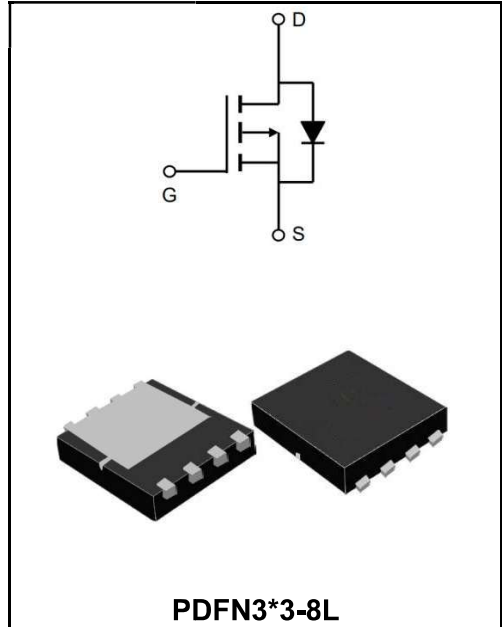


-30V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-40A
V_{DSS}	-30V
R_{DS(on)-typ(@V_{GS}=-10V)}	< 16mΩ (Type: 10.5 mΩ)



Application

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW40P03DF	PDFN3*3-8L	YFW 40P03DF XXXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ -10V ¹ @T _A =25°C	I_D	-40	A
Continuous Drain Current, V _{GS} @ -10V ¹ @T _A =70°C	I_D	-23	A
Pulsed Drain Current ²	I_{DM}	-120	A
Single Pulse Avalanche Energy ³	E_{AS}	68	mJ
Avalanche Current	I_{AS}	-29.4	A
Total Power Dissipation ⁴ @T _A =25°C	P_D	3.1	W
Total Power Dissipation ⁴ @T _A =70°C	P_D	2	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹	R_{θJA}	75	°C/W
Thermal Resistance Junction-Ambient ¹ (t ≤10s)	R_{θJA}	40	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	24	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	V(BR)DSS	-30	-32.5	-	V
Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	I_{DSS}	-	-	-1	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	V_{GS(th)}	-1.2	-1.5	-2.5	V
Static Drain-Source on-Resistance note3	$V_{GS}=-10V, I_D=-10A$	R_{DS(on)}	-	10.5	16	mΩ
	$V_{GS}=-4.5V, I_D=-5A$		-	16	20	
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	R_g	4.9	7.0	9.1	Ω
Input Capacitance	$V_{DS}=-24V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2130	-	pF
Output Capacitance		C_{oss}	-	280	-	
Reverse Transfer Capacitance		C_{rss}	-	252	-	
Total Gate Charge	$V_{DS}=-24V$ $V_{GS}=-10V$ $I_D=-1A$	Q_g	-	22	-	nC
Gate-Source Charge		Q_{gs}	-	4	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	5.8	-	
Turn-on delay time	$V_{DD}=-24V$ $V_{GS}=-10V$ $I_D=-1A$ $R_{GEN}=7.0\Omega$	t_{d(on)}	-	9	-	ns
Turn-on Rise Time		T_r	-	13	-	
Turn-Off Delay Time		t_{d(OFF)}	-	48	-	
Turn-Off Fall Time		t_f	-	20	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	-29.5	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	-44	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-1A$	V_{SD}	-	-0.74	-1.2	V

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 .The EAS data shows Max. rating .
- 3、 The power dissipation is limited by 175°C junction temperature
- 4、 EAS condition: T_J=25°C, V_{DD}= -24V, V_G= -10V, R_G=7Ω, L=0.1mH, I_{AS}= -29.5A
- 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

