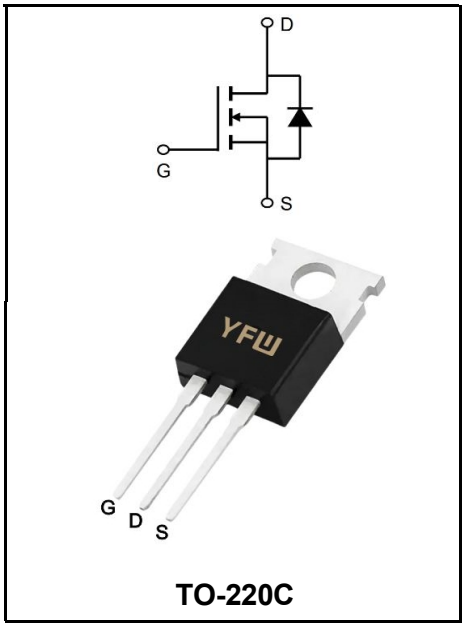
650V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	650V
R_{DSON}-typ(@V_{GS}=10V)	＜0.74Ω(Type:0.59Ω)



TO-220C

FEATURES

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

Application

- Power switch circuit of adaptor and charger.

MECHANICAL DATA

- Case: TO-220C/AC
- 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℃ maximum,10s per JESD 22-B106

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{Gs}	±30	V
Continue Drain Current	I_D	12	A
Pulsed Drain Current (Note1)	I_{DM}	48	A
Power Dissipation	P_D	150	W
Single Pulse Avalanche Energy(Note2)	E_{AS}	750	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.83	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W

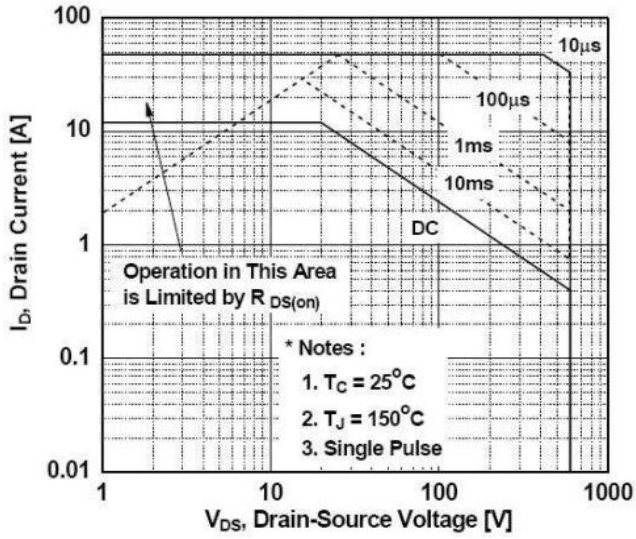
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

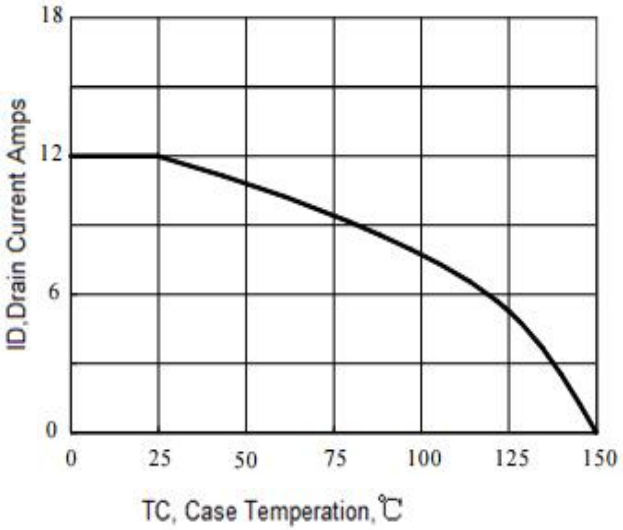
Electrical Characteristics at Tc=25°C unless otherwise specified

