

100V N- Channel Advanced Power MOSFET

MAIN CHARACTERISTICS

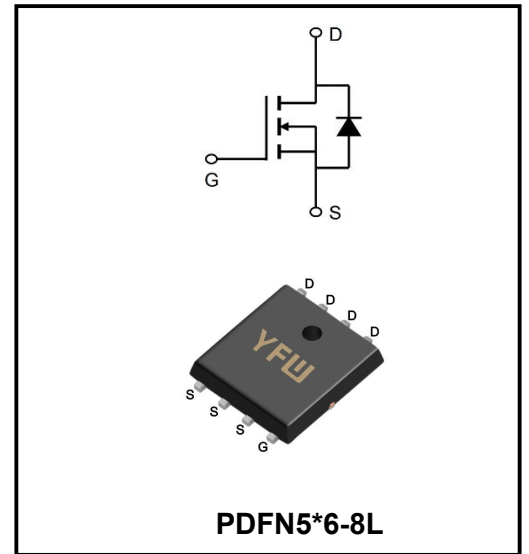
I_D	50A
V_{DSS}	100V
R_{DS(on)-typ}(@V_{GS}=10V)	<20mΩ(Typ:14mΩ)

FEATURES

- ◆ Ultra-Low RDS(ON)
- ◆ Low Gate Charge
- ◆ High Current Capability

APPLICATIONS

- ◆ Power Management in Telecom.,Industrial Automation
- ◆ Motor Driving in Power Tool,E-vehicle,Robotics
- ◆ Current Switching in DC/DC&AC/DC(SR) Sub-systems
- ◆ **YFW-SGT technology**



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	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	82	W
Single Pulse Avalanche Energy	E_{AS}	74	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance Junction-Case (Note2)	R_{θJC}	1.5	°C/W
Thermal Resistance, Junction-to-Ambient	R_{θJA}	39	°C/W

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

Electrical Characteristics 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}	100	-	-	V
Drain -Source Leakage Current	$V_{DS}=100V, V_{GS}=0V,$	I_{DSS}	-	-	1	μA
	$V_{DS}=100V, T_c=125^\circ C$		-	-	100	
Gate-Source 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	-	2.2	V
Static Drain-Source On-Resistance	$V_{GS} = 10 V, I_D = 20A$	$R_{DS(ON)}$	-	14	20	m Ω
	$V_{GS} = 4.5 V, I_D = 15A$		-	18.6	25	m Ω
Input Capacitance	$V_{DS}=50V$	C_{iss}	-	992	-	pF
Output Capacitance	$V_{GS}=0V$	C_{oss}	-	330	-	pF
Reverse Transfer Capacitance	$f=100KHz$	C_{rss}	-	19.2	-	pF
Turn-on delay time	$V_{DD}=50V$ $V_{GS}=10V$ $R_G=6.2\Omega$ $I_D=20A$	$t_{d(on)}$	-	7	-	ns
Rise Time		T_r	-	18	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	21	-	ns
Fall Time		t_f	-	9	-	ns
Total Gate Charge		Q_G	-	19	-	nC
Gate to Source Charge	$V_{DS}=50$ $I_D=20A,$ $V_{GS}=10V$	Q_{GS}	-	4	-	nC
Gate to Drain Charge		Q_{GD}	-	5	-	nC
Maximun Body-Diode Continuous Current (Note 2)		I_S	-	-	50	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	200	A
Drain-Source Diode Forward Voltage	$I_{SD} = 20 A$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F, I_{SD}=20A, V_{GS} = 0 V, di / dt = 100 A/\mu s$	t_{rr}	-	32	-	ns
Reverse Recovery Charge		Q_{rr}	-	32	-	μC

