-4.5V, I_D=-12A$		-	9.0	15	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.2	-1.8	-2.5	V
Drain-Source Leakage Current	$V_{DS}=-40V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	μA
	$V_{DS}=-40V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Forward Transconductance	$V_{DS}=-15V, I_D=-12A$	$g_{fs}$	-	20	-	S
Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	$R_g$	-	7	14	Ω
Total Gate Charge(-4.5V)	$V_{DS}=-20V$ $V_{GS}=-10V$ $I_D=-12A$	$Q_g$	-	27.9	-	nC
Gate-Source Charge		$Q_{gs}$	-	7.7	-	
Gate-Drain Charge		$Q_{gd}$	-	7.5	-	
Turn-on delay time	$V_{DD}=-20V$ $V_{GS}=-10V$ $I_D=-12A$ $R_G=3.0\Omega$	$t_{d(on)}$	-	40	-	ns
Rise Time		$T_r$	-	35.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	100	-	
Fall Time		$t_f$	-	9.6	-	
Input Capacitance	$V_{DS}=-20V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	6500	-	pF
Output Capacitance		$C_{oss}$	-	790	-	
Reverse Transfer Capacitance		$C_{rss}$	-	605	-	
Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V$ , Force Current	$I_S$	-	-	-70	A
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	-	-	-1.2	V

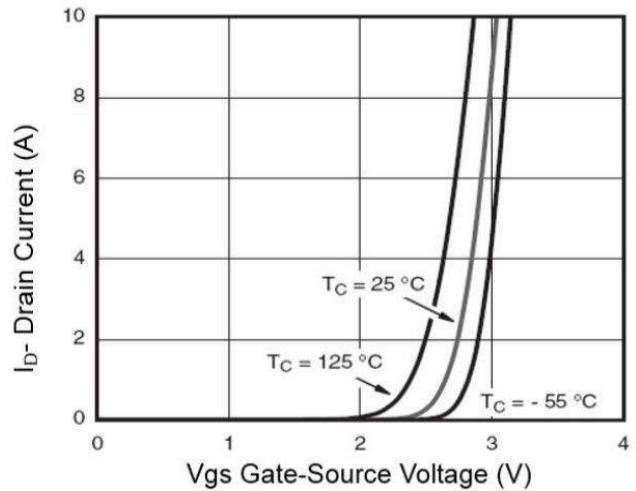
Note :

- 1、 The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$
- 3、 The EAS data shows Max. rating . The test condition is  $V_{DD}=-32V, V_{GS}=-10V, L=0.1mH, I_{AS}=-50A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

