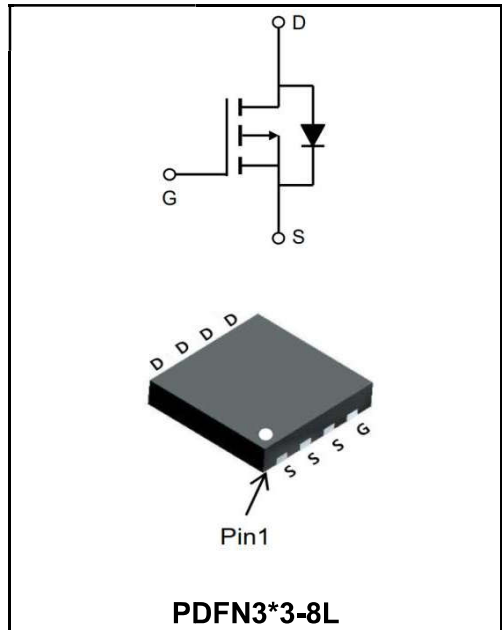


**-30V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-70A
<b>V<sub>DSS</sub></b>	-30V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-10V)</sub></b>	< 8.0mΩ ( <b>Type:5.8 mΩ</b> )



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW70P03DF	PDFN3*3-8L	YFW 70P03DF 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>	-70	<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>	-57	<b>A</b>
Pulsed Drain Current 2	<b>I<sub>DM</sub></b>	-200	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	125	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	-40	<b>A</b>
Total Power Dissipation <sup>4</sup> @T <sub>C</sub> =25°C	<b>P<sub>D</sub></b>	69	<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>	85	<b>°C/W</b>
Thermal Resistance Junction-Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	1.6	<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	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-30	-34	-	V
$BV_{DSS}$ Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.0232	-	V/°C
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-20A$	$R_{DS(on)}$	-	5.8	8.0	mΩ
	$V_{GS}=-4.5V, I_D=-15A$		-	8.0	11	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.2	-1.4	-2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	4.6	-	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
Forward Transconductance	$V_{DS}=-5V, I_D=-30A$	$g_{fs}$	-	30	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	$R_g$	-	9.8	-	Ω
Total Gate Charge(-4.5V)	$V_{DS}=-15V$ $V_{GS}=-4.5V$ $I_D=-20A$	$Q_g$	-	35	-	nC
Gate-Source Charge		$Q_{gs}$	-	9.9	-	
Gate-Drain Charge		$Q_{gd}$	-	10.5	-	
Turn-on delay time	$V_{DD}=-15V$ $V_{GS}=-10V$ $I_D=-20A$ $R_G=3.0\Omega$	$t_{d(on)}$	-	10.8	-	ns
Rise Time		$T_r$	-	13.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	73	-	
Fall Time		$t_f$	-	35	-	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	3520	-	pF
Output Capacitance		$C_{oss}$	-	465	-	
Reverse Transfer Capacitance		$C_{rss}$	-	370	-	
Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	$I_S$	-	-	-70	A
Pulsed Source Current		$I_{SM}$	-	-	-130	A
Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	-	-	-1.3	V
Reverse Recovery Time	$I_F=-20A, dI/dt=100A/\mu s,$ $T_J=25^\circ C$	$t_{rr}$	-	25	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	10	-	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 .The EAS data shows Max. rating .
- 3、 The power dissipation is limited by 175°C junction temperature
- 4、 EAS condition:  $T_J=25^\circ C, V_{DD}=-24V, V_G=-10V, R_G=7\Omega, L=0.1mH, I_{AS}=-40A$
- 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