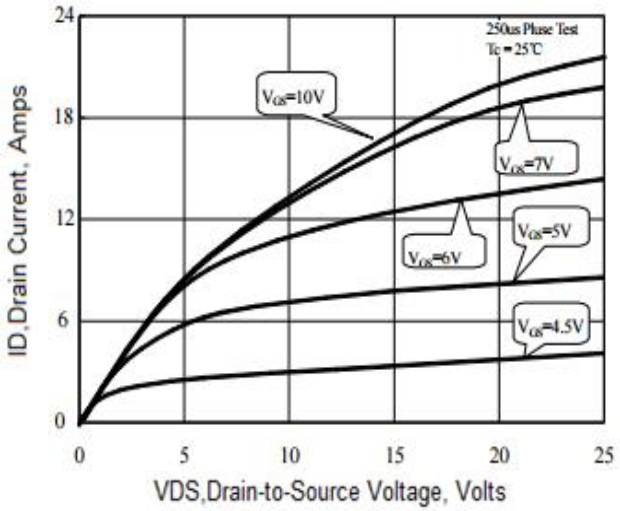
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	650	690	-	V
Drain-Source Leakage Current	V_{DS}=650V,V_{GS}=0V	I_{DSS}	-	-	1	μA
	V_{DS}=520V,Tc=125°C		-	-	10	μA
Gate Leakage Current	V_{GS}=±30V,V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	V_{GS}=10V,I_D=6A	$R_{DS(ON)}$	-	0.59	0.74	Ω
Forward Transconductance	V_{DS}=40V,I_D=6A	gfs	-	11	-	S
Input Capacitance	V_{GS}=0V,V_{DS}=25V, f = 1 MHz	C_{iss}	-	2450	-	pF
Output Capacitance		C_{oss}	-	140	-	
Reverse Transfer Capacitance		C_{rss}	-	9	-	
Turn-on Delay Time	I_D = 12 A, V_{DD} = 325V, R_G= 10 Ω	$t_{d(on)}$	-	29	-	ns
Rise Time		T_r	-	27	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	65	-	
Fall Time		t_f	-	46	-	
Total Gate Charge	I_D = 12 A, V_{DD} = 520 V, V_{GS} = 10 V	Q_g	-	50	-	nC
Gate to Source Charge		Q_{gs}	-	10	-	
Gate to Drain Charge		Q_{gd}	-	14	-	
Maximun Body-Diode Continuous Current		I_S	-	-	12	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	48	A
Drain-Source Diode Forward Voltage	I_{SD} =12A	V_{SD}	-	-	1.5	V
Reverse Recovery Time	I_{SD}=12A,V_{GS}=0V,	t_{rr}	-	670	-	ns
Reverse Recovery Charge	dI_F / dt = 100 A/μs	Q_{rr}	-	4.4	-	μC

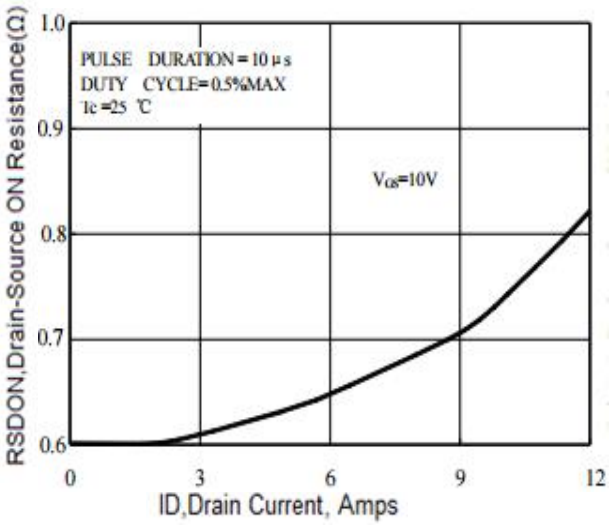
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

