

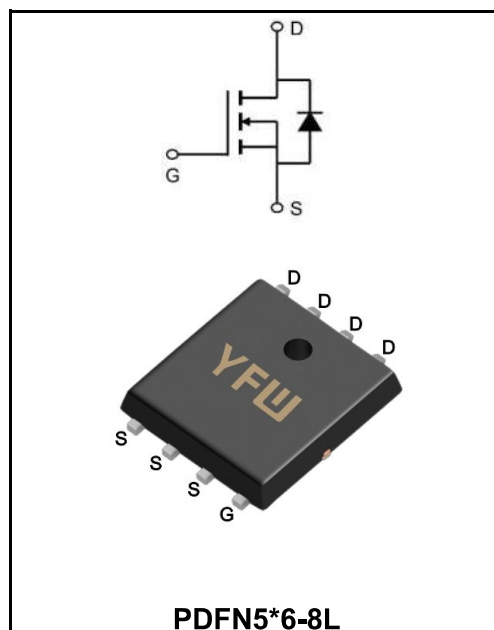
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DSS}	20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	< 6.0mΩ (Type: 4.8 mΩ)

Application

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



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, V_{GS} @ 4.5V @ $T_A=25^{\circ}C$	I_D	60	A
Continuous Drain Current, V_{GS} @ 4.5V @ $T_A=70^{\circ}C$	I_D	39	A
Pulsed Drain Current ^{note1}	I_{DM}	200	A
Single Pulse Avalanche Energy ^{note2}	E_{AS}	47.6	mJ
Power Dissipation @ $T_A=25^{\circ}C$	P_D	37	W
Operating Junction Temperature Range	T_J, T_{STG}	-55 to +175	°C
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	25	°C/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	4	°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	20	24	-	V
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	0.5	0.7	1.2	V
Static Drain-Source On-Resistance note3	$V_{GS}=4.5V, I_D=30A$	R_{DS(ON)}	-	4.8	6.5	mΩ
	$V_{GS}=2.5V, I_D=20A$		-	8.2	10	
Input Capacitance	$V_{DS}=10V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	1832	-	pF
Output Capacitance		C_{oss}	-	289	-	
Reverse Transfer Capacitance		C_{rss}	-	271	-	
Total Gate Charge	$V_{DS}=10V$ $I_D=30A$ $V_{GS}=4.5V$	Q_g	-	23	-	nC
Gate-Source Charge		Q_{gs}	-	4.5	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	7.3	-	
Turn-on delay time	$V_{DS}=10V$ $I_D=30A$ $R_{GEN}=3\Omega$ $V_{GS}=4.5V$	t_{d(on)}	-	15	-	ns
Turn-on Rise Time		T_r	-	37	-	
Turn-Off Delay Time		t_{d(OFF)}	-	52	-	
Turn- Off Fall Time		t_f	-	21	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	60	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	210	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=25A$	V_{SD}	-	-	1.2	V

Notes:

- 1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2、The test condition is, VDD=10V, VG=4.5V, L=0.5mH, RG=25Ω, IAS=13.8A
- 3、The data tested by pulsed Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%
- 4、The power dissipation is limited by 150°C junction temperature