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

Ratings and Characteristic Curves

Figure 1: Power De-rating

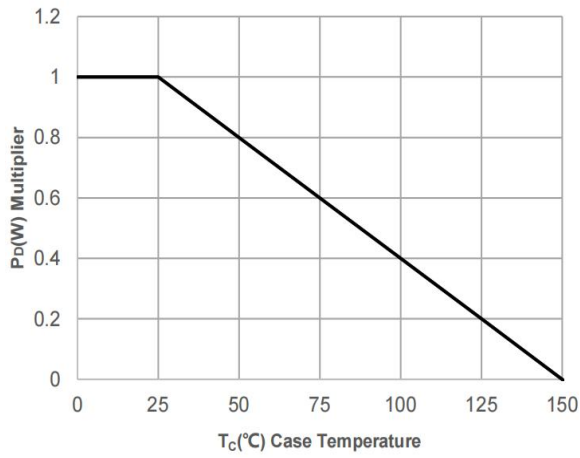


Figure 2: Current De-rating

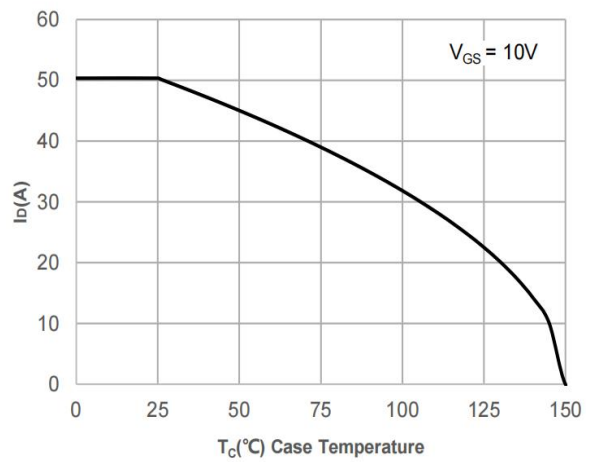


Figure 3: Normalized Maximum Transient Thermal Impedance

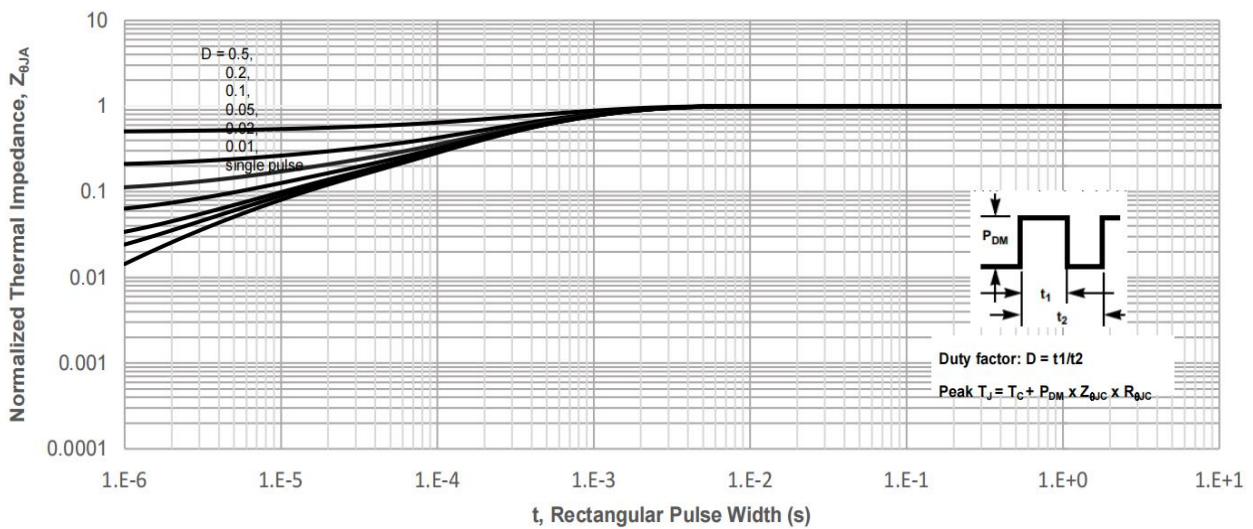
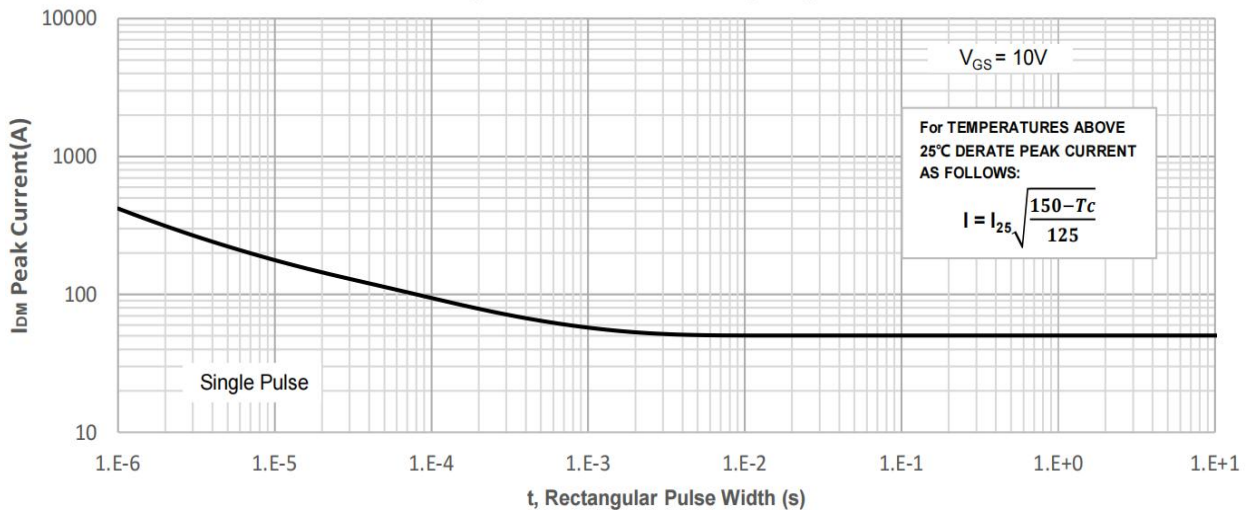


