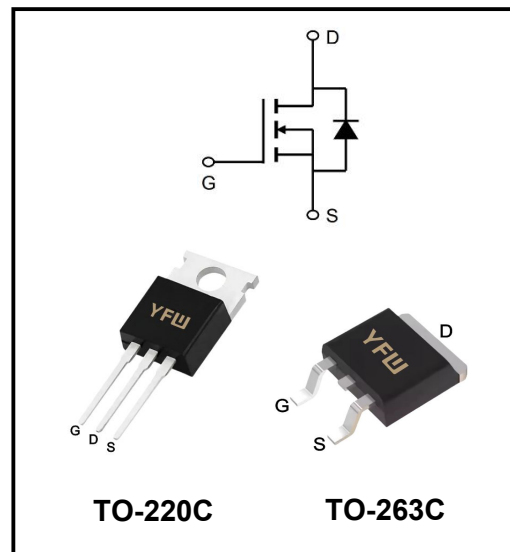


85V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	150A
V_{DSS}	85V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<4m\Omega$ (Typ: 3.2 mΩ)



Features

- ◆ **YFW-SGT technology**
- ◆ Ultra-low $R_{DS(ON)}$
- ◆ Low Gate Charge
- ◆ Halogen-free and RoHS-compliant

Application

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

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}	85	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous drain current	I_D	150	A
Pulsed Drain Current (Note1)	I_{DM}	515	A
Power dissipation	P_D	192	W
Single Pulse Avalanche Energy(Note1)	E_{AS}	434	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	$^\circ\text{C}$
Thermal Resistance, Junction-case	$R_{\theta JC}$	0.65	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	45	$^\circ\text{C/W}$

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}	85	-	-	V
Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate-Source Leakage Current	$V_{GS} = \pm 20 V, V_{DS} = 0 V$	I_{GSS}	-	-	± 100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	-	4	V
Drain-Source On-State Resistance(Note 3)	$V_{GS} = 10 V, I_D = 20 A$	$R_{DS(ON)}$	-	3.2	4	m Ω
Forward Transconductance	$V_{DS} = 5 V, I_D = 20 A$	g_{fs}	-	43	-	S
Input Capacitance	$V_{GS}=0V$ $V_{DS}=40V$ $f=1MHz$	C_{iss}	-	4083	-	pF
Output Capacitance		C_{oss}	-	1313	-	
Reverse Transfer Capacitance		C_{rss}	-	42	-	
Turn-on delay time	$V_{GS} = 10V,$ $V_{DS} = 40V$ $RL = 2.0\Omega$ $RGEN = 3\Omega$	$t_{d(on)}$	-	18.9	-	ns
Rise Time		T_r	-	28	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	38	-	
Fall Time		t_f	-	13.1	-	
Total Gate Charge	$I_D=20A$ $V_{DS}=40V$ $V_{GS}=10V$	Q_g	-	62	-	nC
Gate-Source Charge		Q_{gs}	-	21	-	
Gate-Drain Charge		Q_{gd}	-	13.8	-	
Maximun Body-Diode Continuous Current		I_S	-	-	150	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	515	A
Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	V_{SD}	-	-	1	V
Reverse Recovery Time	$I_S = I_F, I_{SD}=20A, V_{GS} = 0 V,$ $dl / dt = 100 A/\mu s$	t_{rr}	-	57	-	ns
Reverse Recovery Charge		Q_{rr}	-	85	-	nC

