

600V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

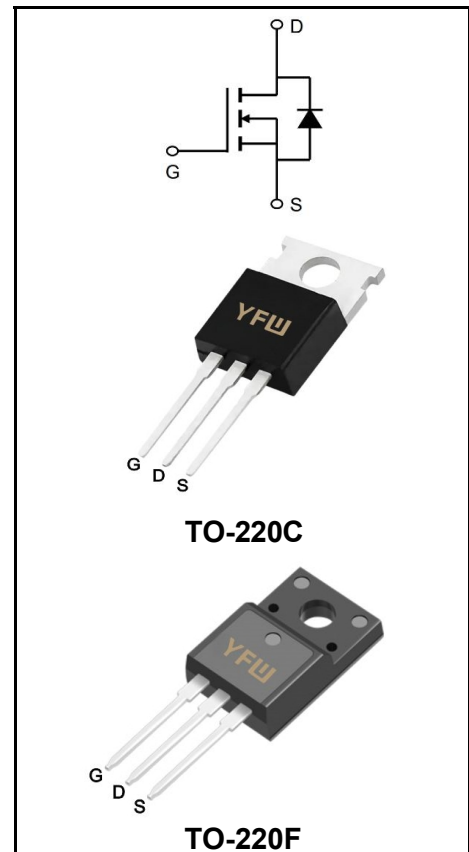
I_D	12A
V_{DSS}	600V
$R_{DS(ON)-typ}(@V_{GS}=10V)$	<0.8Ω (Type:0.5 Ω)

Features

- ◆Fast Switching
- ◆Low ON Resistance
- ◆Low Gate Charge
- ◆100% Single Pulse avalanche energy Test
- ◆LeadfreeincomplywithEURoHS2011/65/EUdirectives

Mechanical Data

- ◆Case: Molded plastic
- ◆Mounting Position: Any
- ◆Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆Solder bath temperature275℃maximum,10s per JESD22-106



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value		Units
		220F	220C	
Drain-Source Voltage	V_{DS}	600		V
Gate-Source Voltage	V_{GS}	±30		V
Continue Drain Current-Continuous (TC = 25°C)	I_D	12		A
-Continuous (TC = 100°C)		7.4		
Pulsed Drain Current (Note1)	I_{DM}	48		A
Power Dissipation	P_D	55	140	W
-Derate above 25°C		0.5	1.33	
Single Pulse Avalanche Energy (Note2)	E_{AS}	700		mJ
Avalanche Current (Note 1)	I_{AR}	10		A
Repetitive Avalanche Energy (Note 1)	E_{AS}	25		mJ
Operating Temperature Range	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Thermal Resistance, Junction to Case	R_{θJC}	2.36	0.89	°C/W
Thermal Resistance, Junction to Ambient	R_{θJA}	62.5	62.5	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

