

-100V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

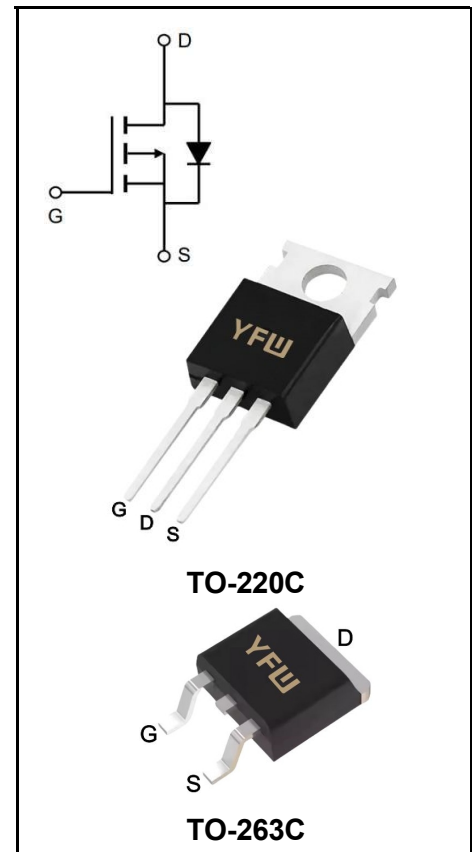
I_D	-50A
V_{DSS}	-100V
R_{DS(on)}-typ(@V_{GS}=-10V)	<22mΩ(Typ:16mΩ)

APPLICATIONS

- ♦ **YFW-SGT technology**
- ♦ Brushless motor
- ♦ Load switch
- ♦ Uninterruptible power supply

MECHANICAL DATA

- ♦ Case: TO-220C/AC, TO-263/ASC
- ♦ 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 Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DSS}	-100	V
Gate - Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-50	A
Pulsed Drain Current (note1)	I_{DM}	-200	A
Single Pulsed Avalanche Energy	E_{AS}	86	mJ
Power Dissipation	P_D	140	W
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance Junction to Case	R_{θJC}	1.1	°C/W
Thermal Resistance, Junction to Ambient	R_{θJA}	62	°C/W

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

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	BV_{DSS}	-100	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=-100V$, $V_{GS}=0V$,	I_{DSS}	-	-	-1	μA
Gate to Body Leakage Current	$V_{DS}=0V$, $V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=-250\mu A$	$V_{GS(th)}$	-2	-	-4	V
Static Drain-Source on-Resistance	$V_{GS}=-10V$, $I_D=-10A$	$R_{DS(ON)}$	-	16	22	m Ω
Input Capacitance	$V_{DS}=-50V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	2100	-	pF
Output Capacitance		C_{oss}	-	190	-	
Reverse Transfer Capacitance		C_{rss}	-	13	-	
Turn-on Delay Time(Note2)	$V_{DS}=-50V$ $I_D=-5A$ $V_{GS}=-10V$ $R_G=6\Omega$	$t_{d(on)}$	-	13	-	ns
Turn-on Rise Time(Note2)		T_r	-	36	-	ns
Turn-off Delay Time(Note2)		$t_{d(OFF)}$	-	98	-	ns
Turn-off Fall Time(Note2)		t_f	-	103	-	ns
Total Gate Charge(Note2)	$V_{DS}=-50V$ $I_D=-5A$ $V_{GS}=-10V$	Q_g	-	40	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	7.6	-	nC
Gate to Drain Charge(Note2)		Q_{gd}	-	8.2	-	nC
Maximun Body-Diode Continuous Current		I_S	-	-	-50	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	-200	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V$, $I_S=-30A$, $T_J=25^{\circ}\text{C}$	V_{SD}	-	-	-1.2	V
Reverse Recovery Time	$I_S = I_F$, $I_{SD}=-5A$, $V_{GS}=0V$, $dI/dt = 100A/\mu s$	trr	-	100	-	ns
Reverse Recovery Charge		Q_{rr}	-	268	-	nC