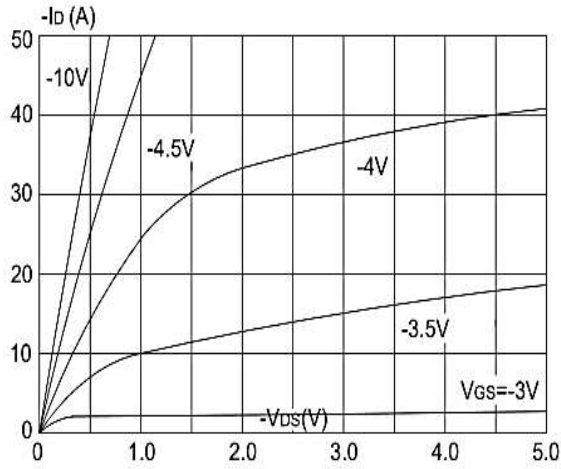


Figure1: Output Characteristics Figure

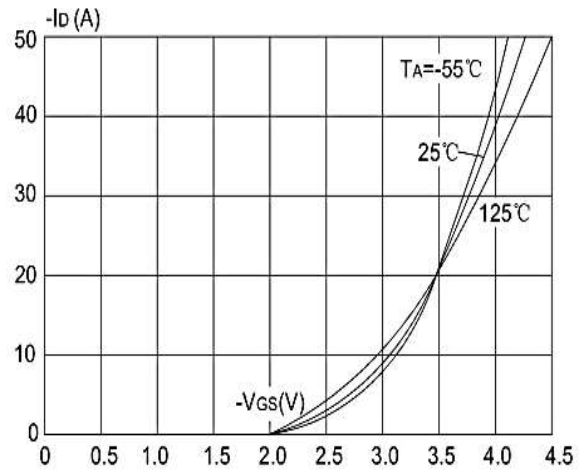


Figure2: Typical Transfer Characteristics

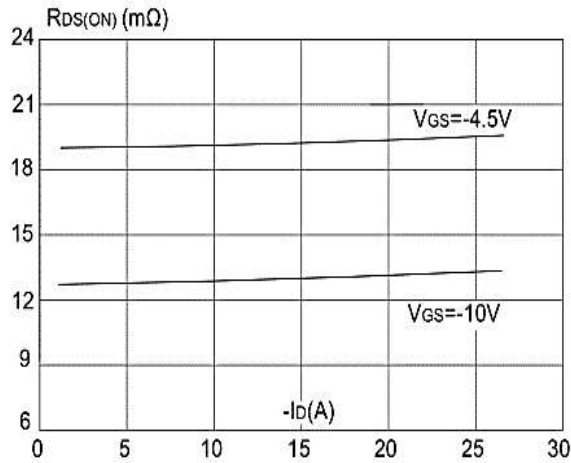


Figure 3: On-resistance vs. Drain Current

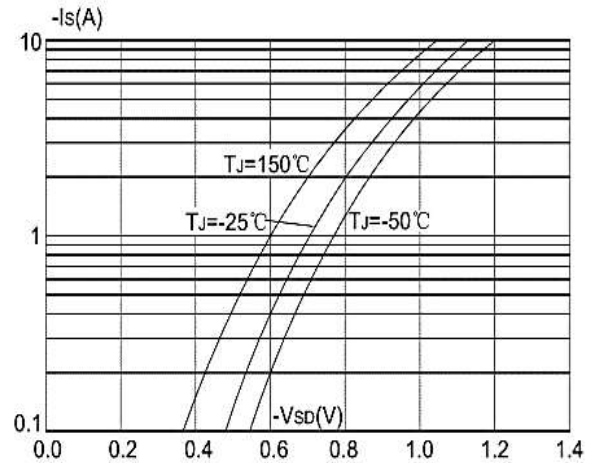


Figure 4: Body Diode Characteristics

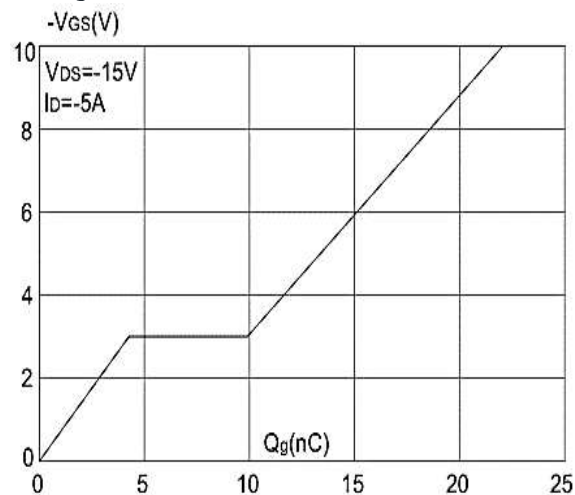