Typical Characteristics

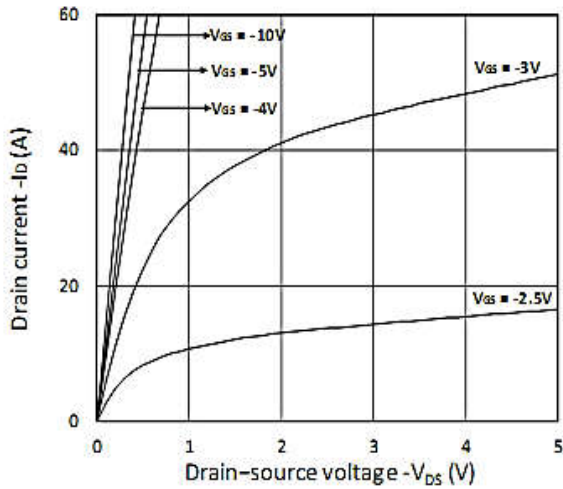


Figure 1. Output Characteristics

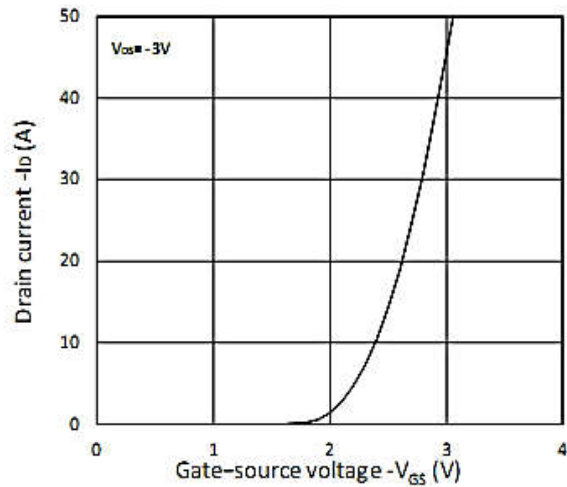


Figure 2. Transfer Characteristics

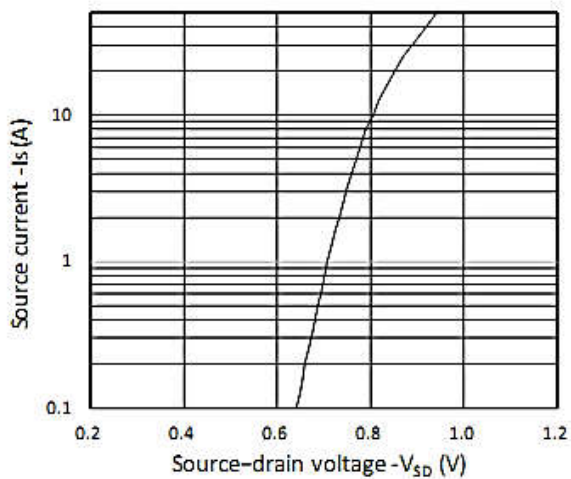


Figure 3. Forward Characteristics of Reverse

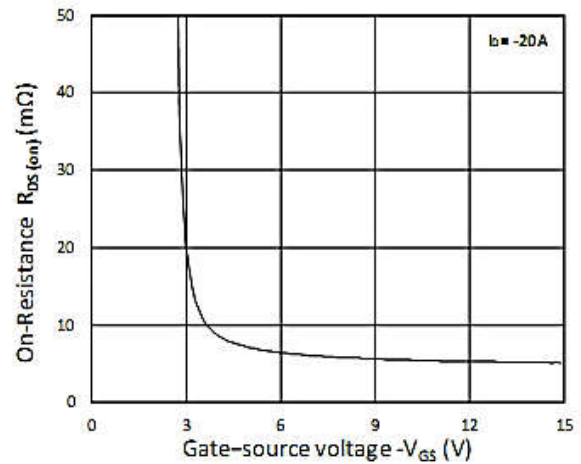


Figure 4.  $R_{DS(ON)}$  vs.  $V_{GS}$