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

RATINGS AND CHARACTERISTIC CURVES

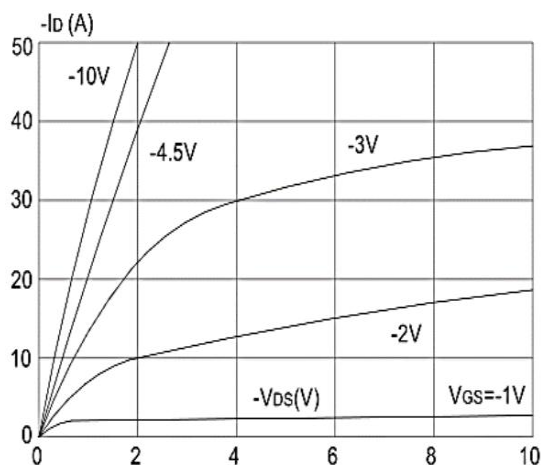


Figure1: Output Characteristics

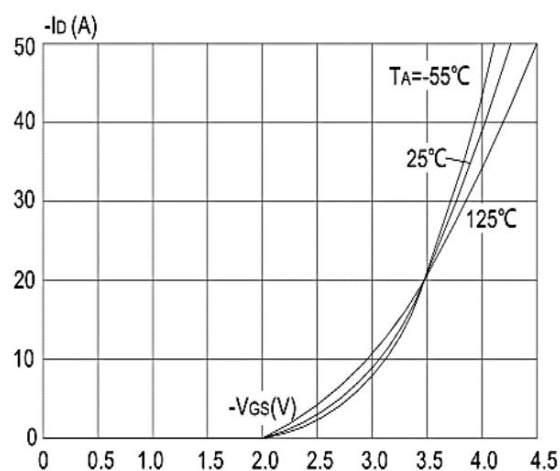


Figure 2: Typical Transfer Characteristics

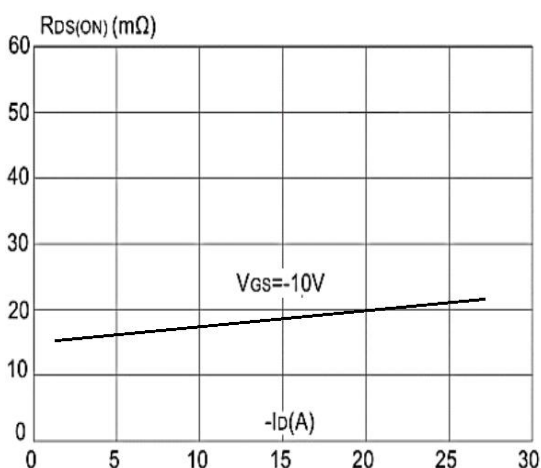


Figure 3: On-resistance vs. Drain Current

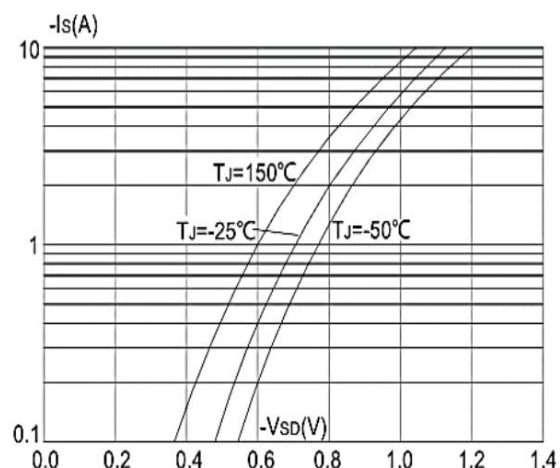


Figure 4: Body Diode Characteristics

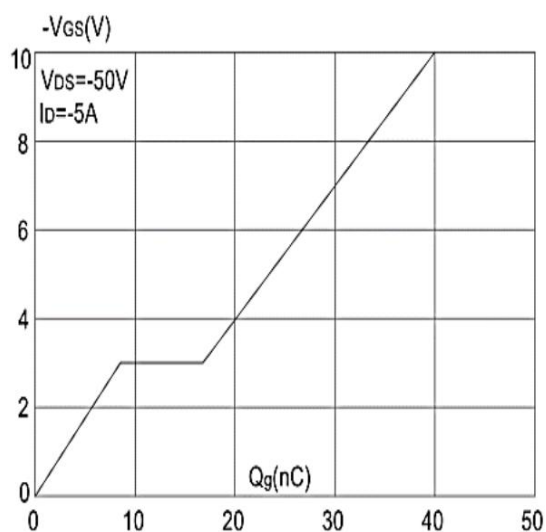


Figure 5: Gate Charge Characteristics

