

40V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	120A
V_{DSS}	40V
R_{DS(on)-typ(@V_{GS}=10V)}	<5mΩ (Type:3.5 mΩ)

Features

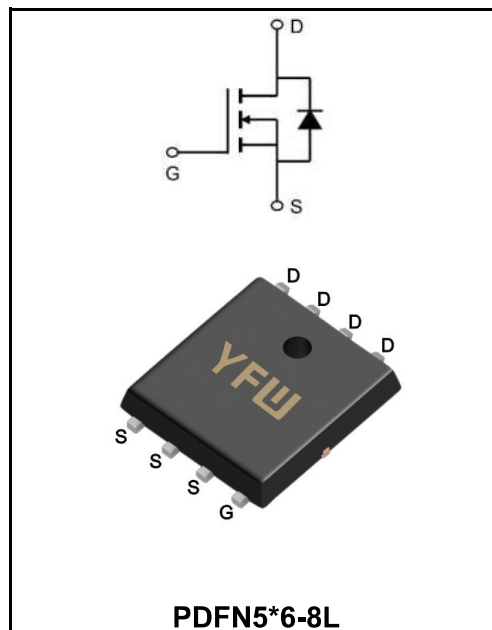
◆ Adopt advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Application

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

MECHANICAL DATA

- ◆ Case: Molded plastic
- ◆ Mounting Position: Any
- ◆ Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆ Lead free in compliance with EU RoHS 2011/65/EU directive
- ◆ Solder bath temperature 275°C maximum, 10s per JESD 22-B106



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	120	A
Pulsed Drain Current(Note1)	I_{DM}	400	A
Single Pulse Avalanche Energy(Note1)	E_{AS}	480	mJ
Total Power Dissipation	P_D	120	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance, Junction ambient	R_{θJA}	55	°C/W
Thermal Resistance, Junction-case	R_{θJC}	1.04	°C/W