Ratings and Characteristic Curves

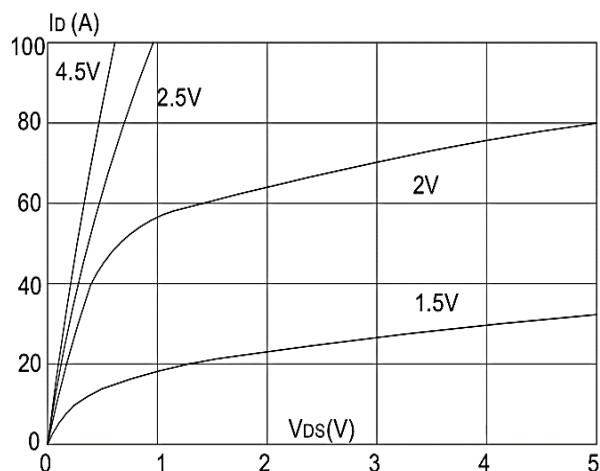


Figure1: Output Characteristics

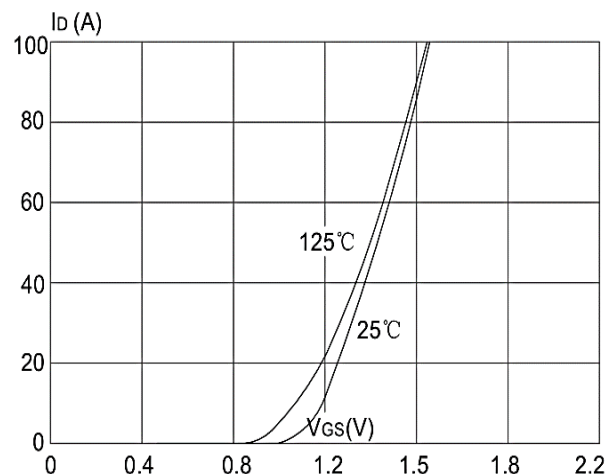


Figure 2: Typical Transfer Characteristics

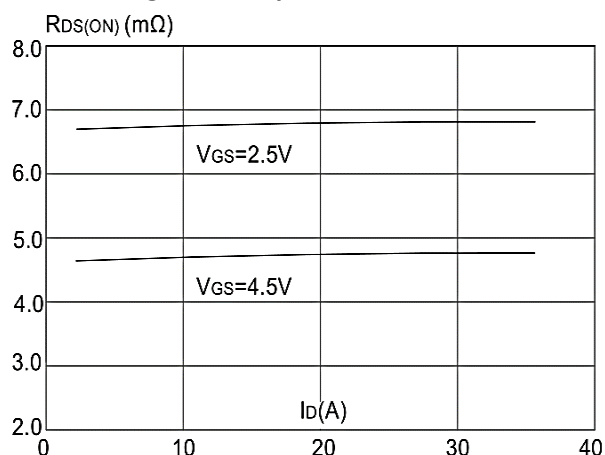


Figure 3: On-resistance vs. Drain Current

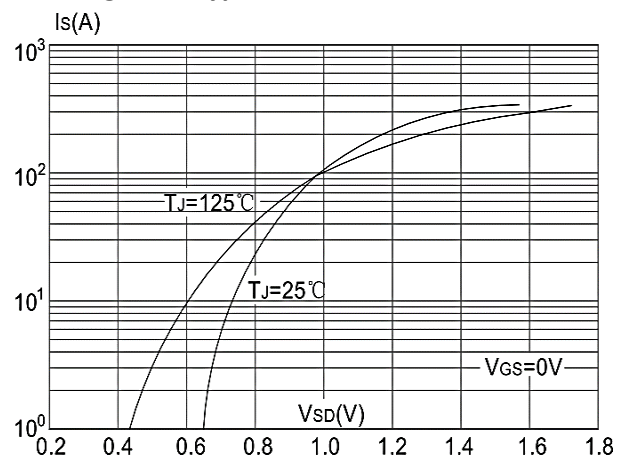


Figure 4: Body Diode Characteristics

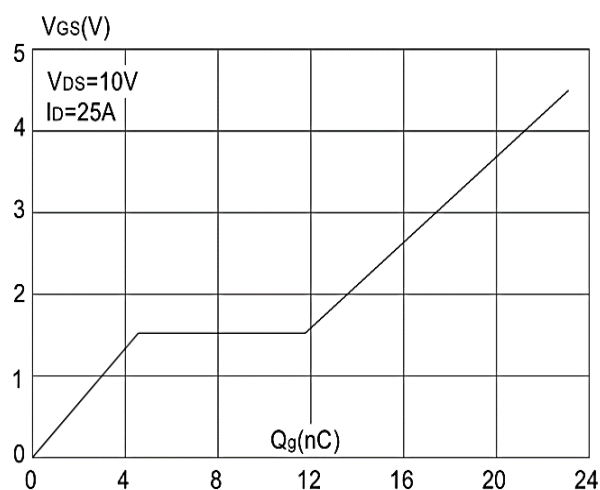


Figure 5: Gate Charge Characteristics

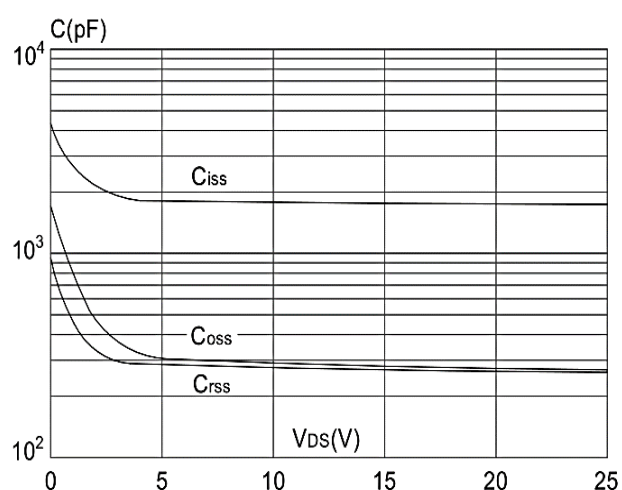


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

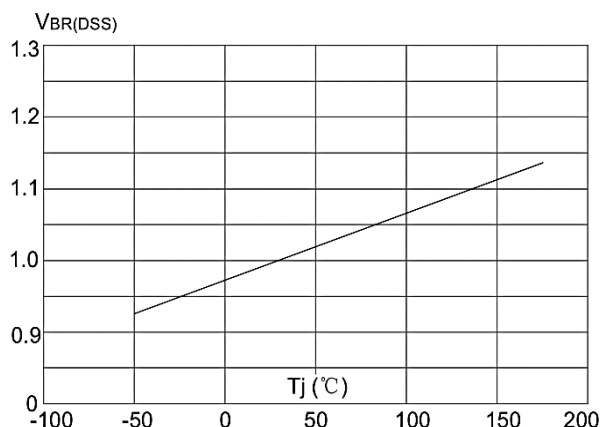