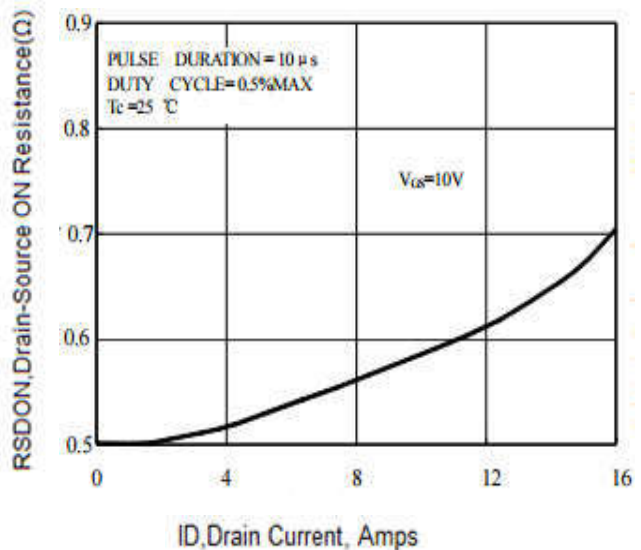
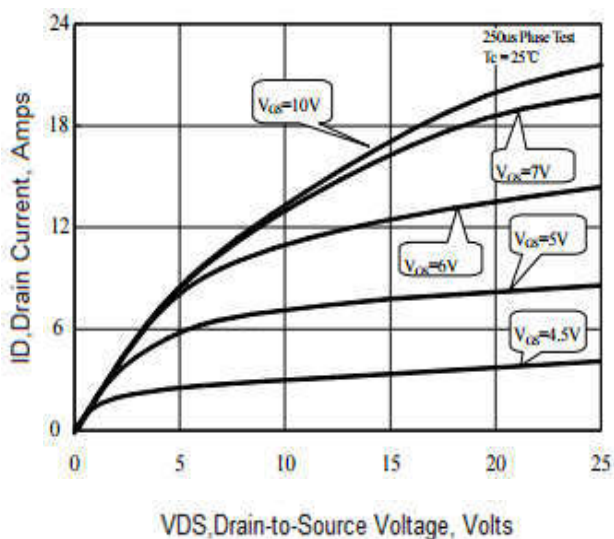
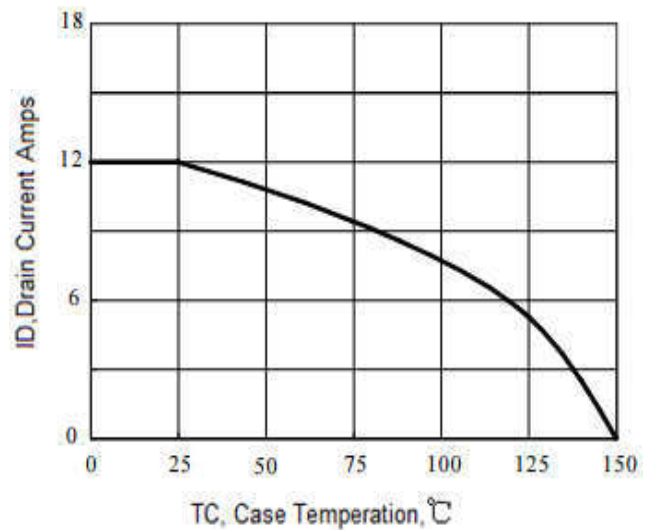
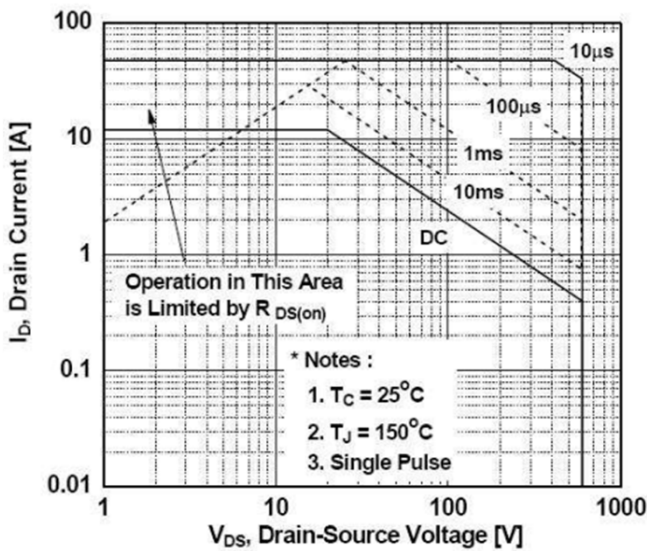
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	BV_{DSS}	600	-	-	V
Drain-Source Leakage Current	V _{DS} = 600 V, V _{GS} = 0 V	I_{DSS}	-	-	1	uA
	V _{DS} = 480 V, T _c = 125°C		-	-	10	
Gate Leakage Current	V _{GS} = ± 30 V, V _{DS} = 0 V	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} = 10 V, I _D = 6 A	R_{DS(on)}	-	0.5	0.8	Ω
Forward Transconductance	V _{DS} = 40 V, I _D = 6 A	g_{fs}	-	12	-	S
Input Capacitance	V _{GS} = 0 V, V _{DS} = 25 V, f = 1MHz	C_{iss}	-	1540	-	pF
Output Capacitance		C_{oss}	-	180	-	
Reverse Transfer Capacitance		C_{rss}	-	8	-	
Turn-on Delay Time	I _D = 12 A, V _{DD} = 300 V, R _G = 10Ω(Note3,4)	td(ON)	-	16	-	nS
Rise Time		tr	-	26	-	
Turn-Off Delay Time		td(OFF)	-	65	-	
Fall Time		tf	-	40	-	
Total Gate Charge	I _D = 12 A, V _{DD} = 480V, V _{GS} = 10 V(Note3,4)	Q_G	-	44	-	nC
Gate to Source Charge		Q_{GS}	-	10	-	
Gate to Drain Charge		Q_{GD}	-	16	-	

