

60V N-Channel Advanced Power MOSFET

MAIN CHARACTERISTICS

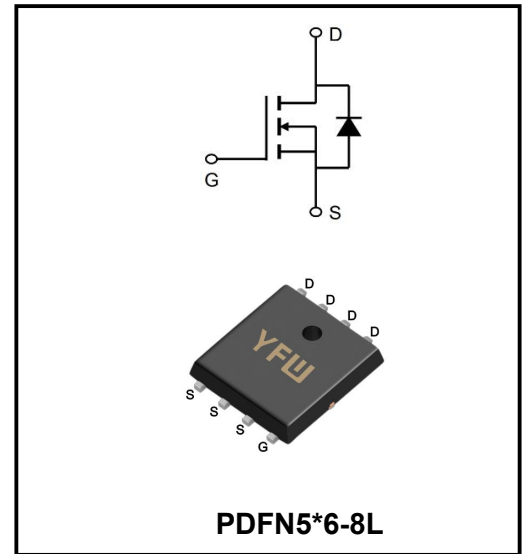
I_D	50A
V_{DS}	60V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<17m\Omega$ (Typ:12 mΩ)

FEATURES

- ♦Fast Switching
- ♦Low ON Resistance
- ♦Low Gate Charge
- ♦100% Single Pulse avalanche energy Test

APPLICATIONS

- ♦Load Switch
- ♦PWM Application
- ♦Power management



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	50	A
Pulsed Drain Current(Note1)	I_{DM}	200	A
Total Power Dissipation	P_D	75	W
Single Pulse Avalanche Energy	E_{AS}	80	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case(Note 2)	$R_{\theta JC}$	2	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	62	°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}	60	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate 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	-	2.5	V
Drain-Source on-Resistance	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	-	12	17	m Ω
	$V_{GS}=4.5V, I_D=20A$	$R_{DS(ON)}$	-	16	25	m Ω
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2030	-	pF
Output Capacitance		C_{oss}	-	130	-	
Reverse Transfer Capacitance		C_{rss}	-	115	-	
Total Gate Charge	$I_D=30A,$ $V_{DS}=30V,$ $V_{GS}=10V$	Q_g	-	45	-	nC
Gate-Source Charge		Q_{gs}	-	8	-	
Gate-Drain Charge		Q_{gd}	-	11	-	
Turn-on delay time	$V_{DD}=30V$ $V_{GS}=10V$ $R_G=1.8\Omega$ $I_D=30A$	$t_{d(on)}$	-	11	-	ns
Rise Time		T_r	-	79	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	33	-	
Fall Time		t_f	-	105	-	
Maximun Body-Diode Continuous Current(Note2)		I_S	-	-	50	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	200	A
Drain-Source Diode Forward Voltage	$I_{SD}=30A$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S=I_F, I_{SD}=30A, V_{GS}=0V,$ $dIF/dt=100A/\mu s$	t_{rr}	-	14	-	ns
Reverse Recovery Charge		Q_{rr}	-	10	-	nC

