

80V N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

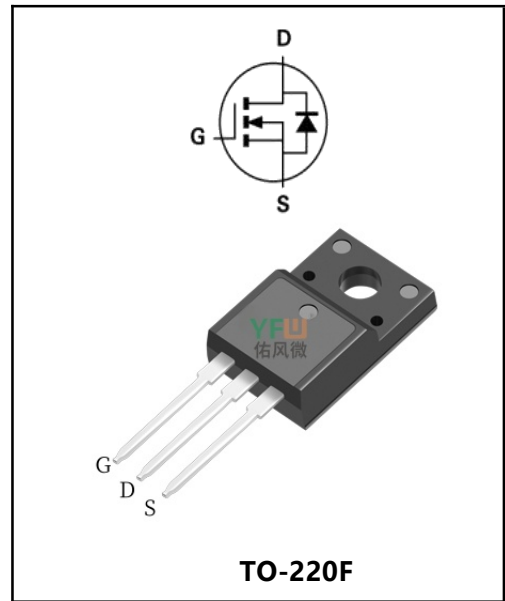
I_D	100A
V_{DS}	80V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<5.0m\Omega$ (Typ:4.55 m Ω)

APPLICATIONS

- ♦ Ultra-low $R_{DS(ON)}$
- ♦ Low Gate Charge
- ♦ 100% UIS Tested, 100% R_g Tested
- ♦ Pb-free Lead Plating
- ♦ Halogen-free and RoHS-compliant
- ♦ **YFW-SGT technology**

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 $T_c=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	80	V
Gate - Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	100	A
Pulsed Drain Current (Note1)	I_{DM}	465	A
Total Power Dissipation	P_D	208	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	338	mJ
Operating Junction Temperature Range	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	45	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.6	$^\circ\text{C/W}$

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}	80	-	-	V
Gate Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	-	4.0	V
Drain-Source on-Resistance (Note 3)	$V_{GS}=10V, I_D=20A$	$R_{DS(on)}$	-	4.55	5.0	m Ω
Forward Transconductance	$V_{DS}=5V, I_D=20A$	g_{fs}	-	31	-	S
Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	R_G	-	1.9	-	Ω
Input Capacitance	$V_{DS}=40V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	3365	-	pF
Output Capacitance		C_{oss}	-	1264	-	
Reverse Transfer Capacitance		C_{rss}	-	46	-	
Total Gate Charge	$V_{GS}=10V$ $V_{DS}=40V$ $I_D=20A$	Q_g	-	56	-	nC
Gate-Source Charge		Q_{gs}	-	18.3	-	
Gate-Drain Charge		Q_{gd}	-	15	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=40V$ $R_L=2.0\Omega$ $R_{GEN}=3\Omega$	$t_{d(on)}$	-	17.6	-	ns
Rise Time		T_r	-	27	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	31	-	
Fall Time		t_f	-	10.8	-	
Body Diode Reverse Recovery Time(Note2)	$T_J=25^\circ C, I_F=20A$ $di/dt=100A/\mu s$	t_{rr}	-	58	-	ns
Body Diode Reverse Recovery Charge(Note2)		Q_{rr}	-	95	-	nC
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	V_{SD}	-	0.7	1.0	V
Maximun Body-Diode Continuous Current		I_S	-	-	100	A