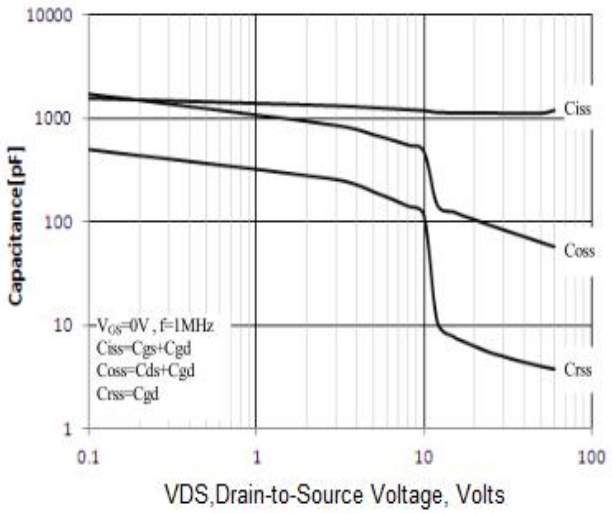
Ratings and Characteristic Curves

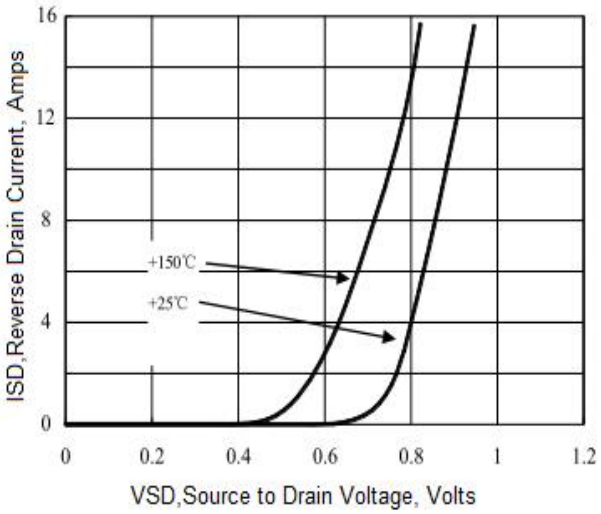












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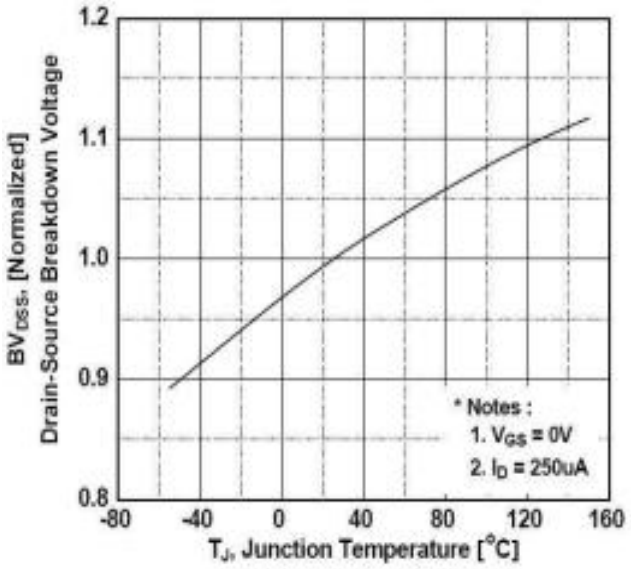
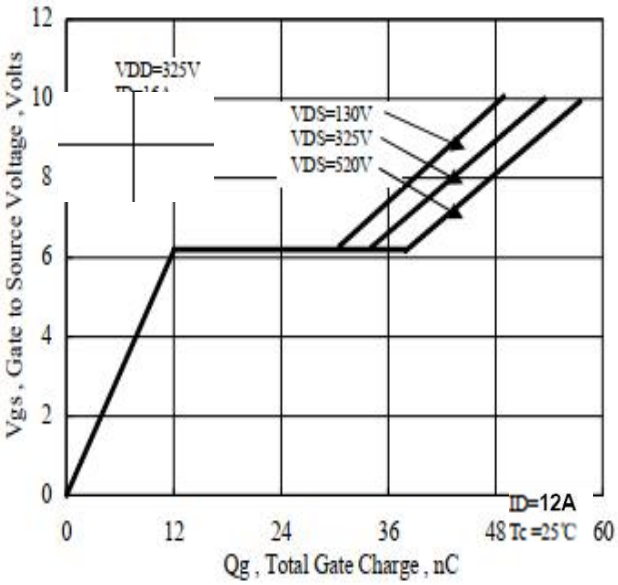