Figure 5: Gate Charge Characteristics

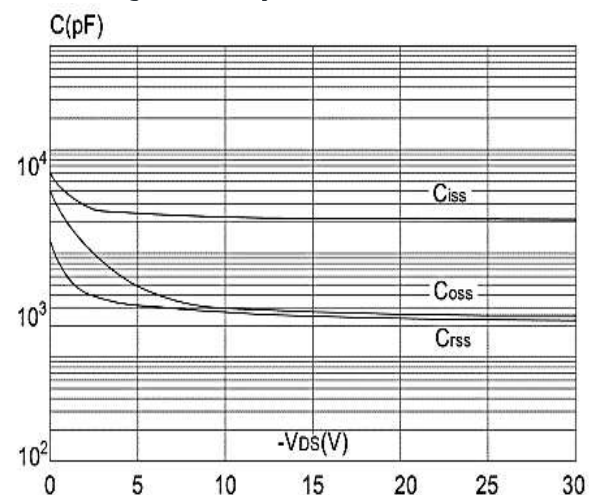


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

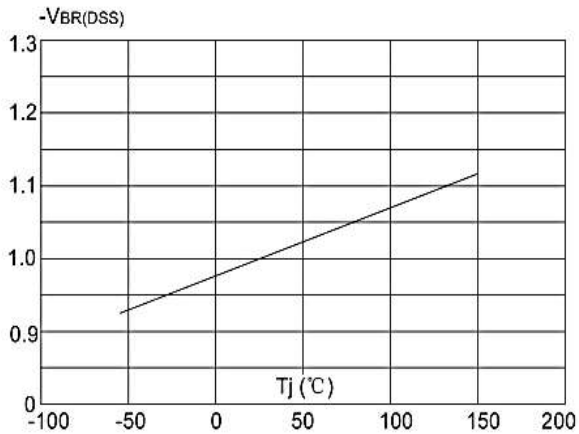


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

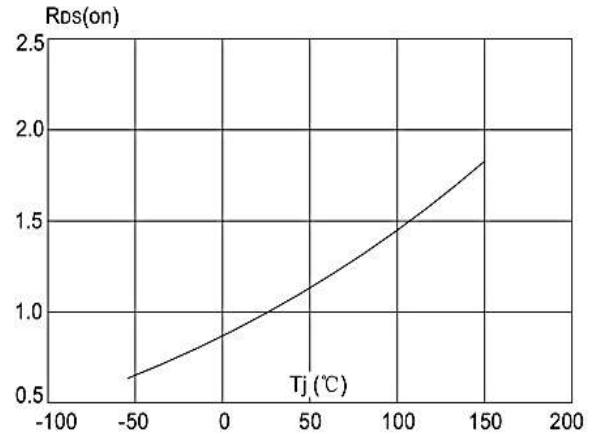


Figure 8: Normalized on Resistance vs. Junction Temperature