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

Ratings and Characteristic Curves

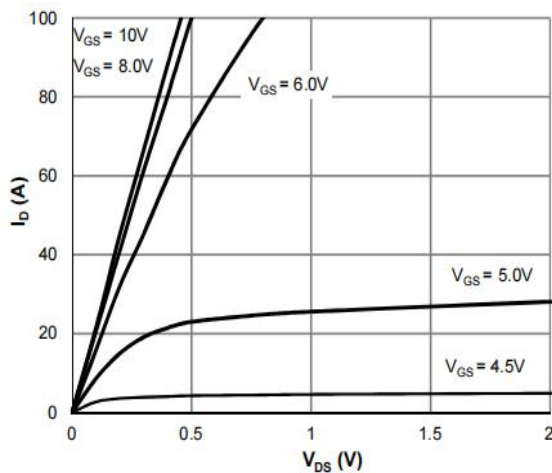


Figure 1: Saturation Characteristics

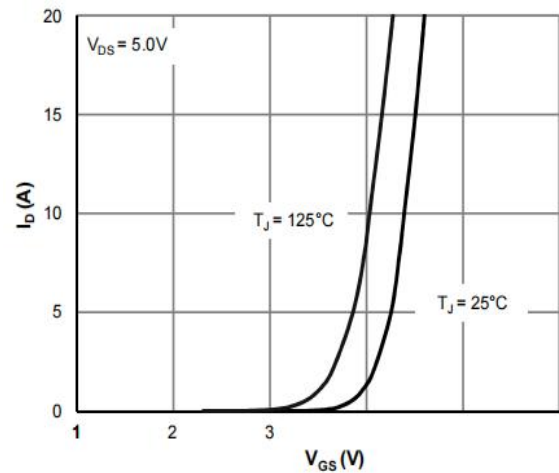


Figure 2: Transfer Characteristics

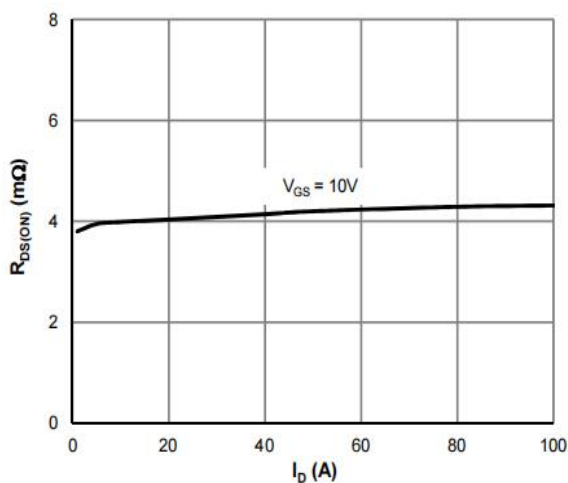


Figure 3: $R_{DS(ON)}$ vs. Drain Current

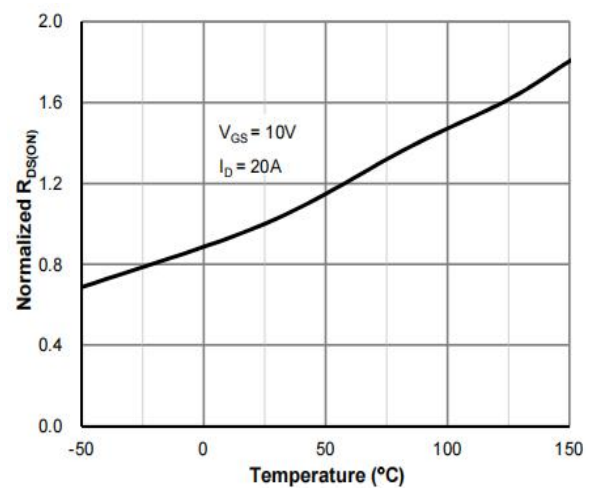


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

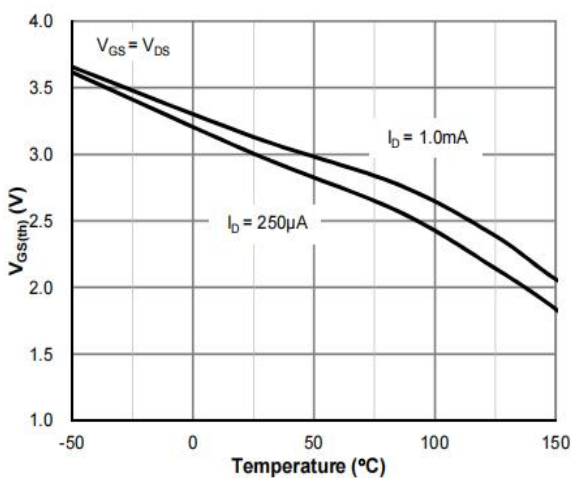


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

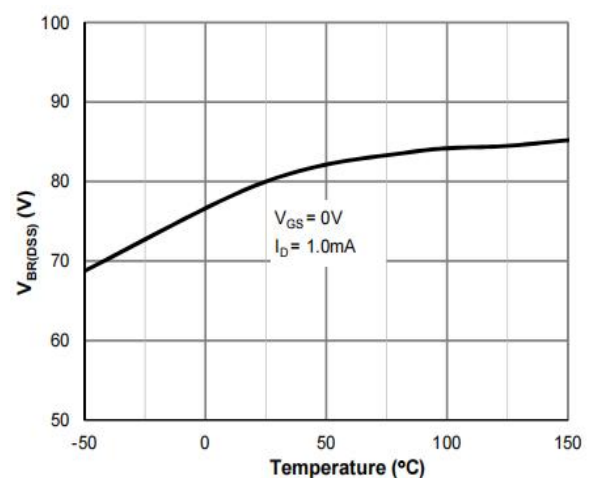


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Ratings and Characteristic Curves