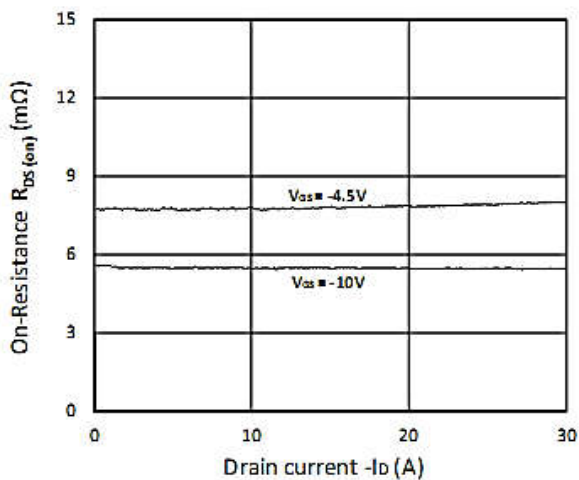


Figure 5.  $R_{DS(ON)}$  vs.  $I_D$

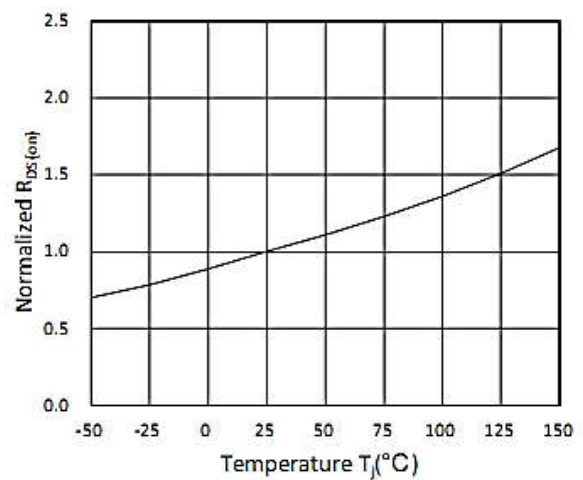


Figure 6. Normalized  $R_{DS(on)}$  vs. Temperature

Ratings and Characteristic Curves

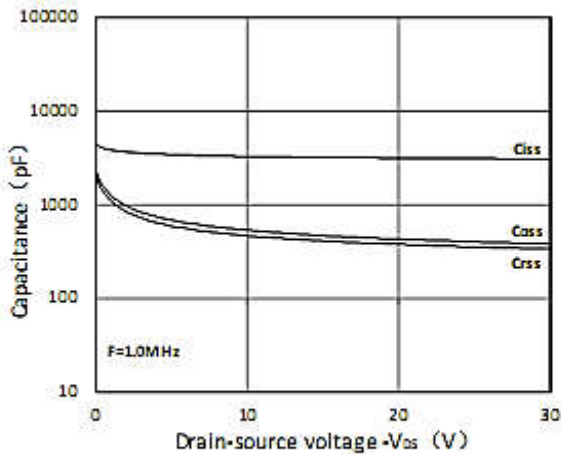


Figure 7. Capacitance Characteristics

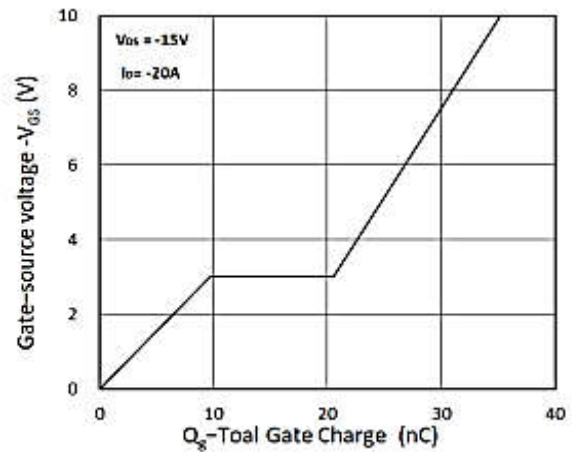


Figure 8. Gate Charge Characteristics