Figure 4: Peak Current Capacity



Ratings and Characteristic Curves

Figure 5: Output Characteristics

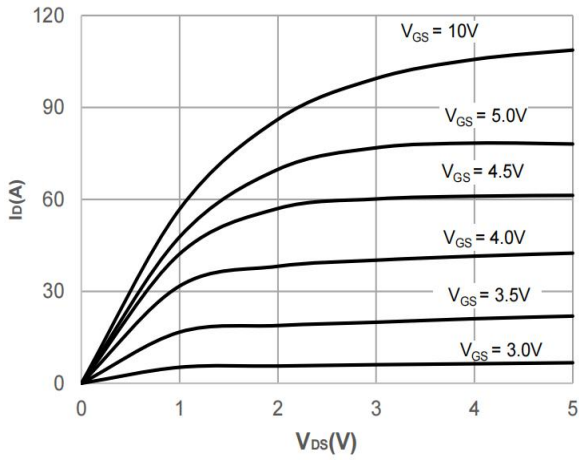


Figure 6: Typical Transfer Characteristics

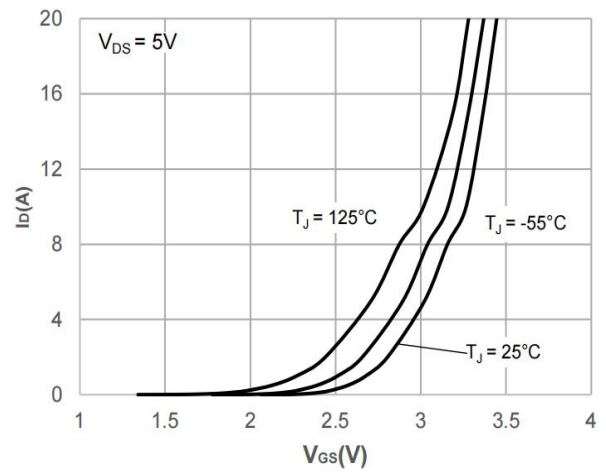


Figure 7: On-resistance vs. Drain Current

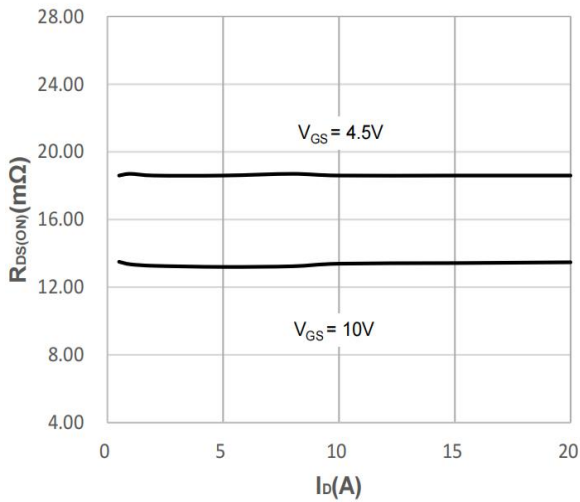


Figure 8: Body Diode Characteristics

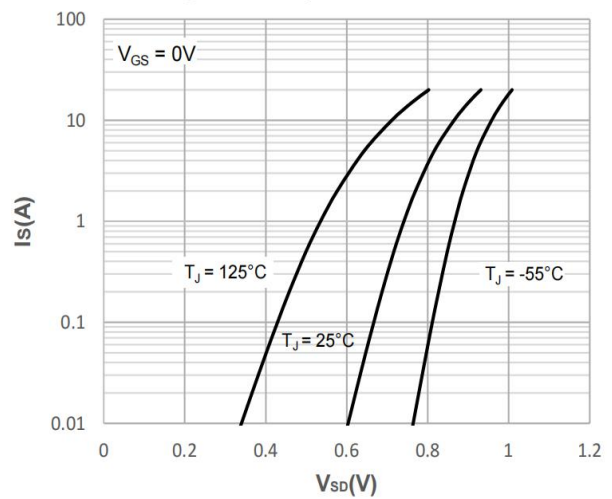


Figure 9: Gate Charge Characteristics

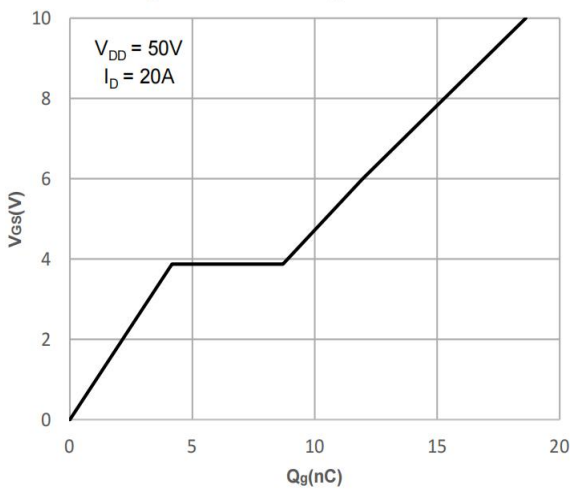
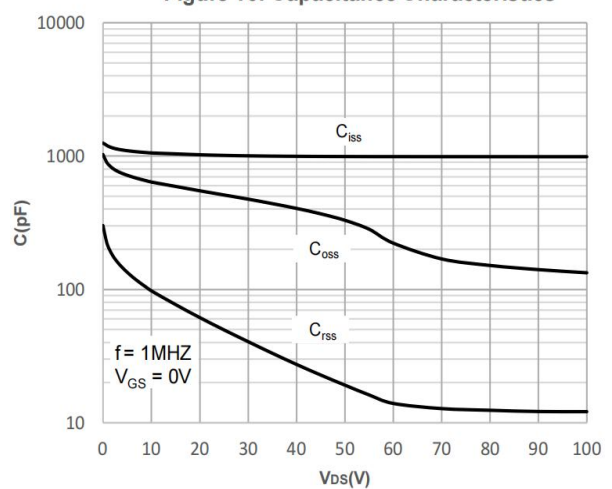


