

120V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

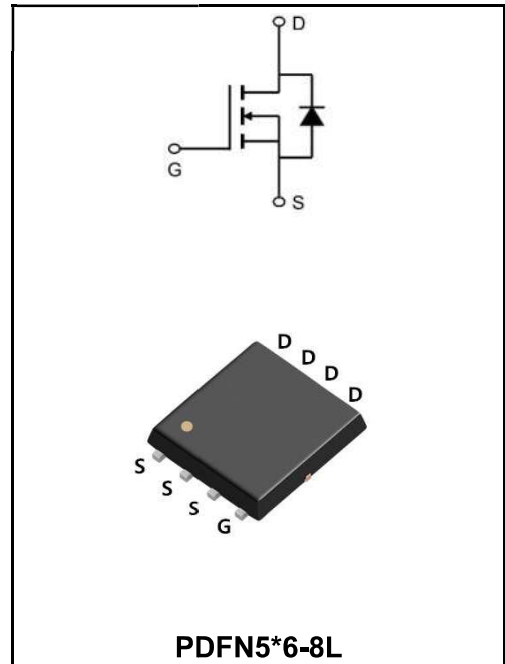
I_D	120A
V_{DSS}	120V
R_{DS(on)-typ}(@V_{GS}=10V)	< 6.8mΩ (Type:6.0 mΩ)

Features

◆YFW-SGT technology

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG120N12NF	PDFN5*6-8L	YFW 120N12NF XXXXX	5000PCS/Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	120	V
Continuous Drain Current ¹ @T _A =25°C	I_D	120	A
Continuous Drain Current ¹ @T _A =70°C	I_D	70	A
Pulsed Drain Current	IDM^{a1}	320	A
Single Pulse Avalanche Energy	EASa2	240	mJ
Single pulse avalanche current	I_{AR}	40	A
Gate - Source Voltage	V_{GS}	±20	V
Power Dissipation	P_D	125	W
Operating Junction and Storage Temperature Range	T_J ,T_{STG}	-55 to +150	°C
Maximum Temperature for Soldering	T_L	300	°C
Thermal Resistance Junction-to-Case	R_{θJC}	1.0	°C/W
Thermal Resistance Junction-to-Ambient	R_{θJA}	50	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	VDSS	120	-	-	V
Drain to Source Leakage Current	$V_{DS}=120V, V_{GS}=0V$	IDSS	-	-	1	μA
Gate to Source Forward Leakage	$V_{GS}=+20V$	IGSS(F)	-	-	100	nA
Gate to Source Reverse Leakage	$V_{GS}=-20V$	IGSS(R)	-	-	-100	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	VGS(th)	2.5	3.0	3.5	V
Drain-to-source on- resistance	$V_{GS}=10V, I_D=20A$	RDS(ON)1	-	6.0	6.8	mΩ
Forward Transconductance	$V_{DS}=5V, I_D=50A$	gfs	-	130	-	S
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=1.0MHz$	Ciss	-	4282	-	pF
Output Capacitance		Coss	-	429	-	
Reverse Transfer Capacitance		Crss	-	17	-	
Gate resistance		Rg	-	2.5	-	
Turn-on delay time	$I_D=20A$ $V_{DS}=50V$ $V_{GS}=10V$ $R_G=5\Omega$	td(on)	-	20	-	ns
Rise Time		Tr	-	11	-	
Turn-Off Delay Time		td(OFF)	-	55	-	
Fall Time		tf	-	28	-	
Total Gate Charge	$I_D=20A$ $V_{DS}=50V$ $V_{GS}=0\sim 10V$	Qg	-	61.4	-	nC
Gate-Source Charge		Qgs	-	17.4	-	
Gate-Drain Charge		Qgd	-	14.1	-	
Diode forward current	$T_C=25^\circ C$	IS	-	-	100	A
Diode Pulse Current		ISM	-	-	320	A
Diode Forward Voltage	$I_S=6A, V_{GS}=0V$	VSD	-	-	1.2	V
Reverse Recovery Time	$I_S=20A, V_{DD}=50V$ $dI/dt=100A/\mu s$	trr	-	100	-	ns
Reverse Recovery Charge		Qrr	-	250	-	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 $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is VDD=50V, L=0.3mH, Rg=25Ω, Starting TJ=25 °C
- 4、 The power dissipation is limited by 150°C junction temperature