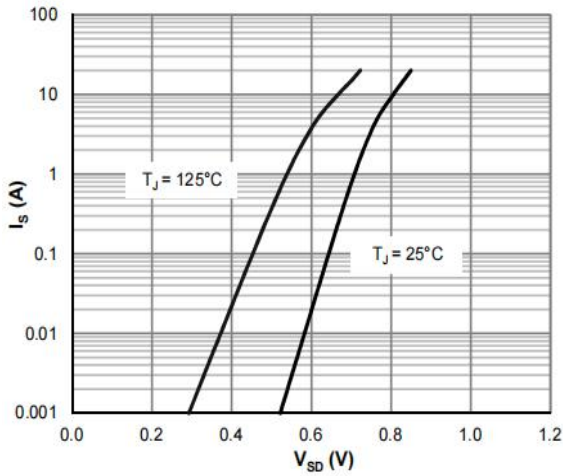


Figure 7: Body-Diode Characteristics

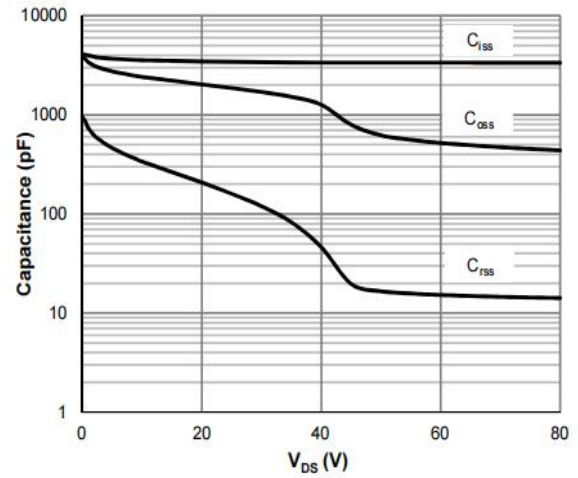


Figure 8: Capacitance Characteristics

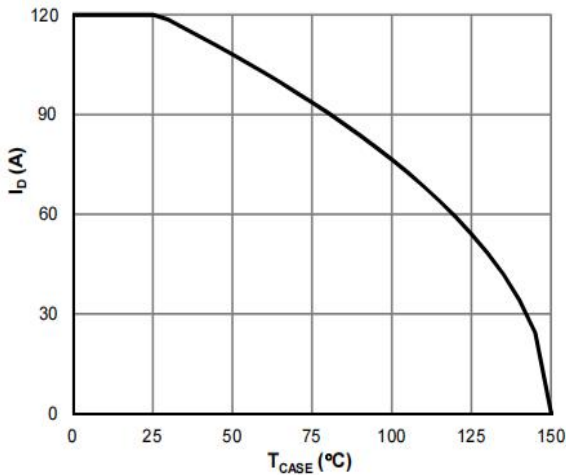


Figure 9: Current De-rating

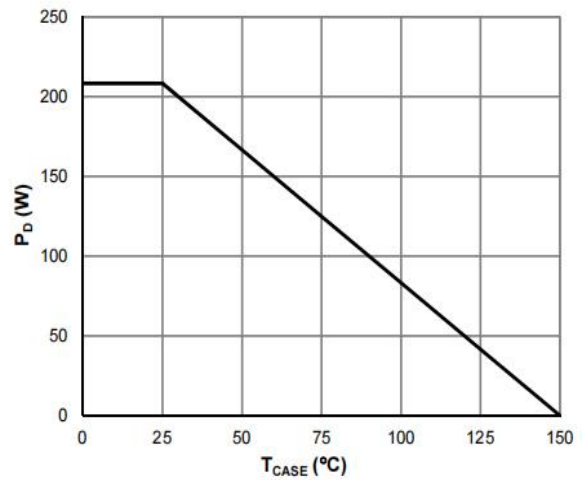


Figure 10: Power De-rating

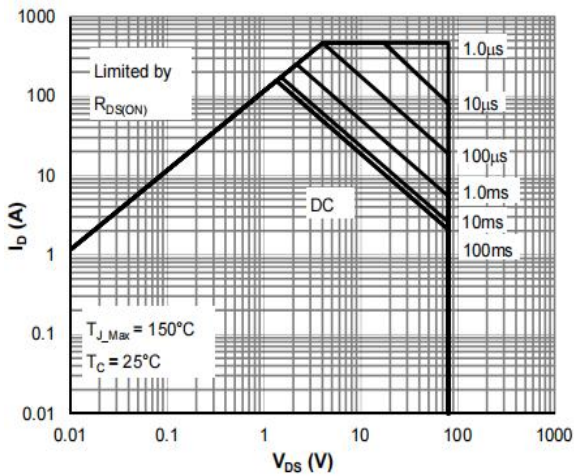


Figure 11: Maximum Safe Operating Area

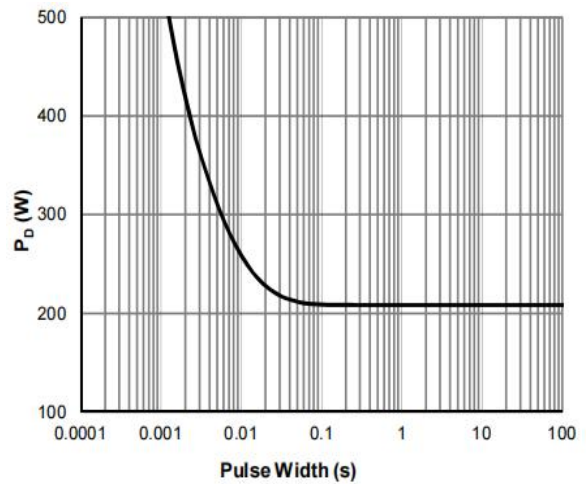