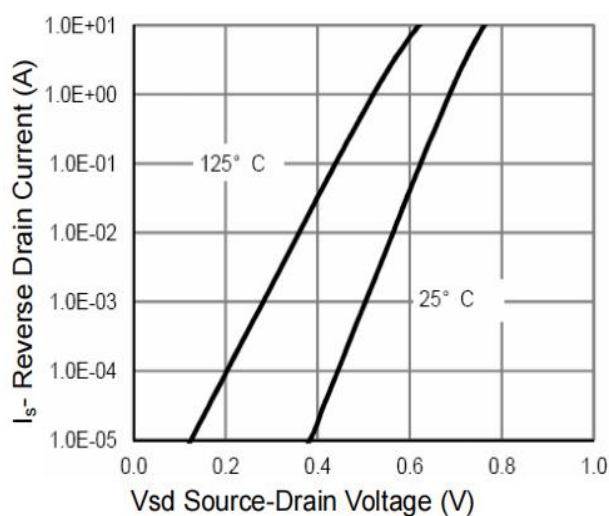
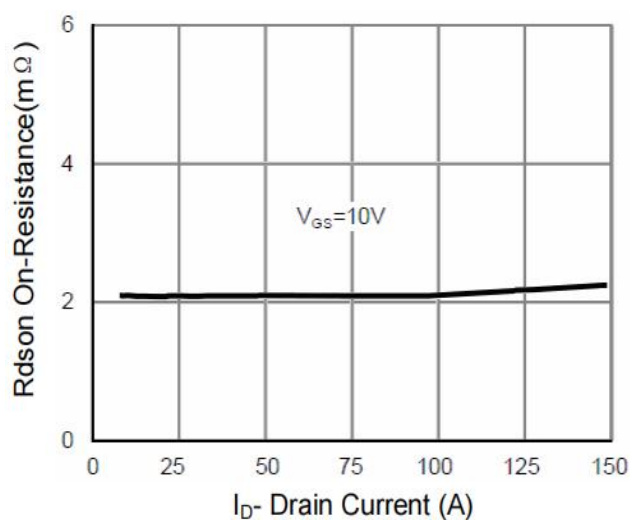
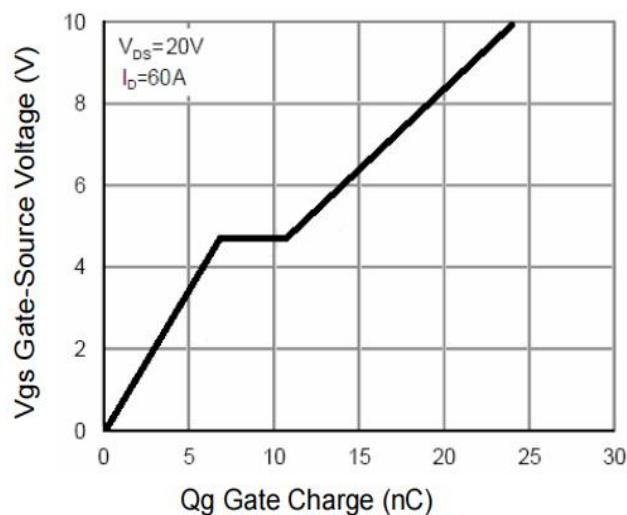
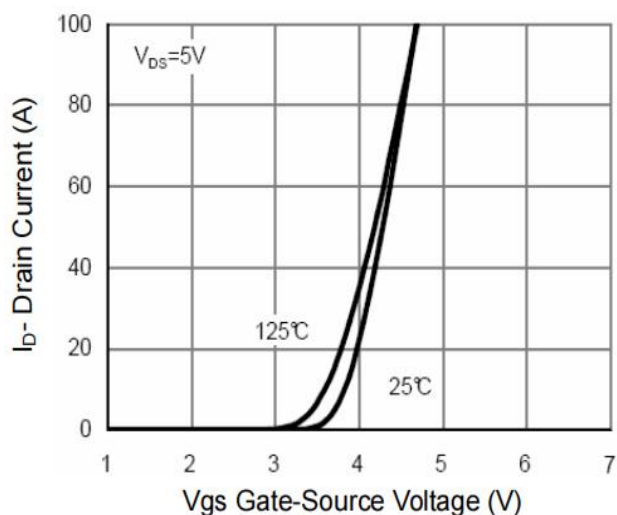
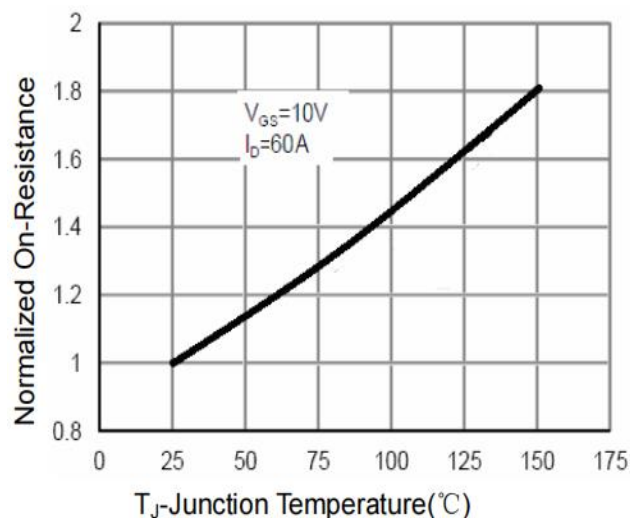
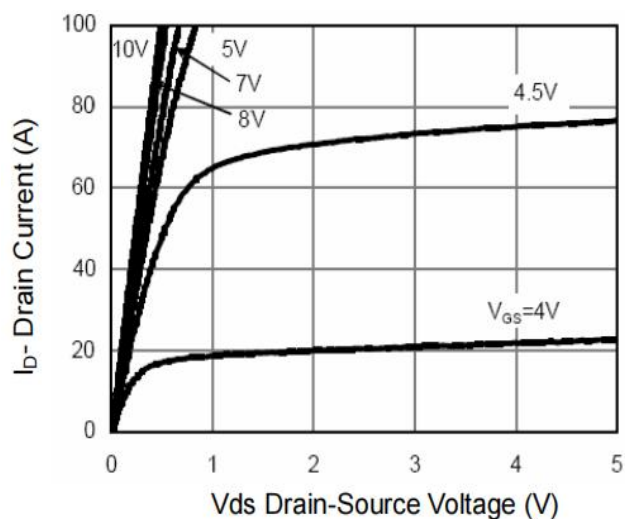
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