Ratings and Characteristic Curves

Typical Characteristics

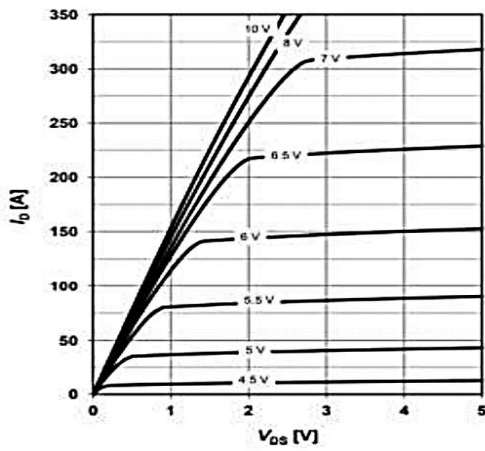


Figure1: output characteristics

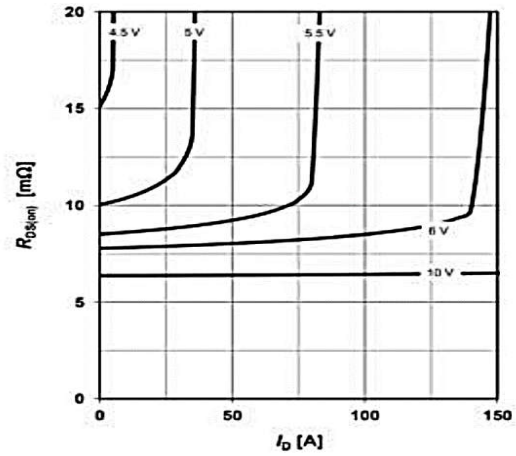


Figure2: Typical drain-source on resistance

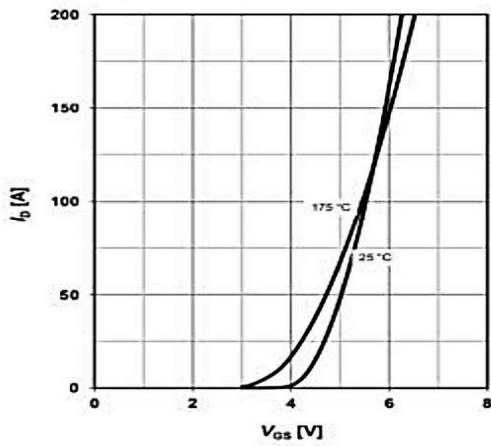


Figure3: transfer characteristics

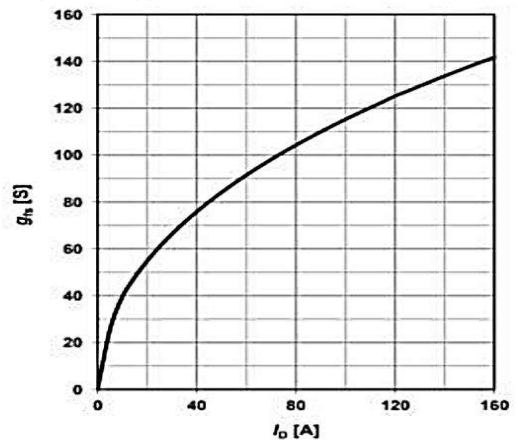


Figure4: forward transconductance

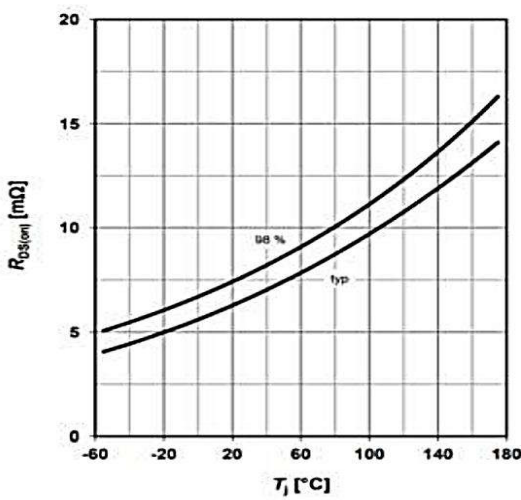


Figure5: Drain-source on-state resistance

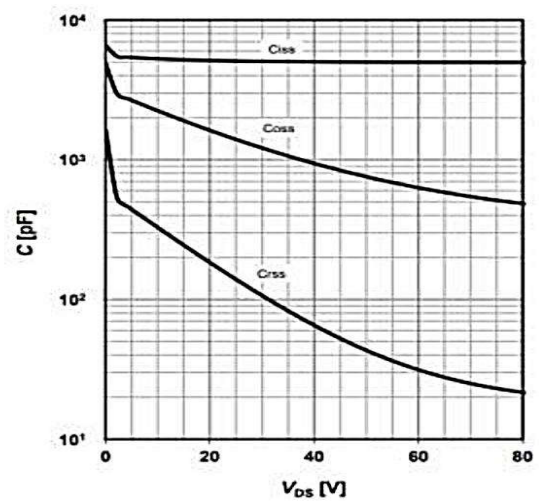


