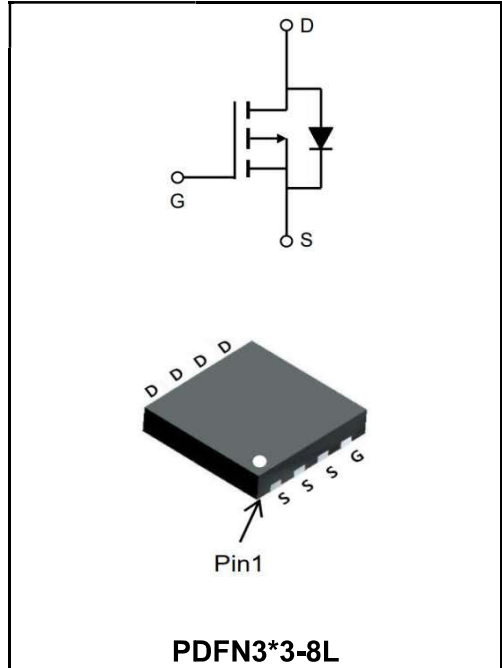


**-12V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-30A
<b>V<sub>DSS</sub></b>	-12V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-4.5V)</sub></b>	< 7.2mΩ ( <b>Type:5.8 mΩ</b> )



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW30P01DF	PDFN3*3-8L	YFW 30P01DF 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>	-12	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	± 12	<b>V</b>
Continuous Drain Current, V <sub>GS</sub> @ -4.5V <sup>1</sup> @T <sub>C</sub> =25°C	<b>I<sub>D</sub></b>	-30	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ -4.5V <sup>1</sup> @T <sub>C</sub> =70°C	<b>I<sub>D</sub></b>	-28	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	-110	<b>A</b>
Total Power Dissipation <sup>3</sup> @T <sub>C</sub> =25°C	<b>P<sub>D</sub></b>	39	<b>W</b>
Total Power Dissipation <sup>3</sup> @T <sub>C</sub> =70°C	<b>P<sub>D</sub></b>	29	<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>	75	<b>°C/W</b>
Thermal Resistance Junction-Ambient <sup>1</sup> (t ≤ 10s)	<b>R<sub>θJA</sub></b>	40	<b>°C/W</b>
Thermal Resistance Junction-Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	4.2	<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	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-12	-18	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.012	-	V/°C
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-4.5V, I_D=-15A$	$R_{DS(ON)}$	-	5.8	72	mΩ
	$V_{GS}=-2.5V, I_D=-10A$		-	7.5	11	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.4	-0.7	-1.0	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	2.94	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	μA
Gate -Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Forward Transconductance	$V_{DS}=-5V, I_D=-10A$	$g_{fs}$	-	43	-	S
Total Gate Charge(-4.5V)	$V_{DS}=-15V$ $V_{GS}=-4.5V$ $I_D=-10A$	$Q_g$	-	63	-	nC
Gate-Source Charge		$Q_{gs}$	-	9.1	-	
Gate-Drain Charge		$Q_{gd}$	-	13	-	
Turn-on delay time	$V_{DD}=-10V$ $V_{GS}=-4.5V$ $I_D=-10A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	15.8	-	ns
Rise Time		$T_r$	-	76.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	193	-	
Fall Time		$t_f$	-	186.4	-	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	5783	-	pF
Output Capacitance		$C_{oss}$	-	509	-	
Reverse Transfer Capacitance		$C_{rss}$	-	431	-	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V$ , Force Current	$I_S$	-	-	-10.7	A
Pulsed Source Current <sup>2,4</sup>		$I_{SM}$	-	-	-60	A
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	$V_{SD}$	-	-	-1.2	V
Reverse Recovery Time	$I_F=-10A, dI/dt=100A/\mu s,$ $T_J=25^\circ C$	$t_{rr}$	-	27	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	17.8	-	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z copper.
- 2、 The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