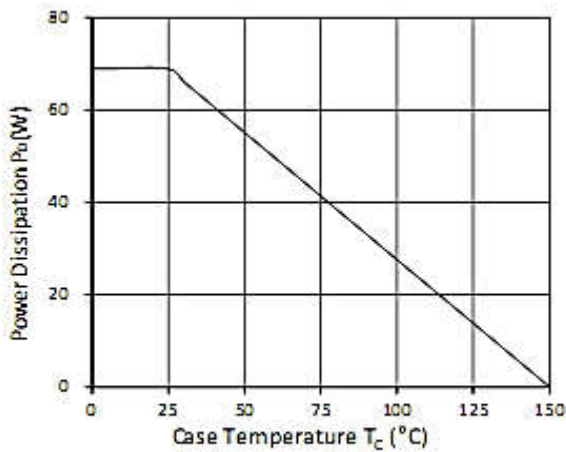


Figure 9. Power Dissipation

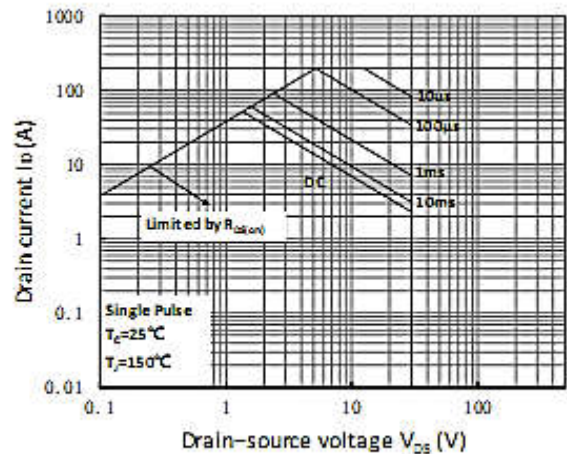


Figure 10. Safe Operating Area

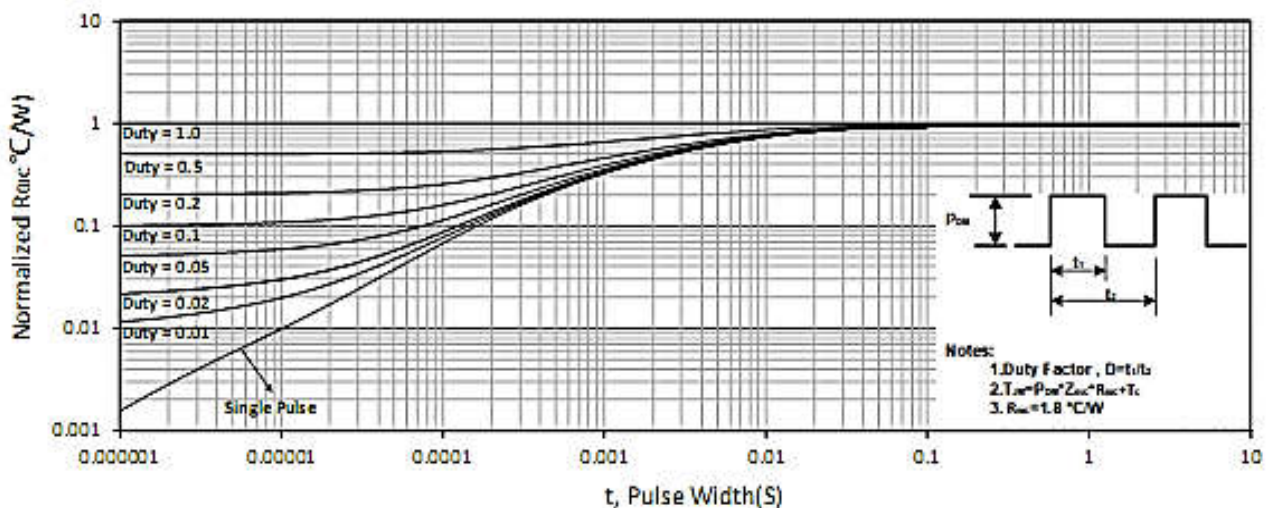
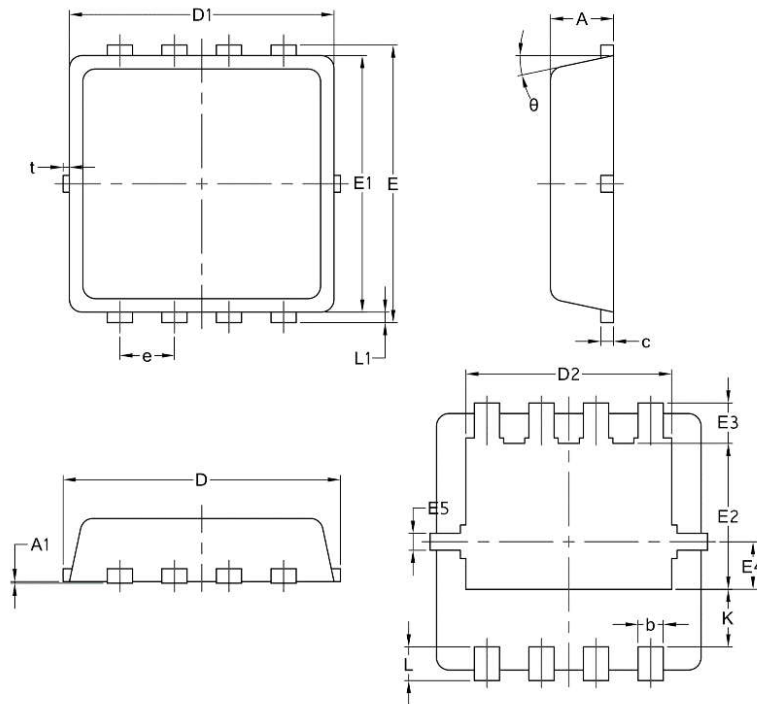


Figure 11. Normalized Maximum Transient Thermal Impedance

**PDFN3\*3-8L**



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14