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

Ratings and Characteristic Curves

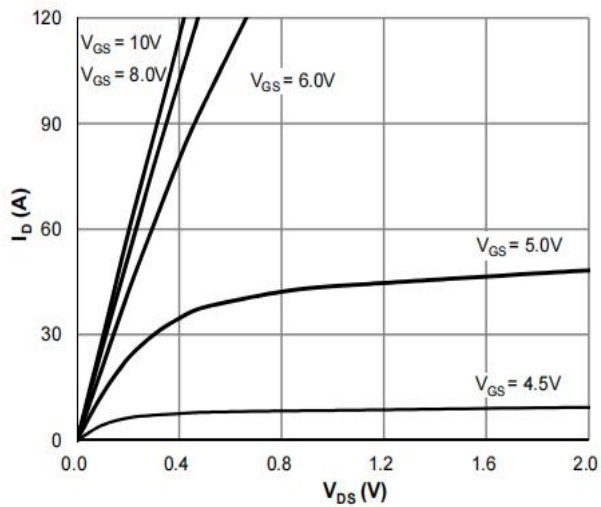


Figure 1: Saturation Characteristics

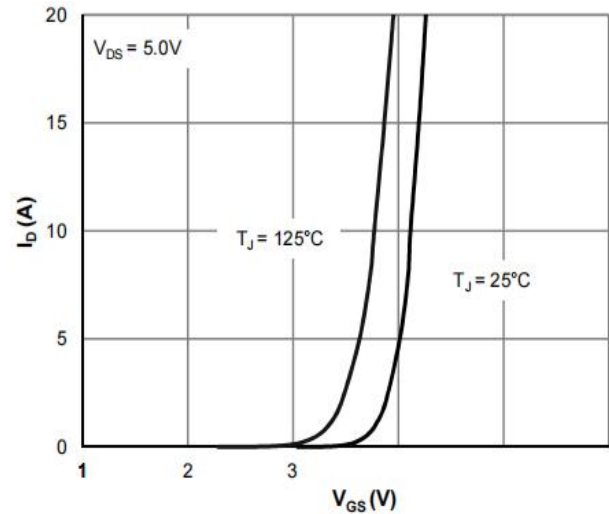


Figure 2: Transfer Characteristics

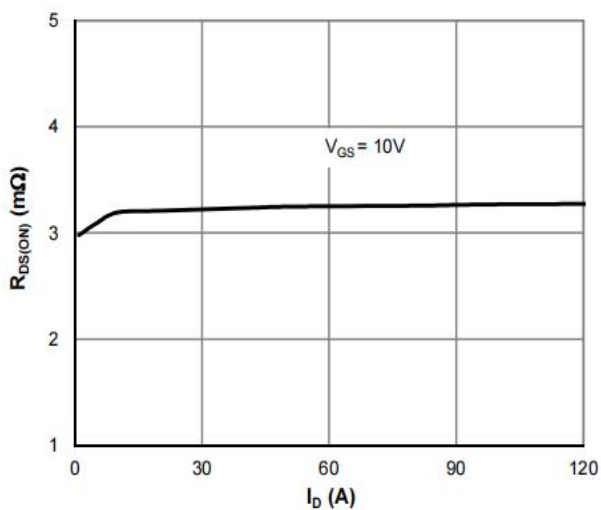


Figure 3: $R_{DS(ON)}$ vs. Drain Current