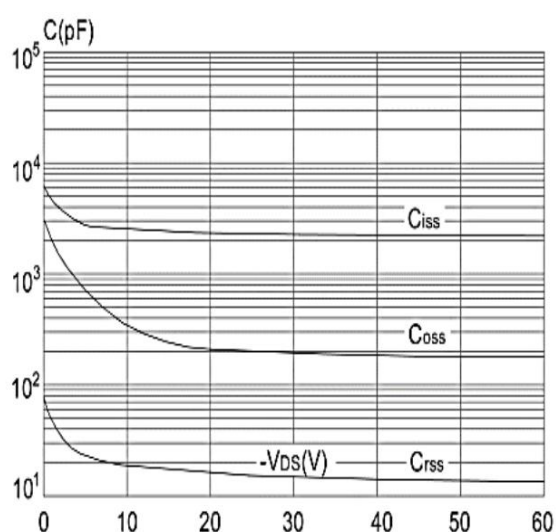


Figure 6: Capacitance Characteristics

RATINGS AND CHARACTERISTIC CURVES

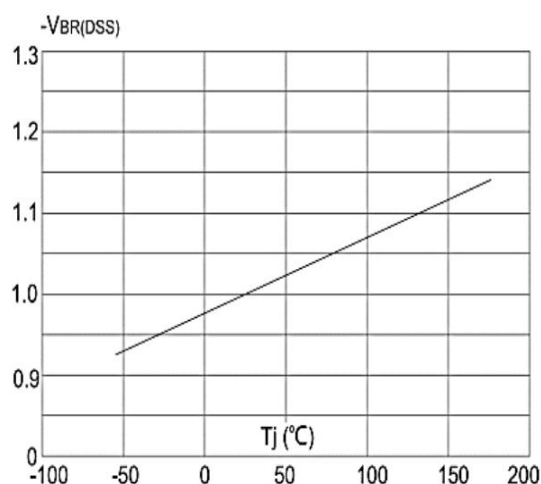


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

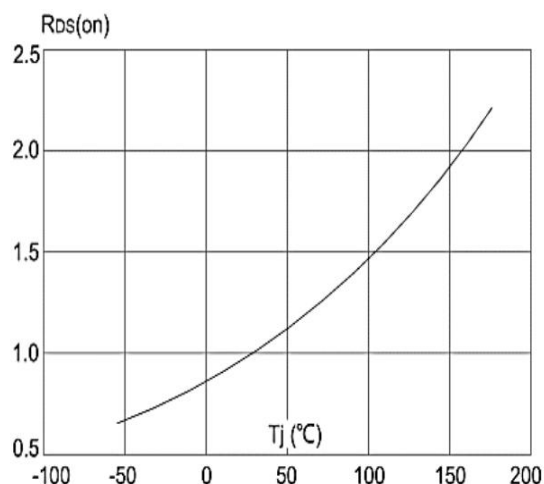


Figure 8: Normalized on Resistance vs. Junction Temperature

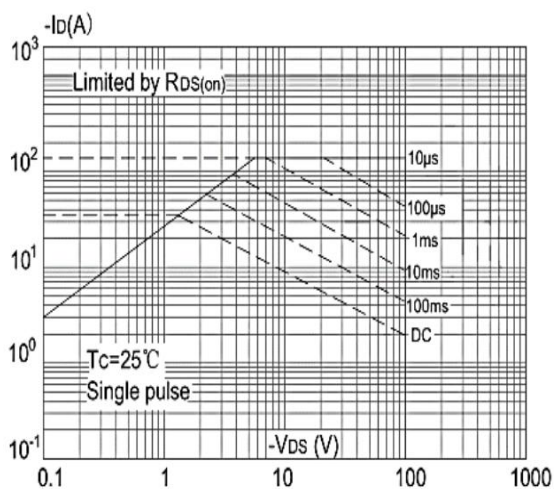


Figure 9: Maximum Safe Operating Area

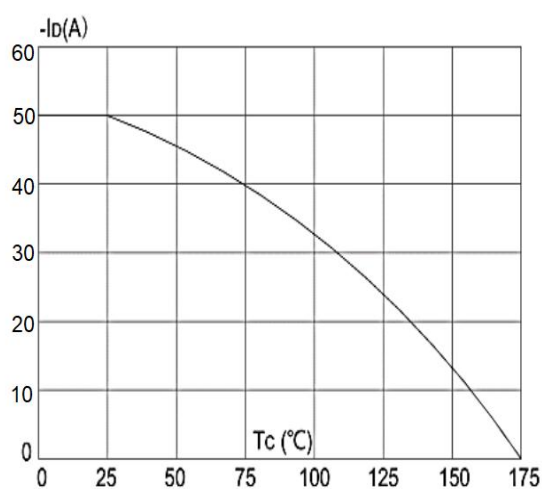


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