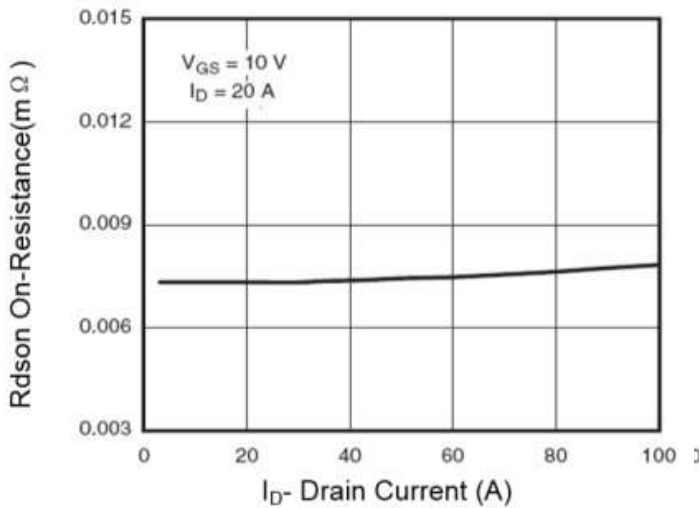
Ratings and Characteristic Curves



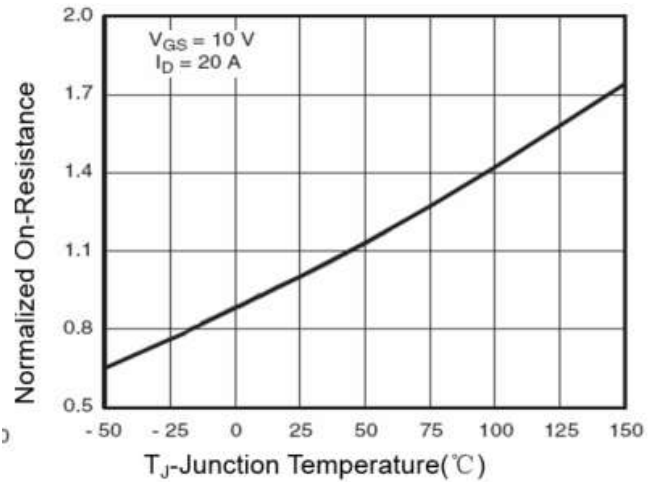
**Figure 1 Output Characteristics**



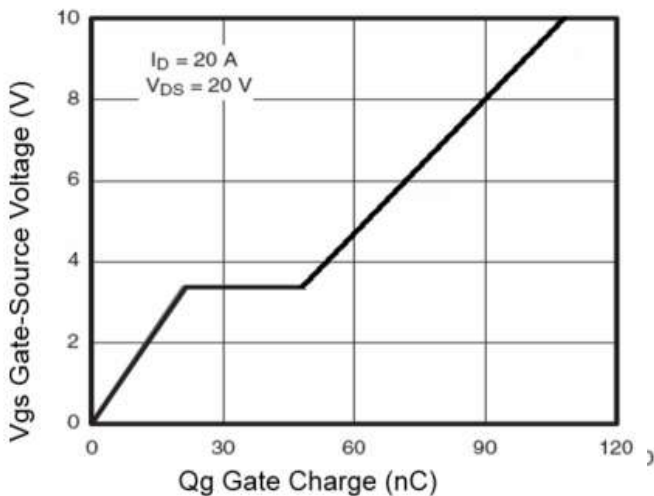
**Figure 2 Transfer Characteristics**



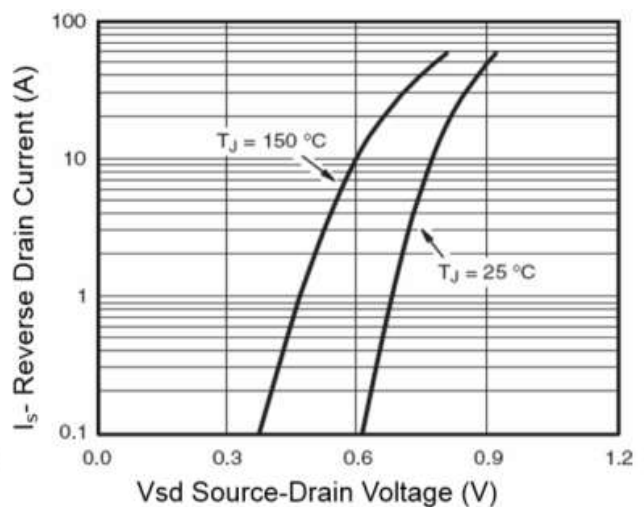
**Figure 3 Rdson- Drain Current**



**Figure 4 Rdson-Junction