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

Ratings and Characteristic Curves

Figure1: Output Characteristics

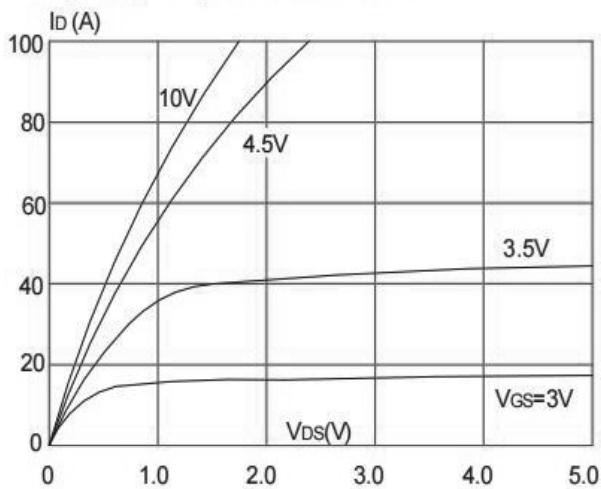


Figure 2: Typical Transfer Characteristics

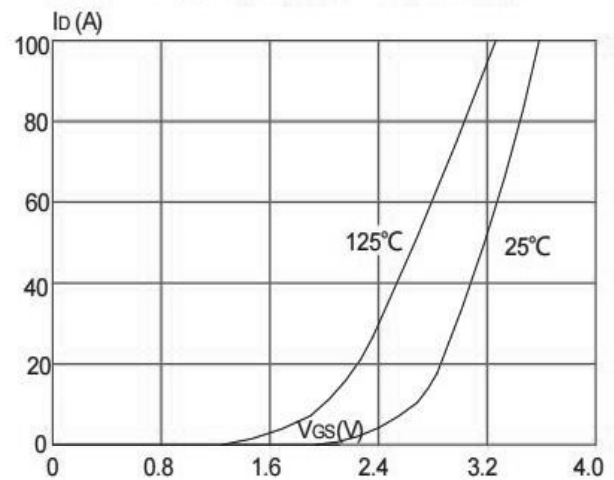


Figure 3: On-resistance vs. Drain Current

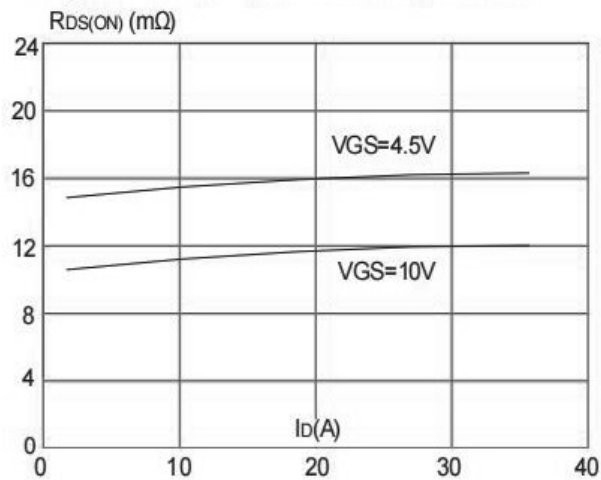


Figure 4: Body Diode Characteristics

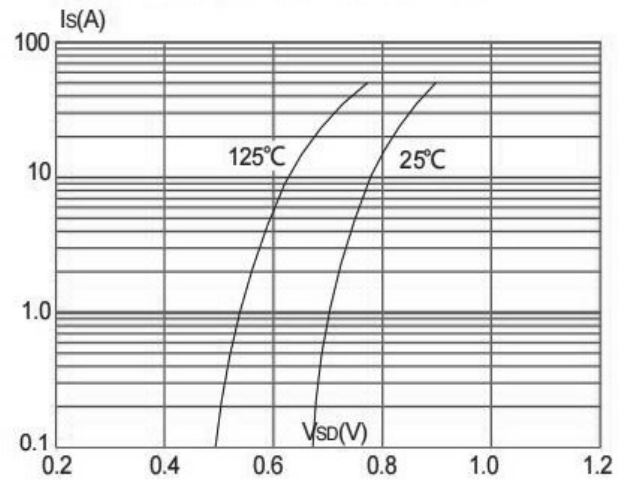


Figure 5: Gate Charge Characteristics

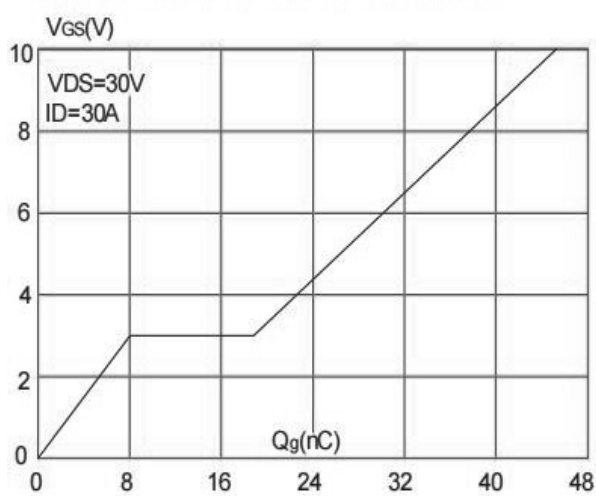
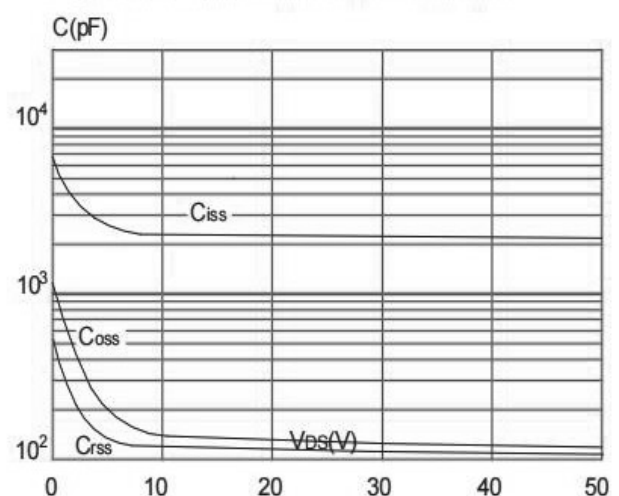