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

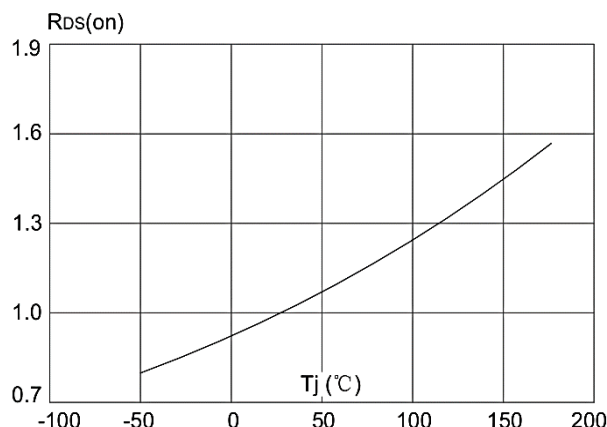


Figure 8: Normalized on Resistance vs. Junction Temperature

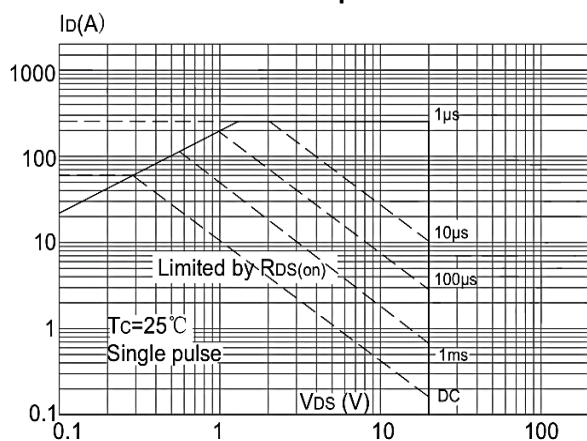


Figure 9: Maximum Safe Operating Area Current Temperature

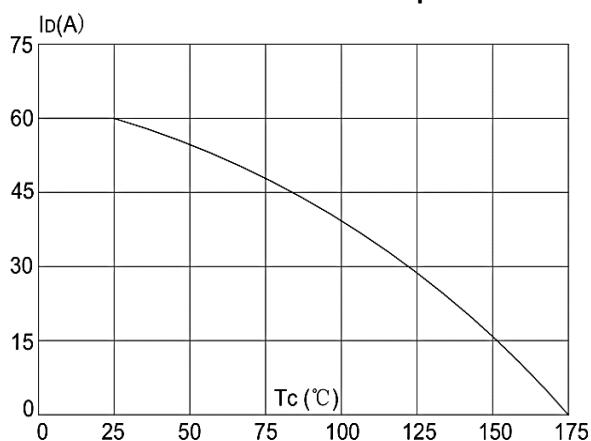


Figure 10: Maximum Continuous Drain vs. Case

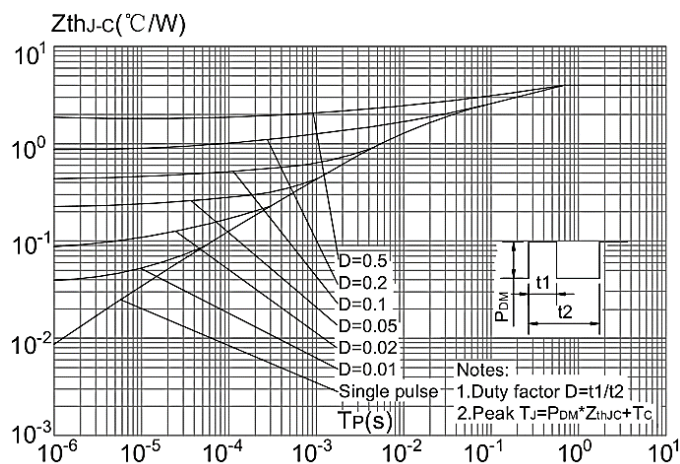
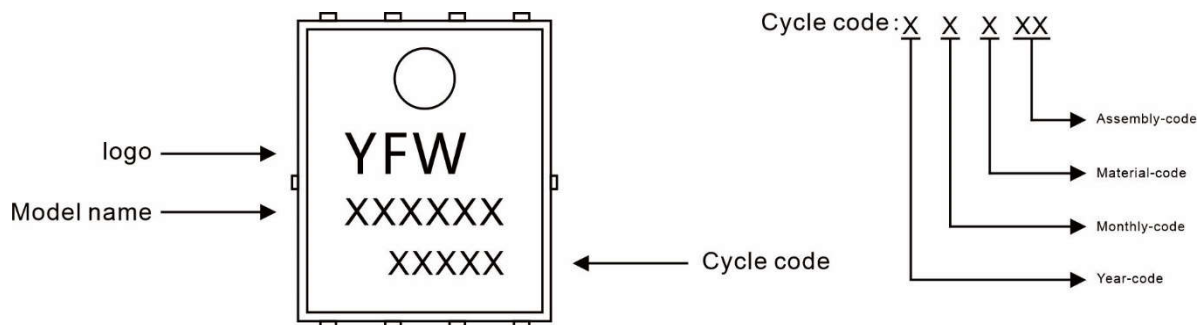


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW60N02NF	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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