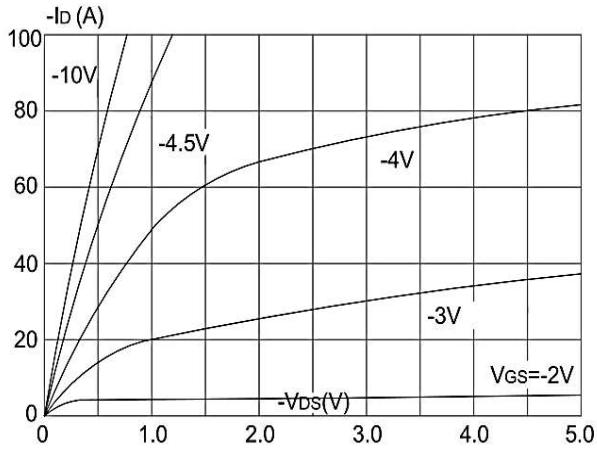


Figure 1: Output Characteristics

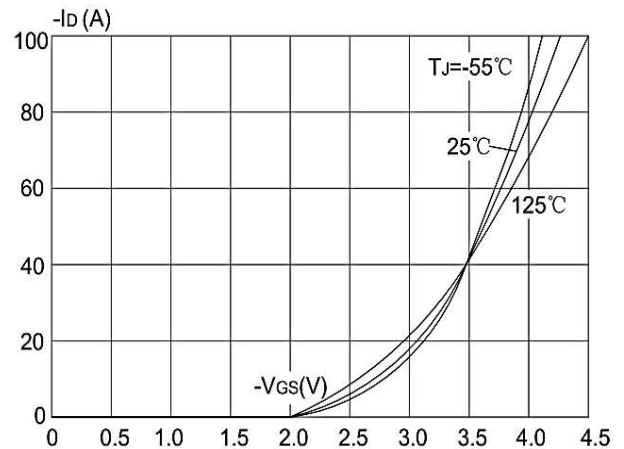


Figure 2: Typical Transfer Characteristics

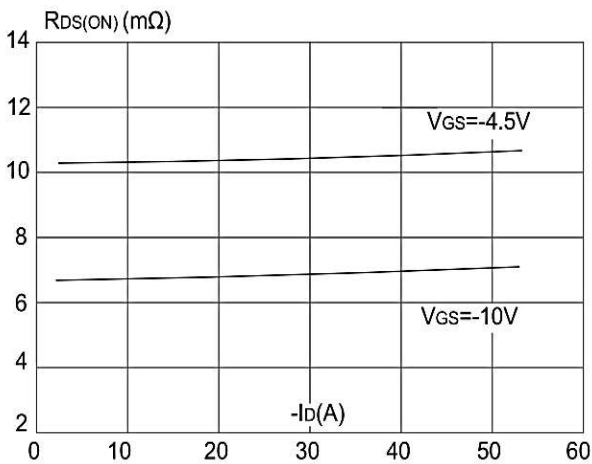


Figure 3: On-resistance vs. Drain Current