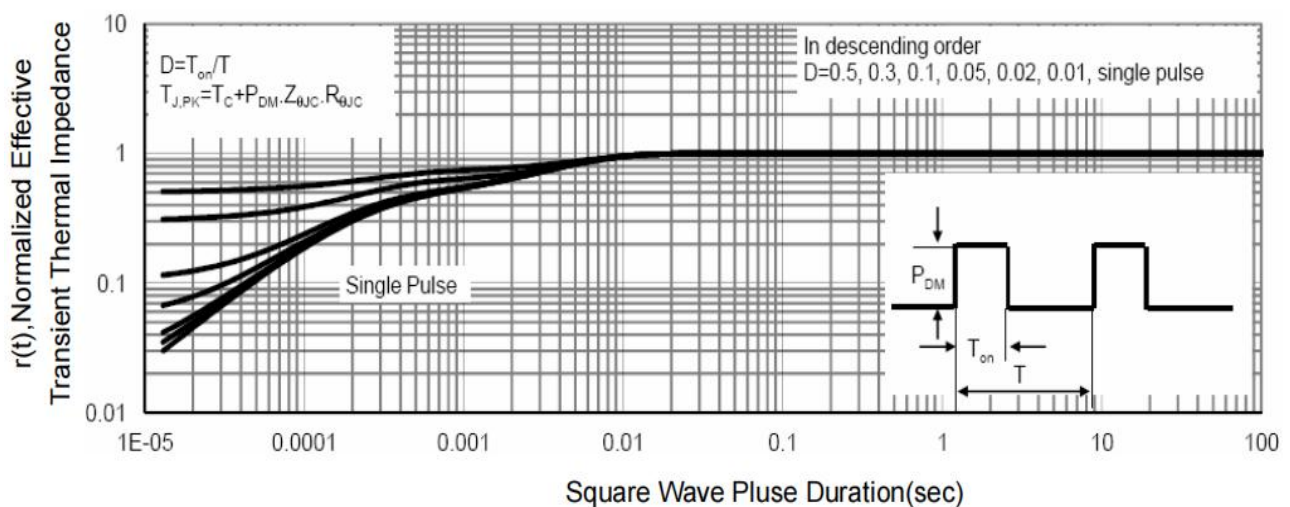
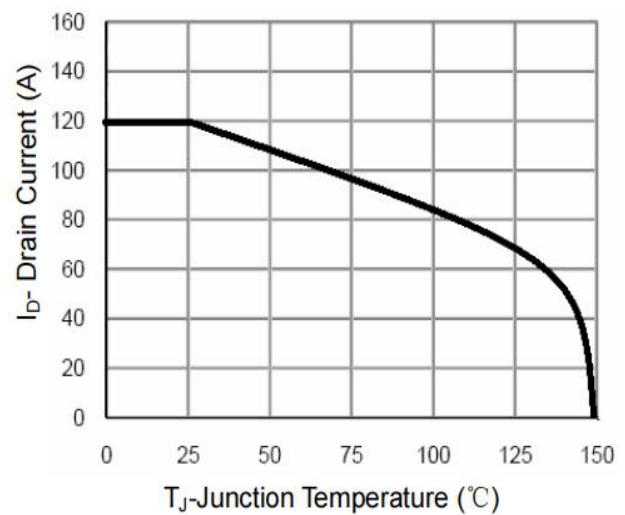
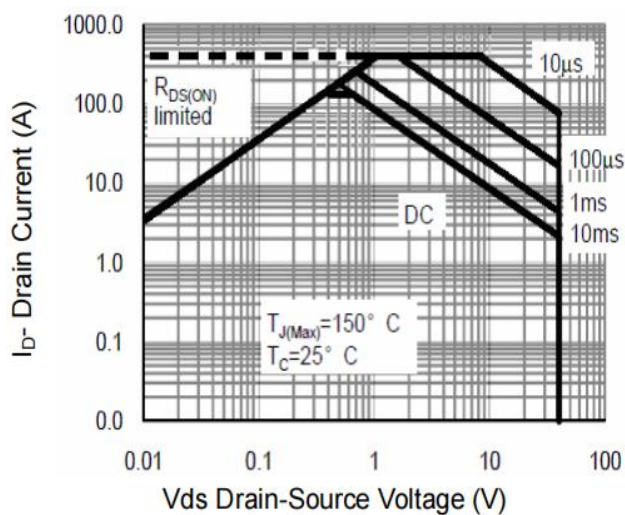
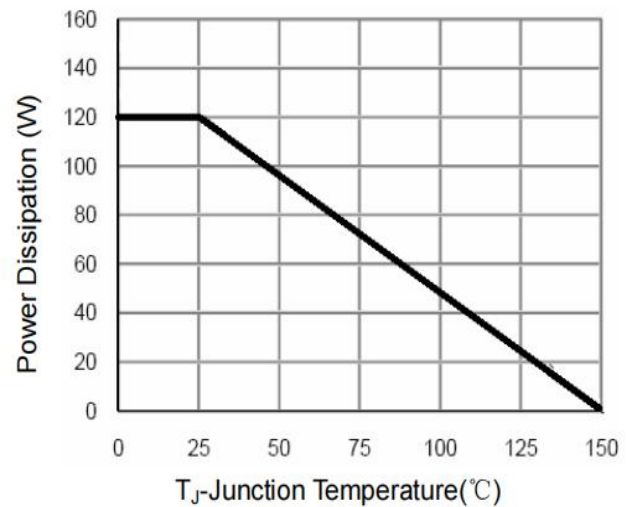
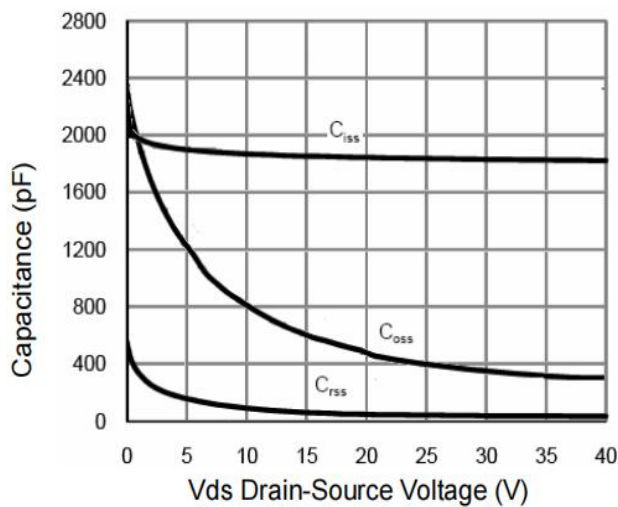
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	40	-	-	V
Gate Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1		2.5	V
Drain-Source on-Resistance (Note 3)	$V_{GS}=10V, I_D=30A$	$R_{DS(on)}$	-	3.5	5	m Ω
	$V_{GS}=4.5V, I_D=20A$	$R_{DS(on)}$		5.5	8	m Ω
Forward Transconductance ⁴	$V_{DS}=5V, I_D=60A$	g_{fs}	-	56	-	S
Input Capacitance	$V_{DS}=20V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	1820	-	pF
Output Capacitance		C_{oss}	-	435	-	
Reverse Transfer Capacitance		C_{rss}	-	34	-	
Total Gate Charge(Note2)	$V_{DS}=20V$ $V_{GS}=10V$ $I_D=60A$	Q_g	-	24	-	nC
Gate-Source Charge(Note2)		Q_{gs}	-	7	-	
Gate-Drain Charge(Note2)		Q_{gd}	-	3.5	-	
Turn-on delay time(Note2)	$V_{GS}=10V$ $V_{DD}=20V$ $R_G=1.6\Omega$ $I_D=60A$	$t_{d(on)}$	-	7	-	ns
Rise Time(Note2)		T_r	-	2.5	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	24	-	
Fall Time(Note2)		t_f	-	3.5	-	
Reverse Recovery Time(Note2)	$T_J=25^\circ C, I_F=I_S$ $di/dt=100A/\mu s$	t_{rr}	-	21	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	60	-	nC
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=60A, T_J=25^\circ C$	V_{SD}	-	-	1.2	V
Maximun Body-Diode Continuous Current		I_S	-	-	120	A