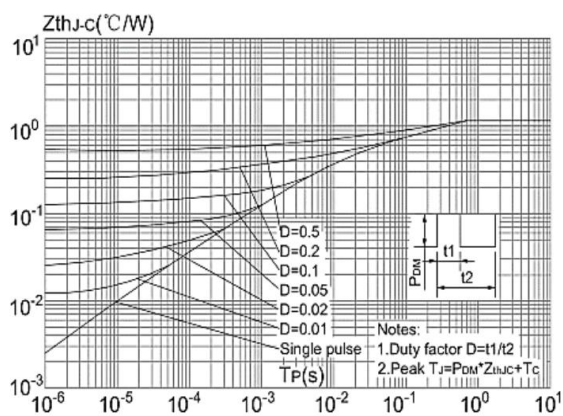
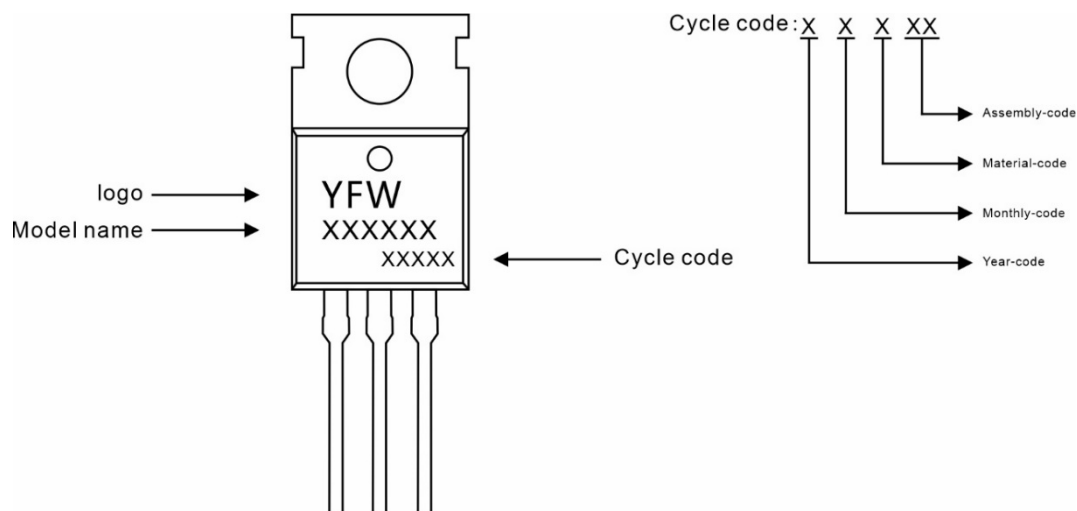


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Marking Diagram



Ordering information

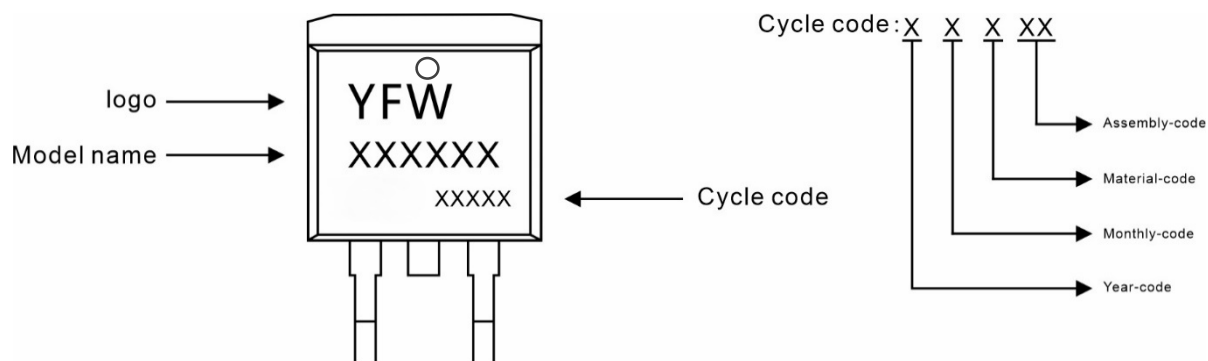
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG50P10AC	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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
YFWG50P10ASC	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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