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

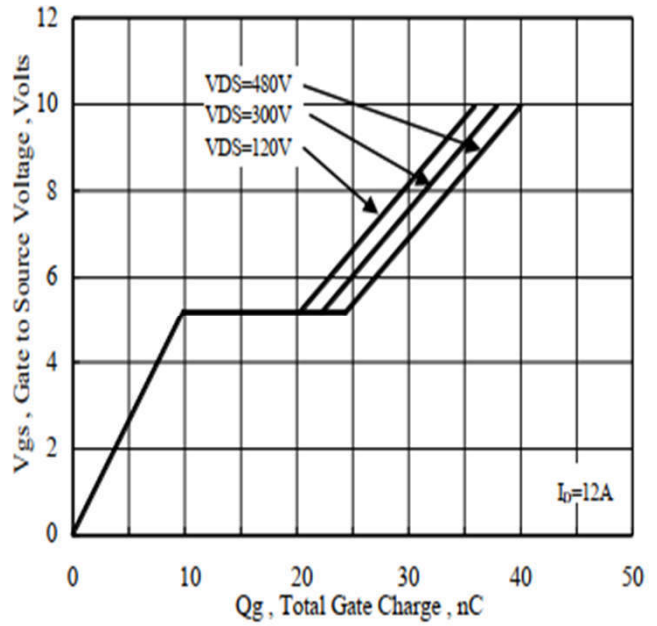
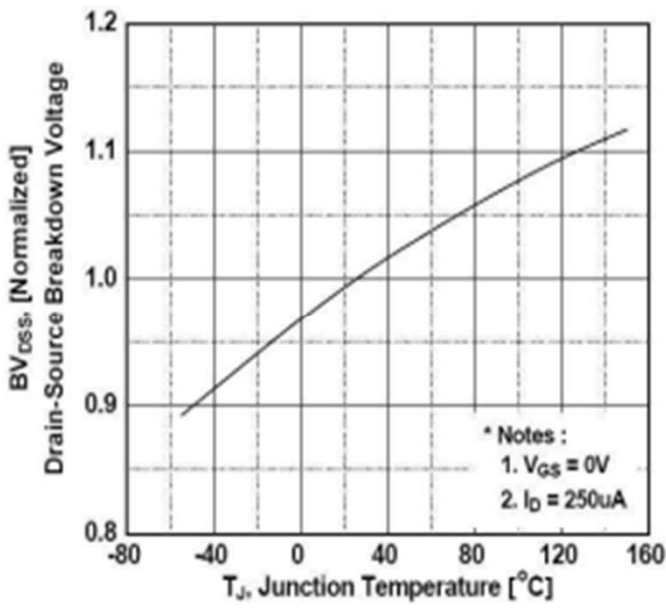
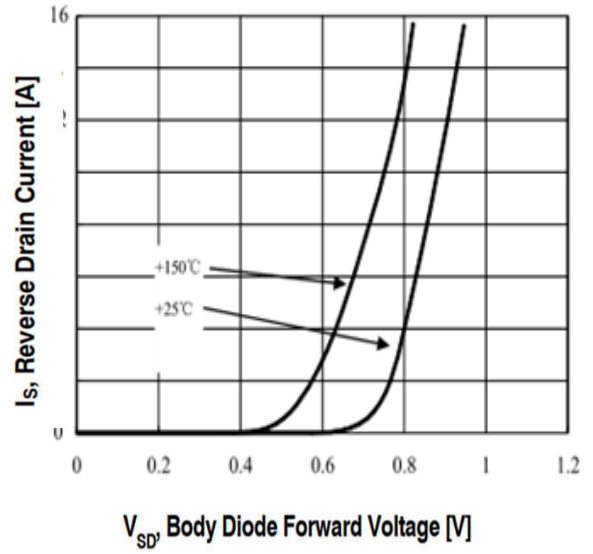
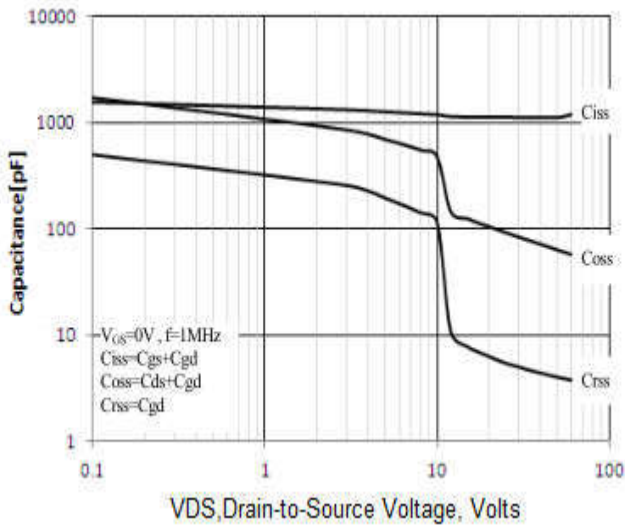
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		I_S	-	-	12	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	48	A
Drain-Source Diode Forward Voltage	I _{SD} = 12 A	V_{SD}	-	-	1.5	V
Reverse Recovery Time	I _{SD} = 12 A, V _{GS} = 0 V, dI _F / dt = 100 A/μs (Note3)	trr	-	324	-	nS
Reverse Recovery Charge		Qrr	-	2.5	-	uC

- Note:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
 2. IAS = 12 A, VDD = 50 V, L = 10mH, RG = 25Ω, starting TJ = 25°C.
 3. ulse test: Pulse Width ≤ 300 μ s, Duty Cycles ≤ 2%.
 4. Essentially Independent of Operating Temperature.