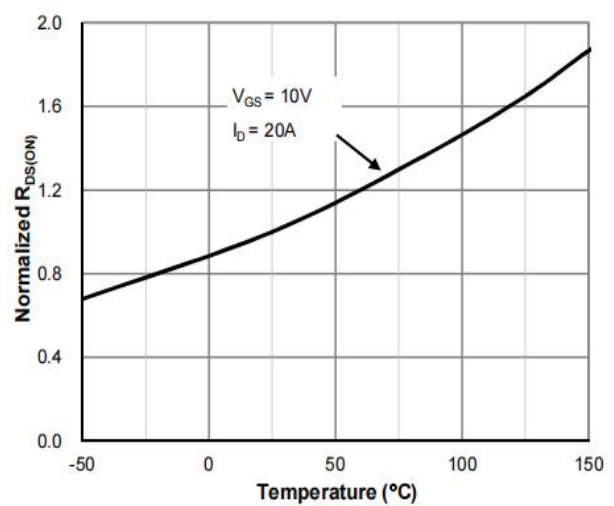


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

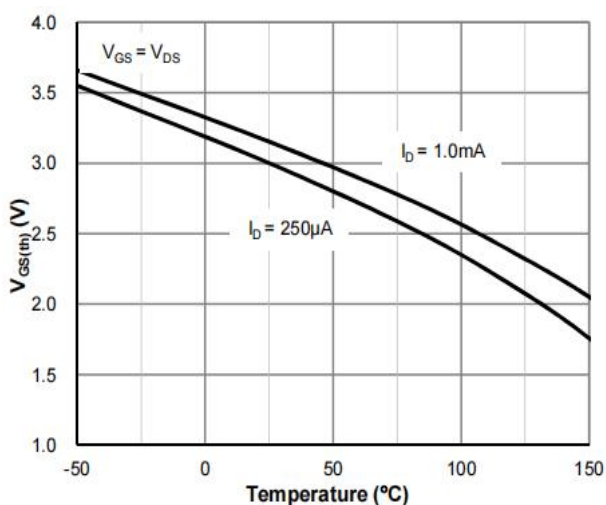


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

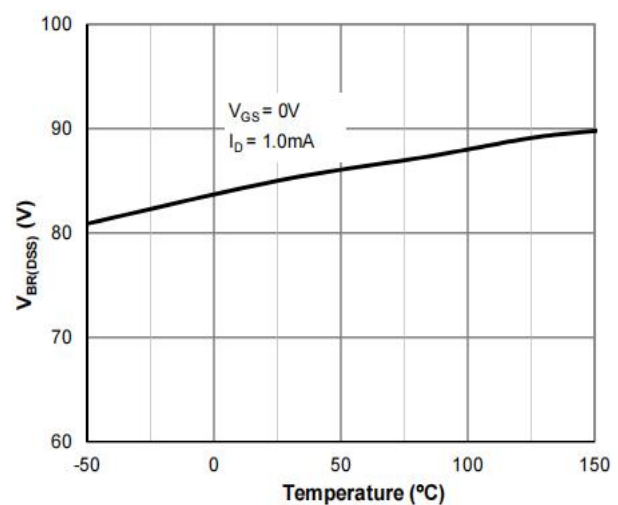


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Ratings and Characteristic Curves