Temperature**



**Figure 5 Gate Charge**



**Figure 6 Source- Drain Diode Forward**

Ratings and Characteristic Curves

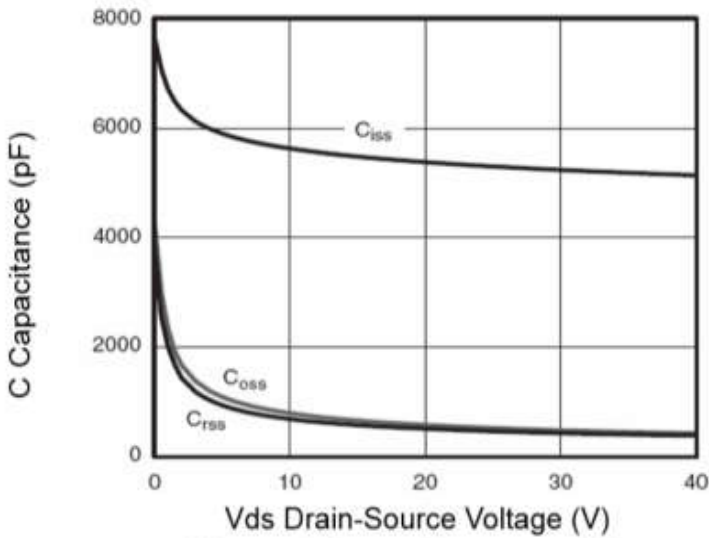


Figure 7 Capacitance vs Vds

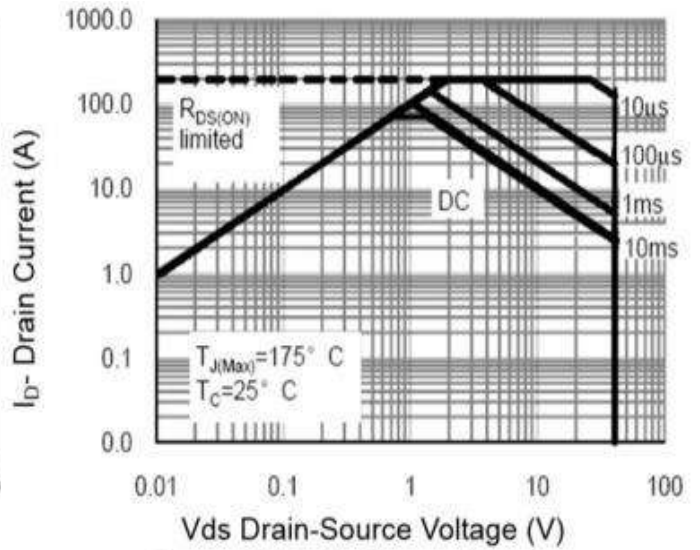


Figure 8 Safe Operation Area

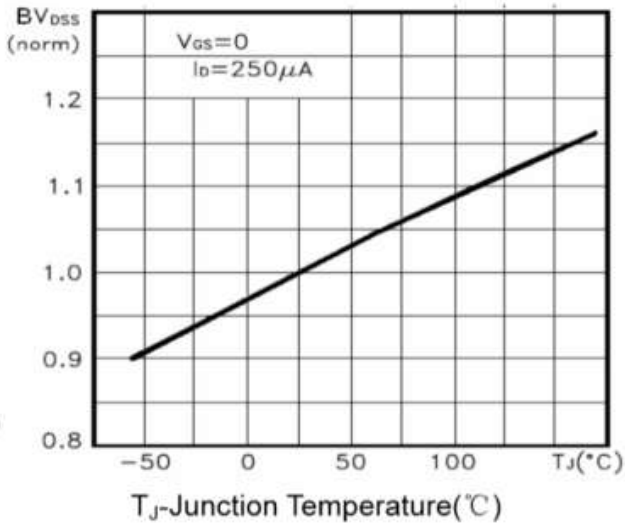


Figure 9  $BV_{DSS}$  vs Junction Temperature