Figure 6: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

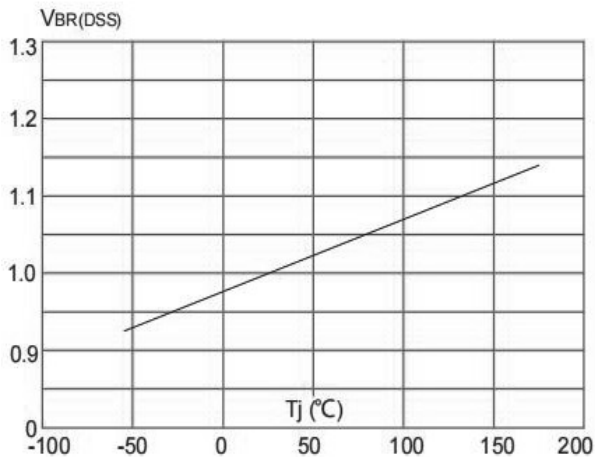


Figure 8: Normalized on Resistance vs. Junction Temperature

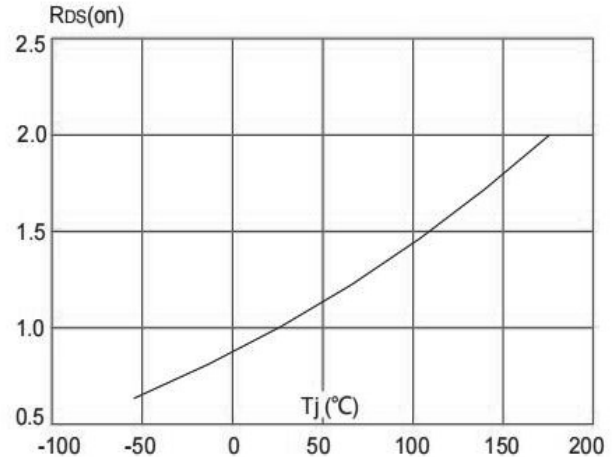


Figure 9: Maximum Safe Operating Area

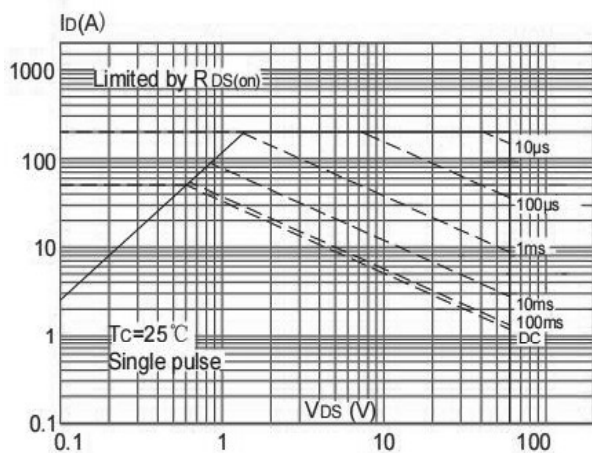


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

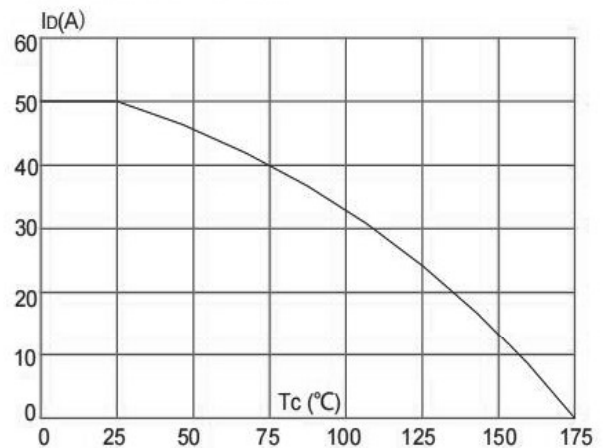
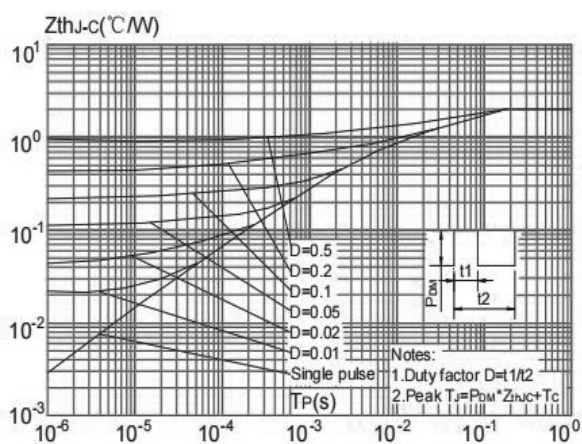
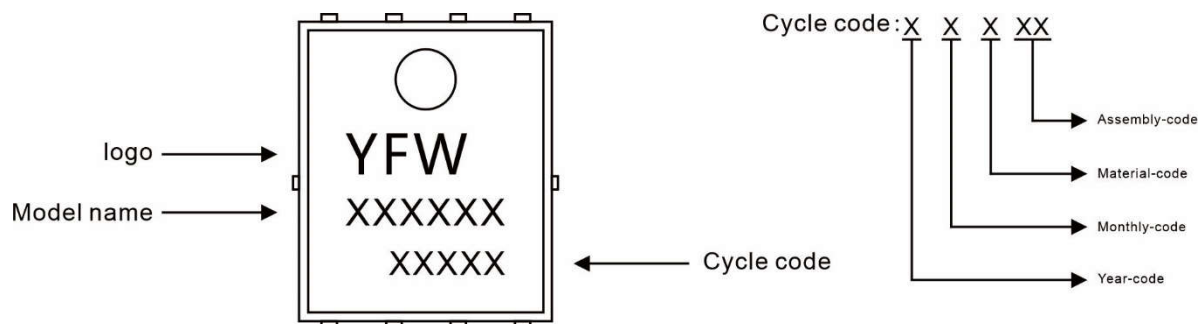


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW50N06NF	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	43
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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