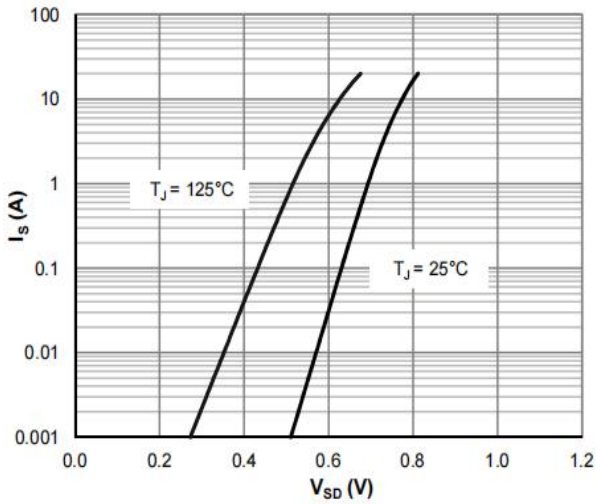


Figure 7: Body-Diode Characteristics

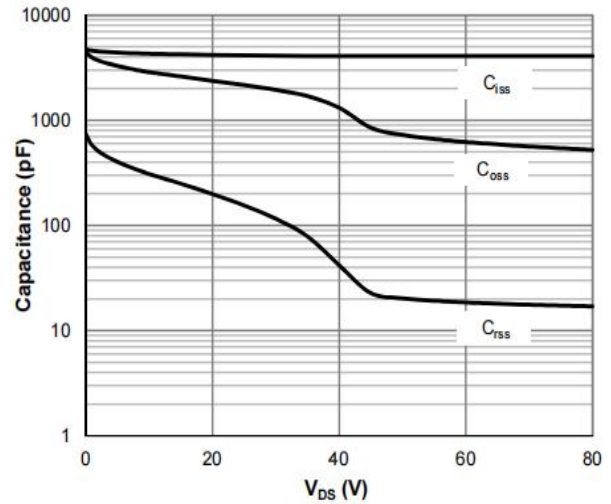


Figure 8: Capacitance Characteristics

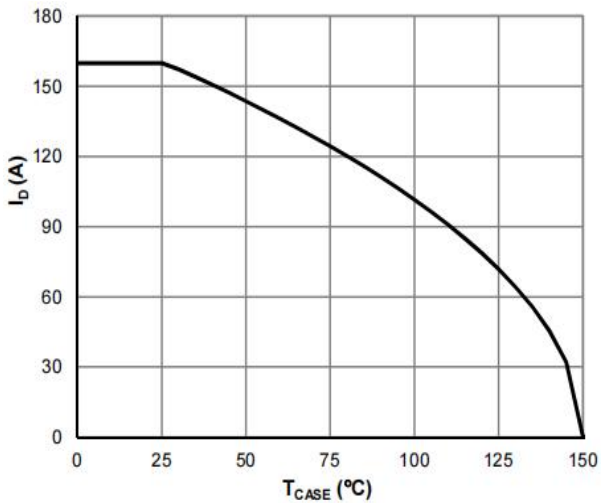


Figure 9: Current De-rating

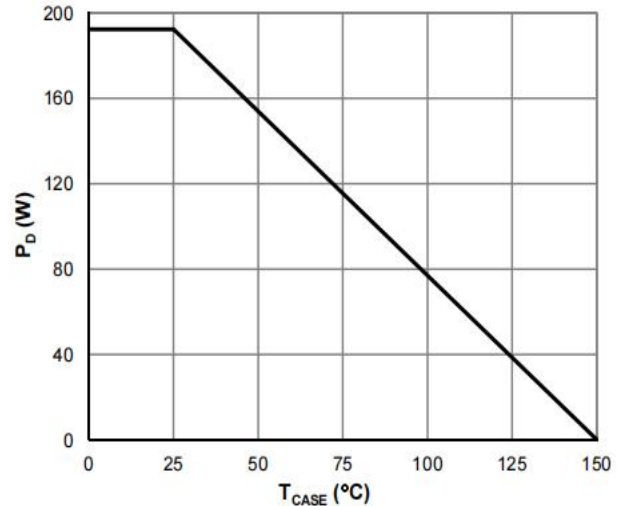


Figure 10: Power De-rating

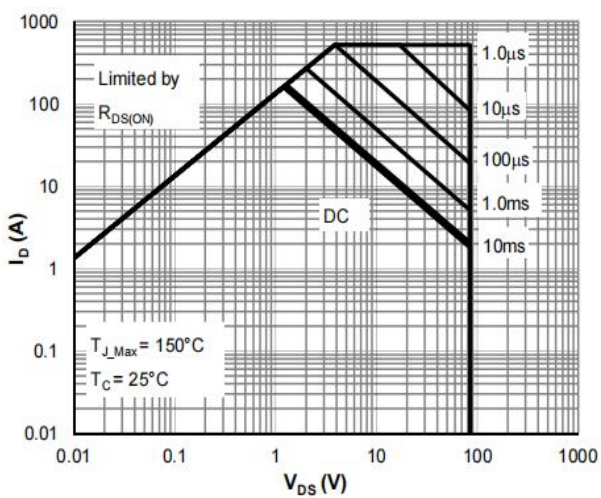


Figure 11: Maximum Safe Operating Area

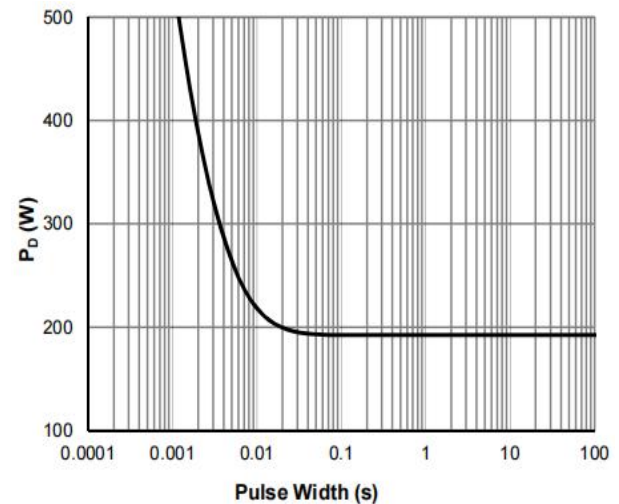
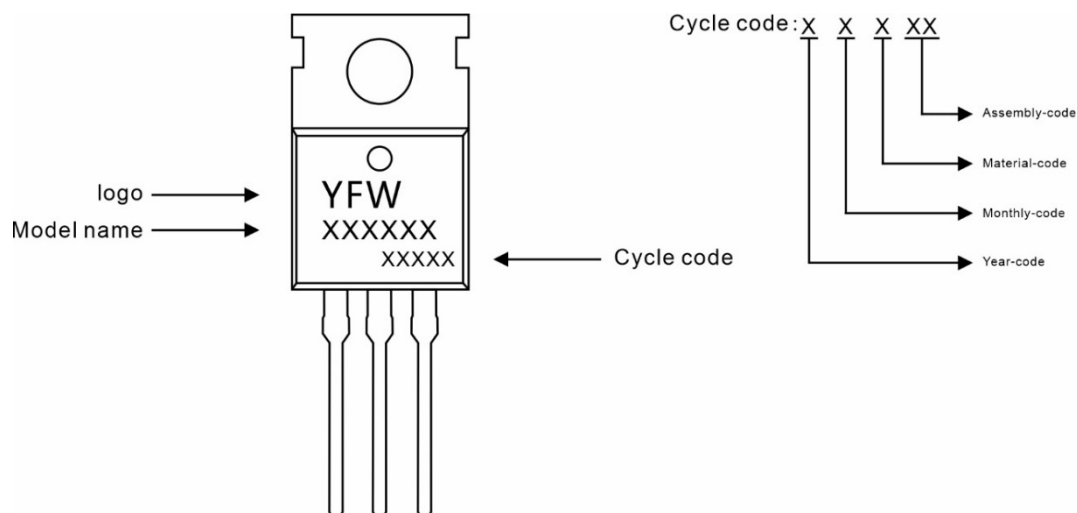


Figure 12: Single Pulse Power Rating, Junction-to-Case

Marking Diagram



Ordering information

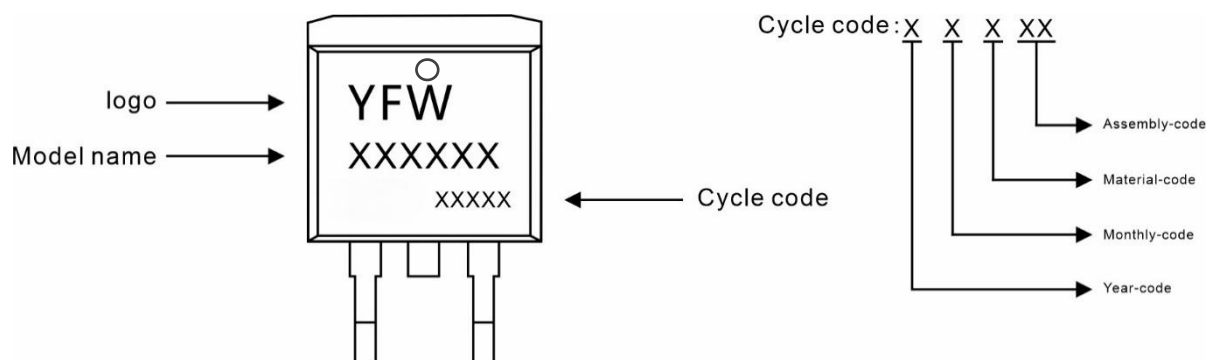
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG150N085AC	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220C

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.34	4.67	0.171	0.184
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG150N085ASC	TO-263C	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Carton

Package Dimensions

TO-263C

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A1	0.00	0.15	0.000	0.006
A2	4.30	4.55	0.169	0.179
B	1.10	1.50	0.043	0.059
b	0.70	0.90	0.028	0.035
b1	1.20	1.50	0.047	0.059
c	0.30	0.60	0.012	0.024
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
L	15.00	15.30	0.591	0.602
L1	5.20	5.40	0.205	0.213
L2	2.40	2.60	0.094	0.102
L3	1.60	1.80	0.063	0.071

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