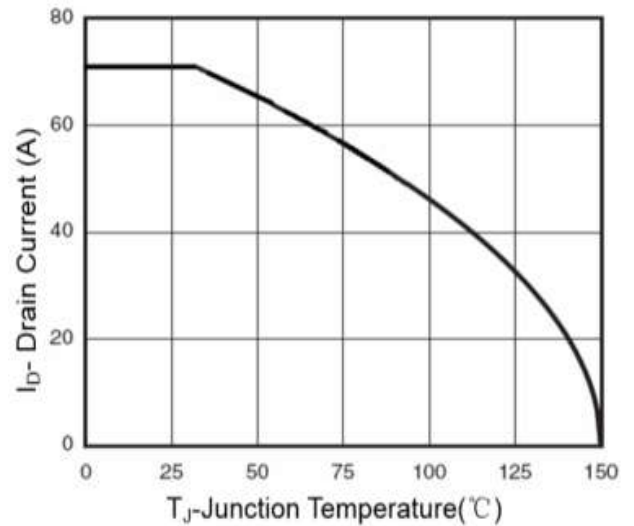


Figure 10  $I_D$  Current Derating vs Junction Temperature

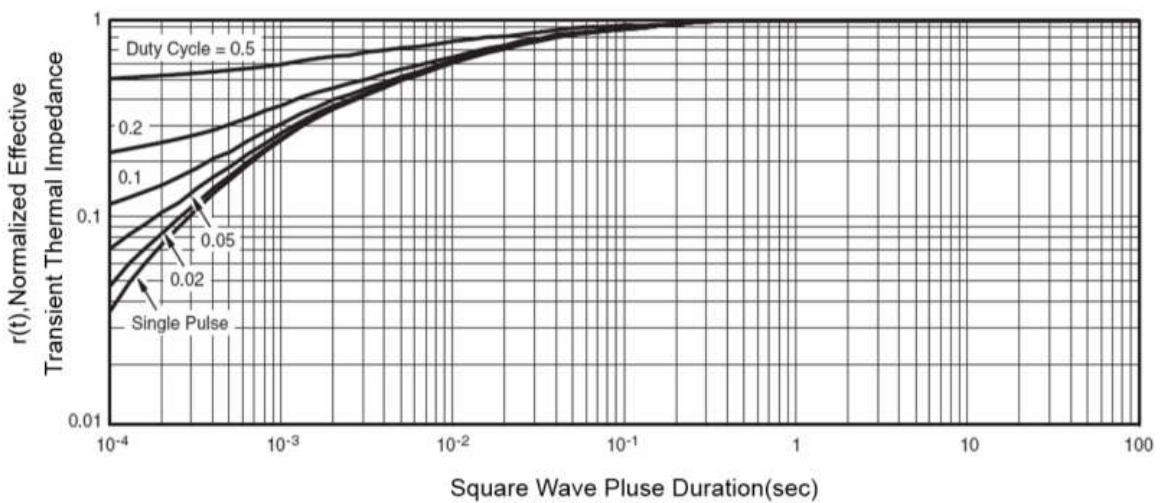
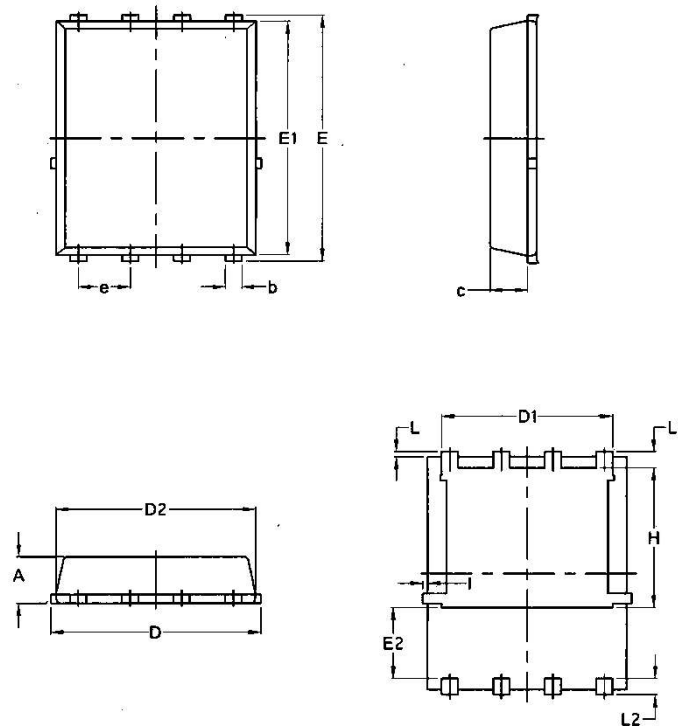


Figure 11 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions Millimeters

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