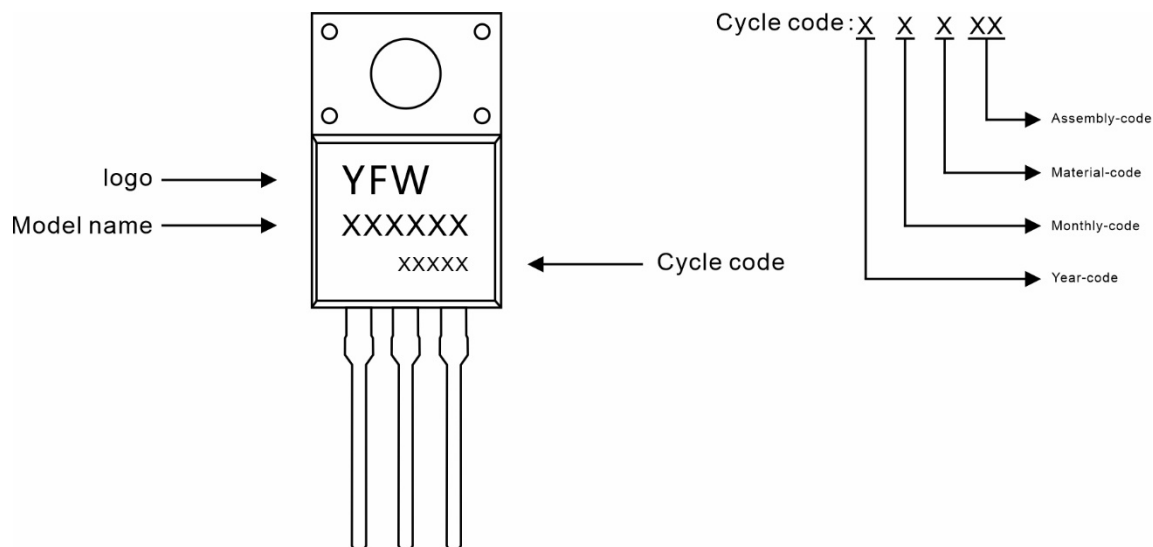


Figure 12: Single Pulse Power Rating, Junction-to-Case

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG100N08AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220F

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	13.50	13.90	0.531	0.547
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

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