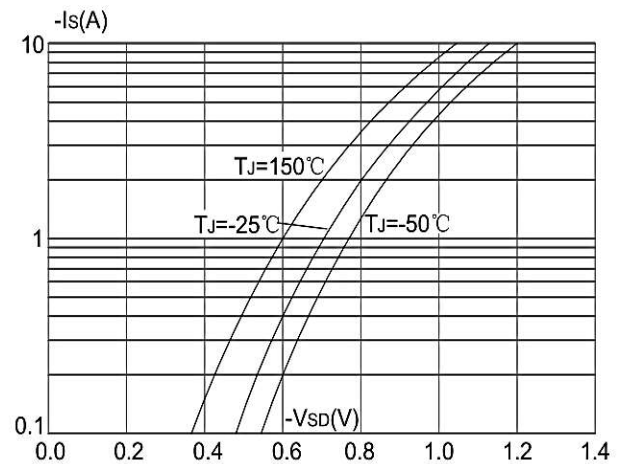


Figure 4: Body Diode Characteristics

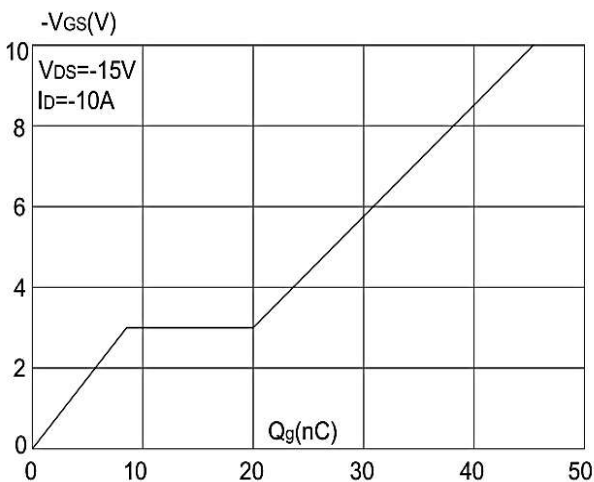


Figure 5: Gate Charge Characteristics

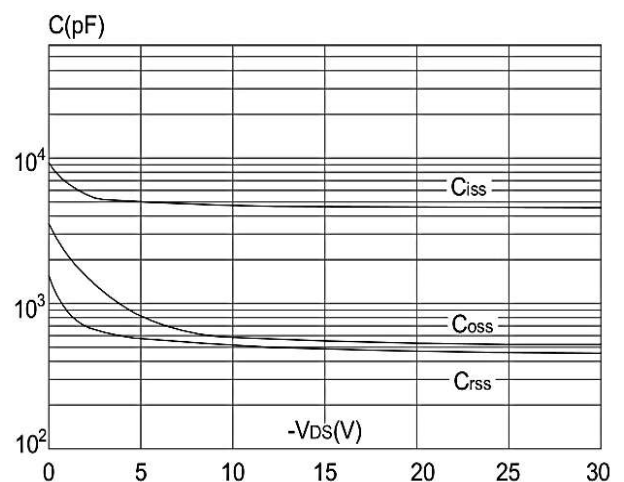
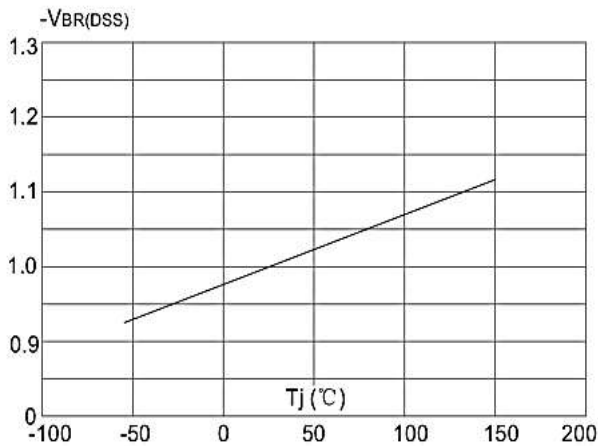
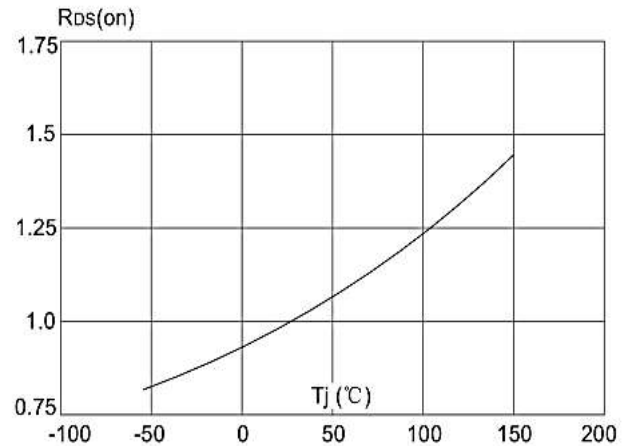