Figure 10: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

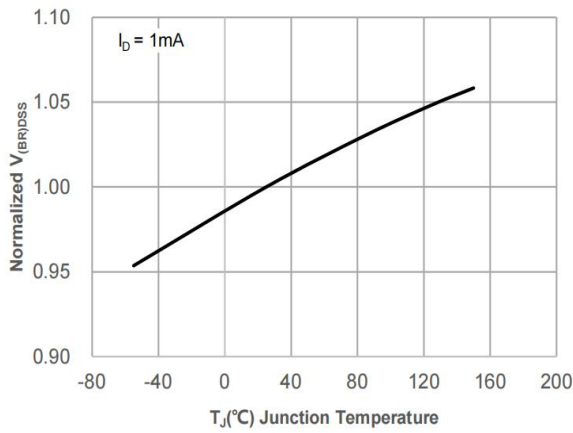


Figure 12: Normalized on Resistance vs. Junction Temperature

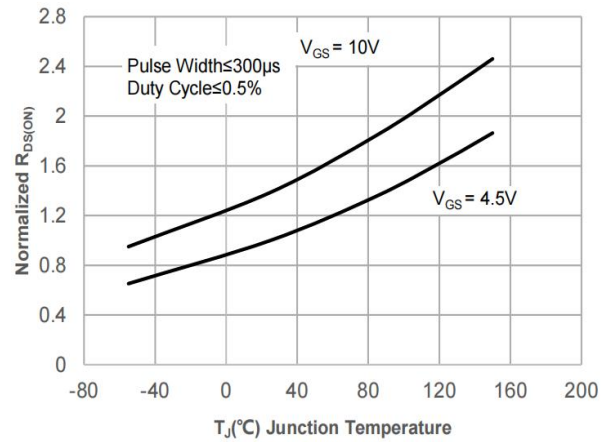


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

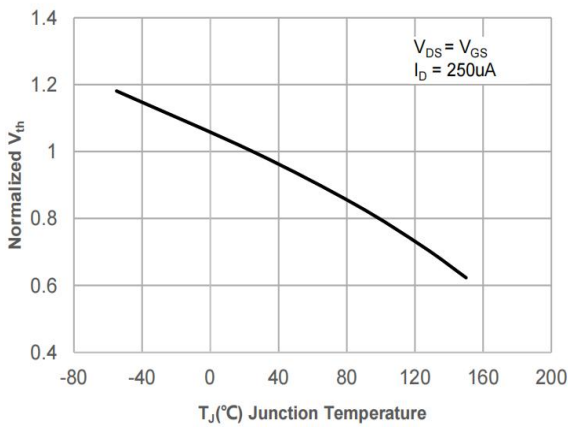


Figure 14: RDS(ON) vs. VGS

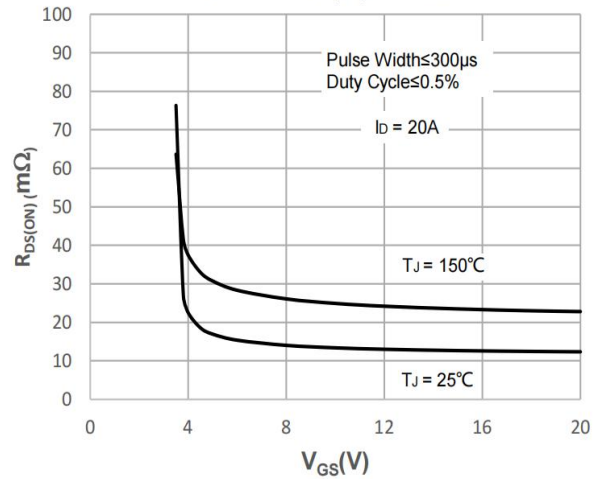
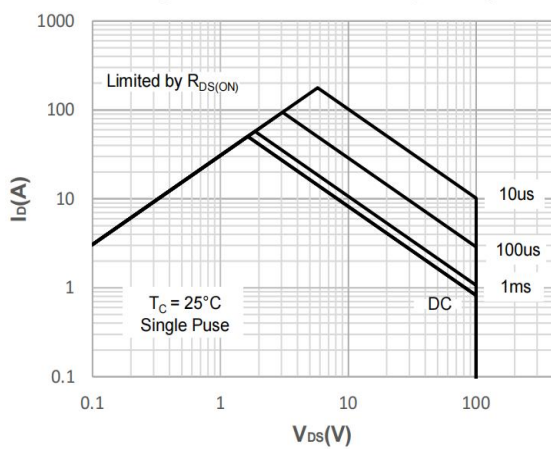
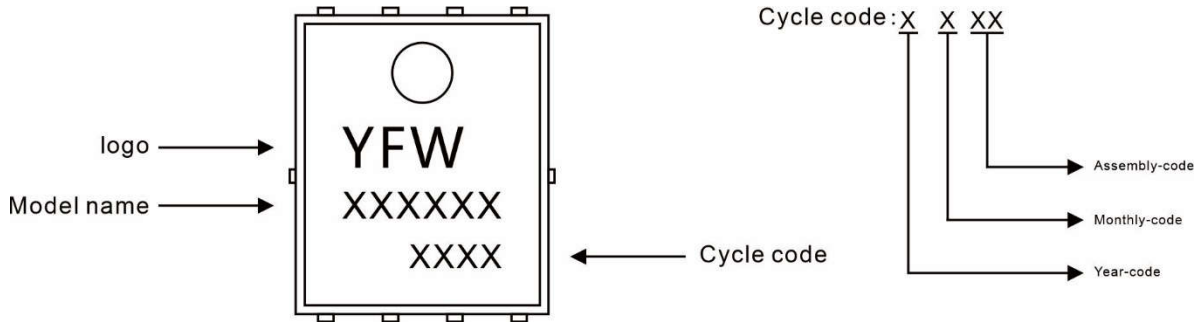


Figure 15: Maximum Safe Operating Area



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG50N10NF	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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