Figure6: Typ. capacitances

Ratings and Characteristic Curves

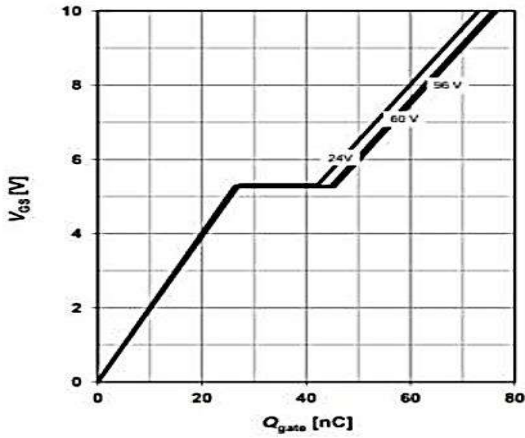


Figure7: Typ. gate charge

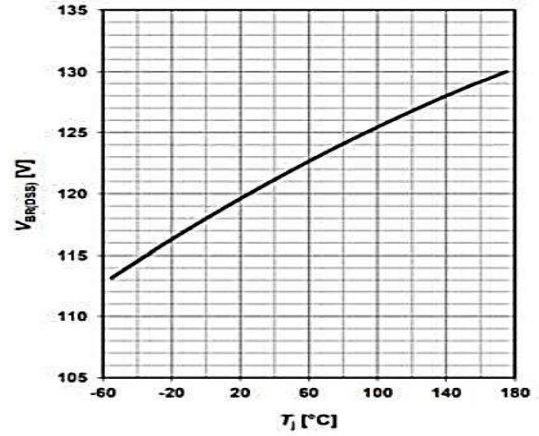


Figure8: Drain-source breakdown voltage

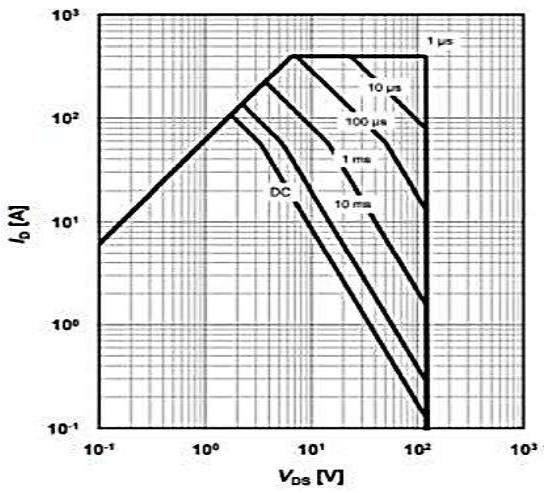


Figure9: Safe operating area

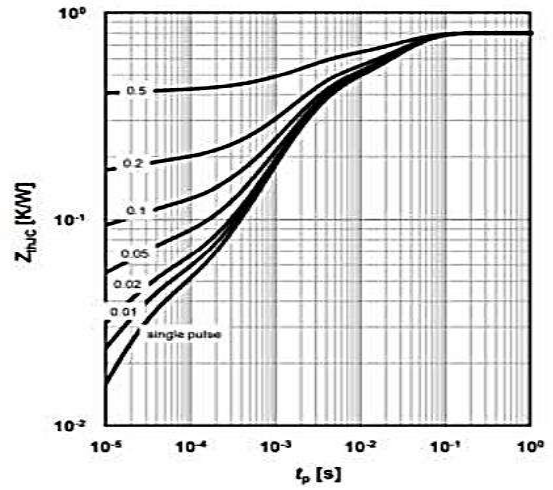
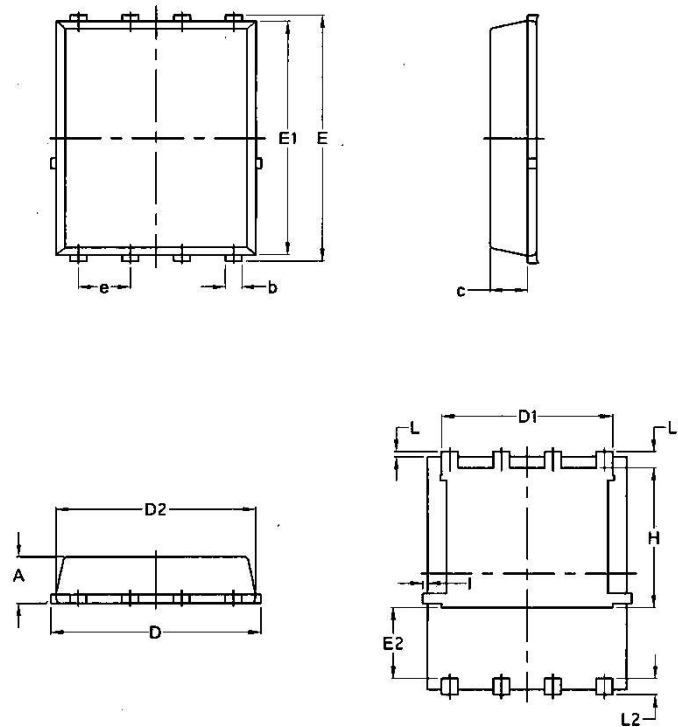


Figure10: Max. transient thermal impedance

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