Figure 6: Capacitance Characteristics

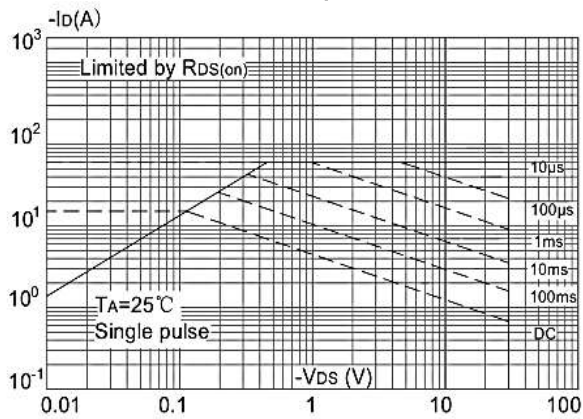
**Ratings and Characteristic Curves**



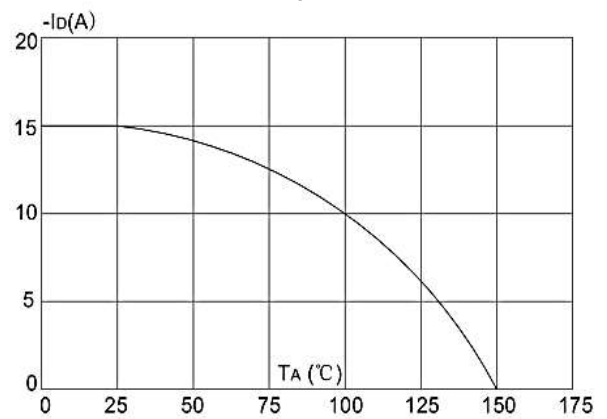
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



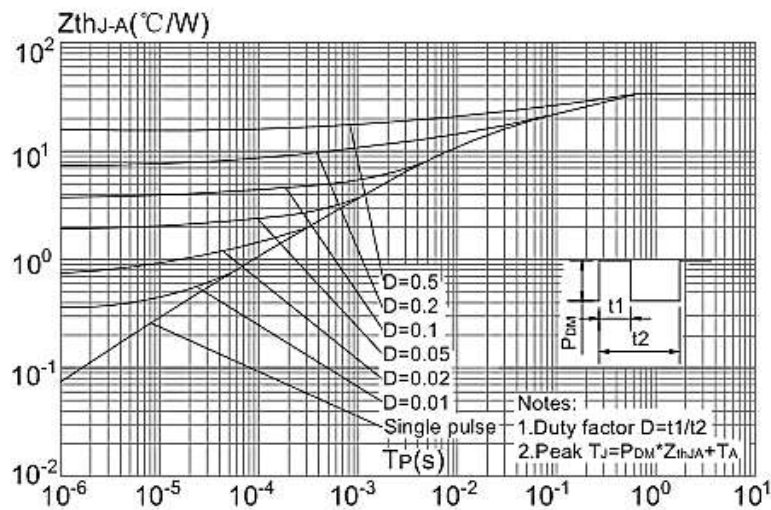
**Figure 8: Normalized on Resistance vs. Junction Temperature**



**Figure 9: Maximum Safe Operating Area vs. Case Temperature**

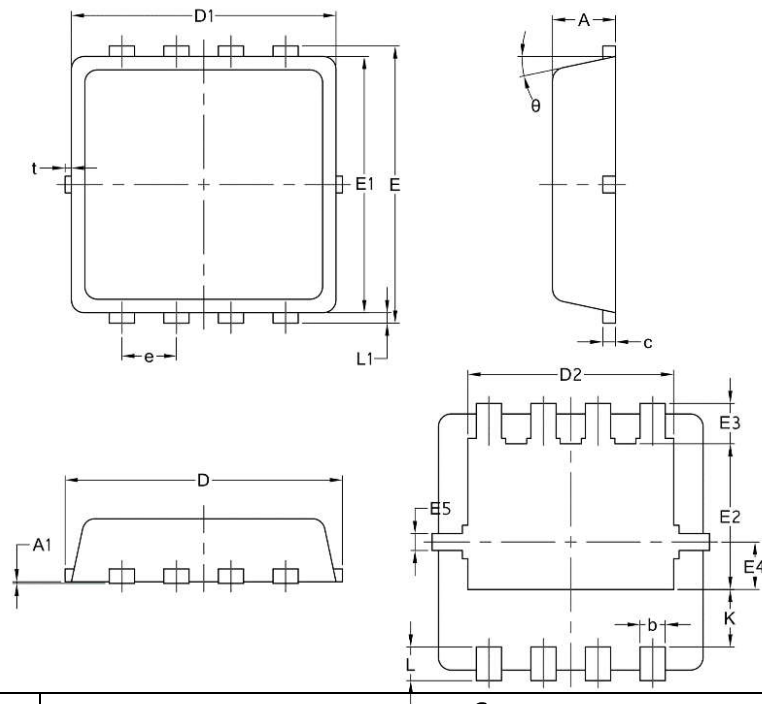


**Figure 10: Maximum Continuous Drain Current vs. Case Temperature**



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

**DFN3\*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