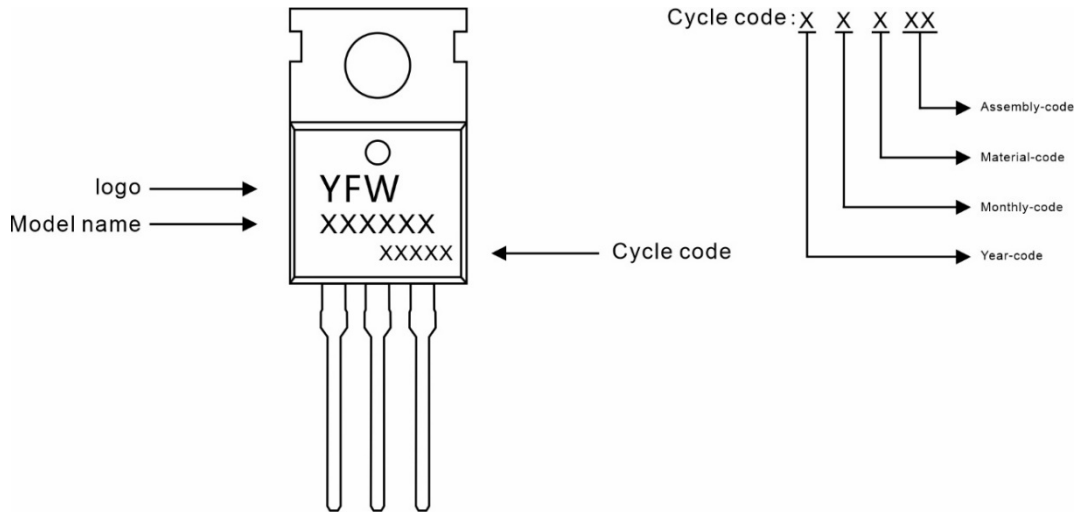
Ratings and characteristic Curves



Ratings and Characteristic Curves



Marking Diagram



Ordering information

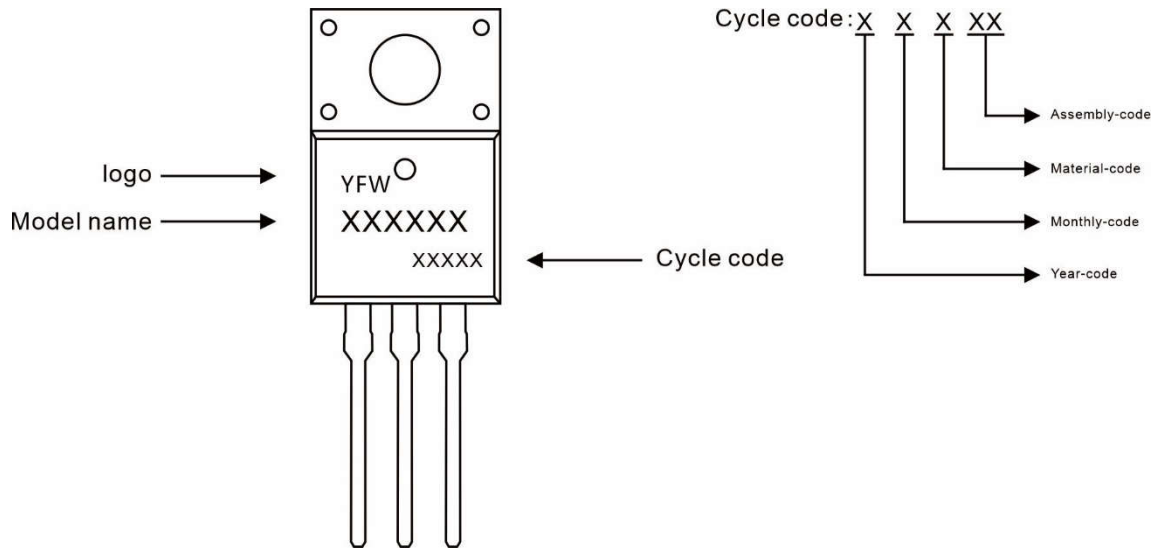
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW12N60AC	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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
YFW12N60AF	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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