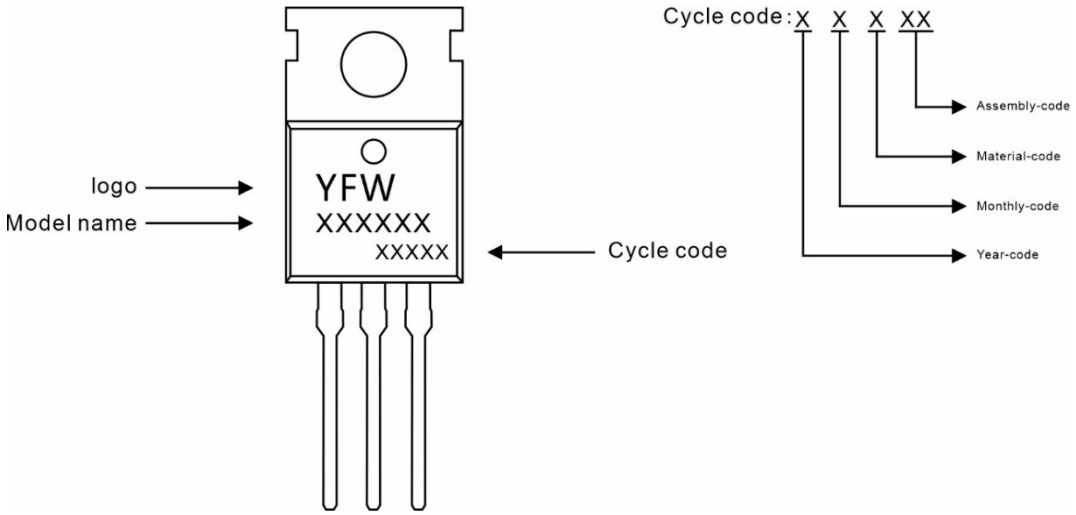




Marking Diagram

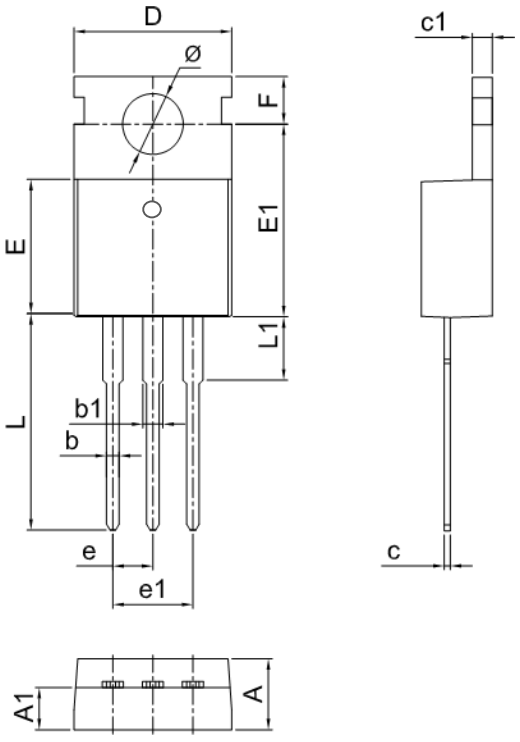


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW12N65AC	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

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