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

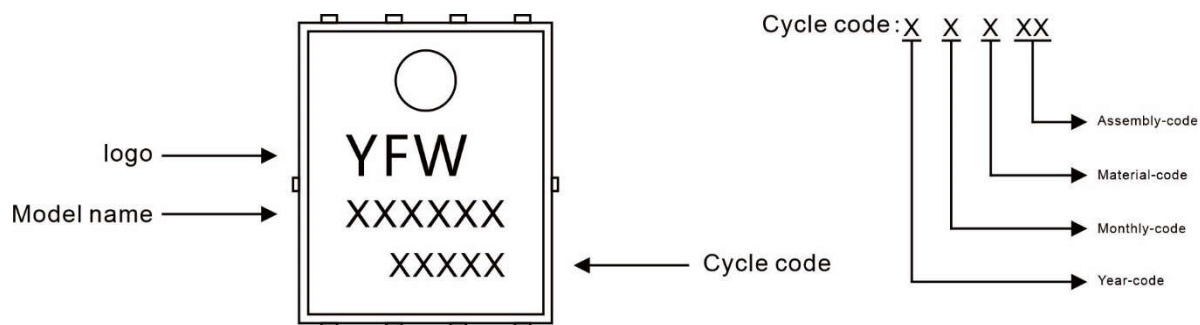
Ratings and Characteristic Curves



Ratings and Characteristic Curves



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW120N04NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L

Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.2	35	45
A2	0.204	0.304	8	12
b	0.4ref.		16ref.	
b1	0.2	0.4	8	16
D	5.0	5.3	197	209
D1	4.84	5.24	191	206
E	5.95	6.35	234	250
E1	3.275	3.675	129	145
E2	5.69	6.09	224	232
e	1.27typ.		50typ.	
K	1.29typ.		51typ.	
L	0.585	0.785	23	27
L1	0.7typ.		28typ.	

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