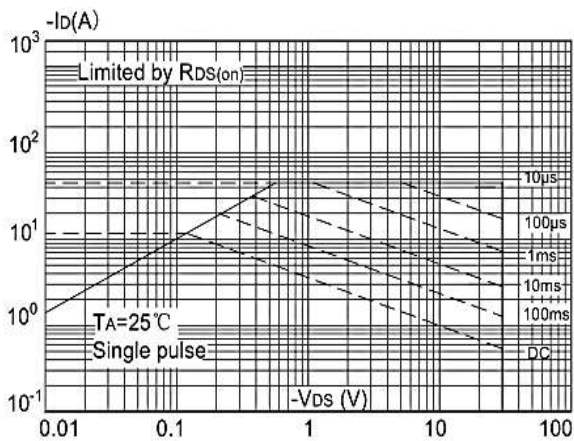


Figure 9: Maximum Safe Operating Area

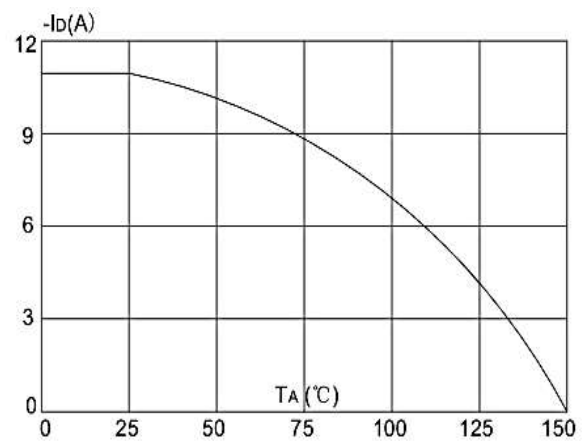


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

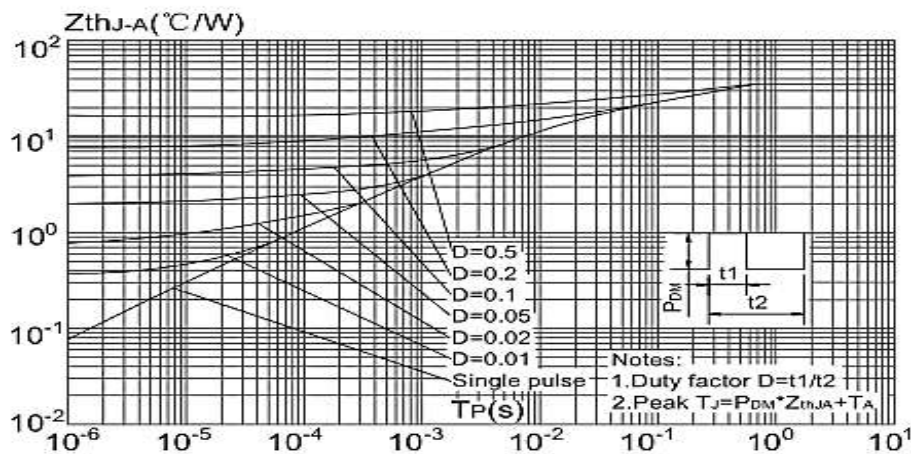
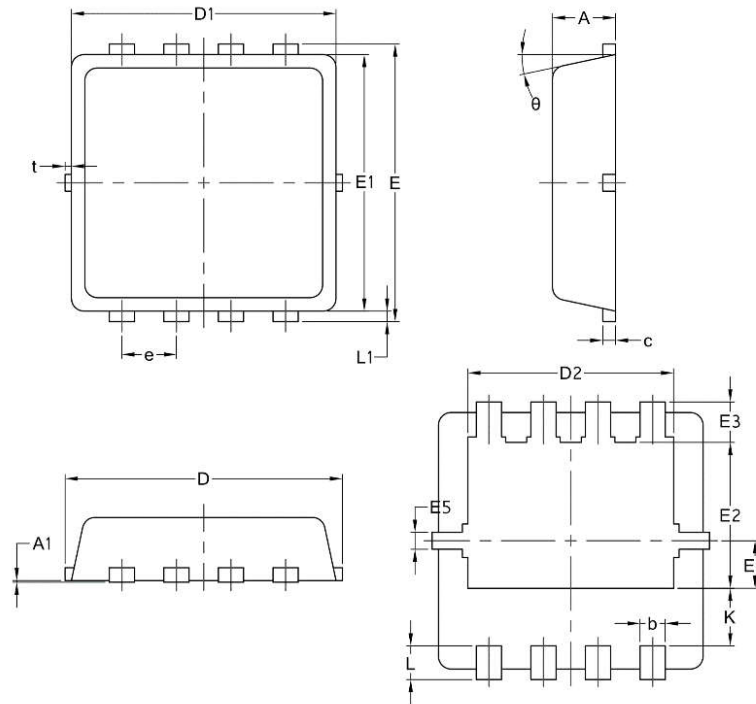


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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