

600V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	20A
V_{DSS}	600V
R_{DS(on)-typ}(@V_{GS}=10V)	<0.45 Ω (Typ:0.325 Ω)

FEATURES

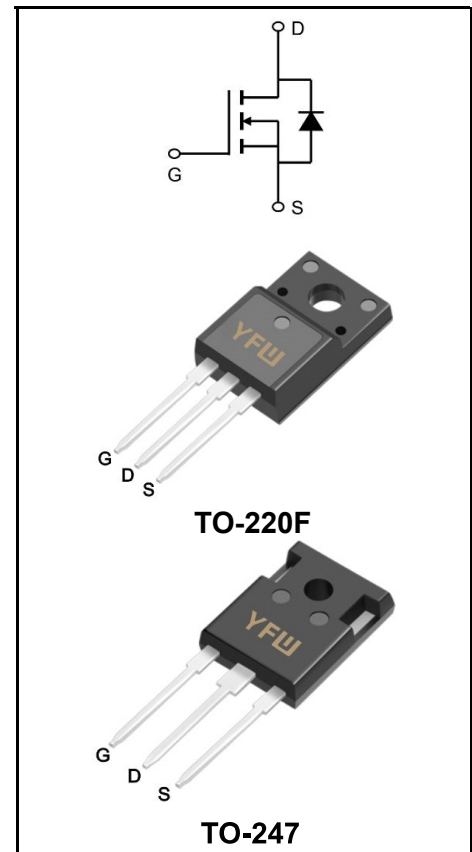
- ♦Fast Switching
- ♦Low ON Resistance
- ♦Low Gate Charge
- ♦100% Single Pulse avalanche energy Test

Application

- ♦Power switch circuit of adaptor and charge

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℃ maximum,10s per JESD 22-B106



Maximum Ratings at Tc=25℃ unless otherwise specified

Characteristics	Symbols	Value		Units
		220F	247	
Drain-Source Voltage	V _{DS}	600		V
Gate - Source Voltage	V _{GS}	±30		V
Continuous Drain Current	I _D	20		A
Pulsed Drain Current(note1)	I _{DM}	80		A
Power Dissipation	P _D	45	250	W
Single Pulse Avalanche Energy(note1)	E _{AS}	1200		mJ
Operating Temperature Range	T _J	150		℃
Operating Temperature Range	T _{STG}	-55 to +150		℃
Thermal Resistance, Junction-to-case	R _{θJC}	2.78	0.5	℃/W
Thermal Resistance, Junction ambient	R _{θJA}	62.5	40	℃/W

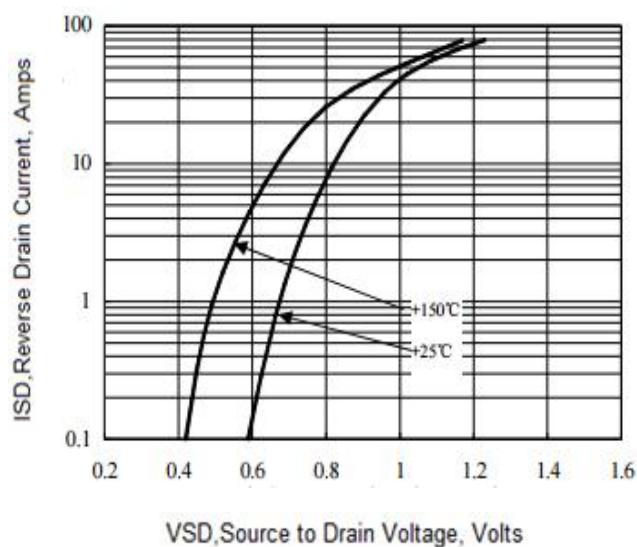
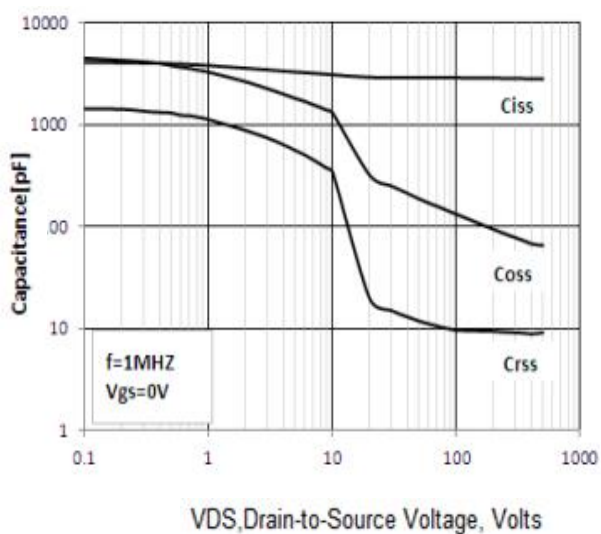
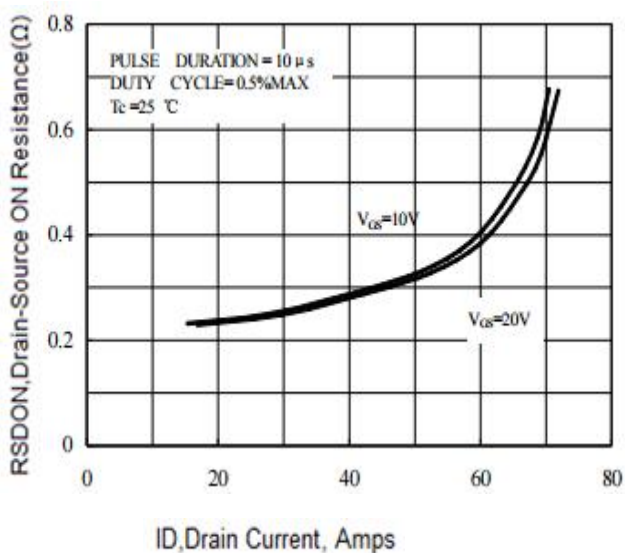
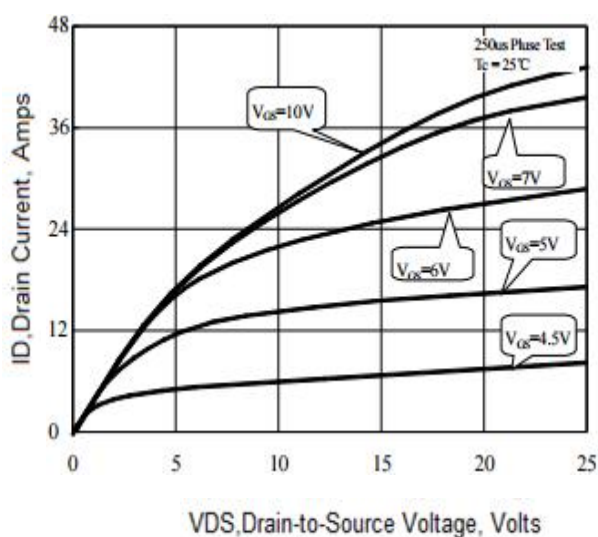
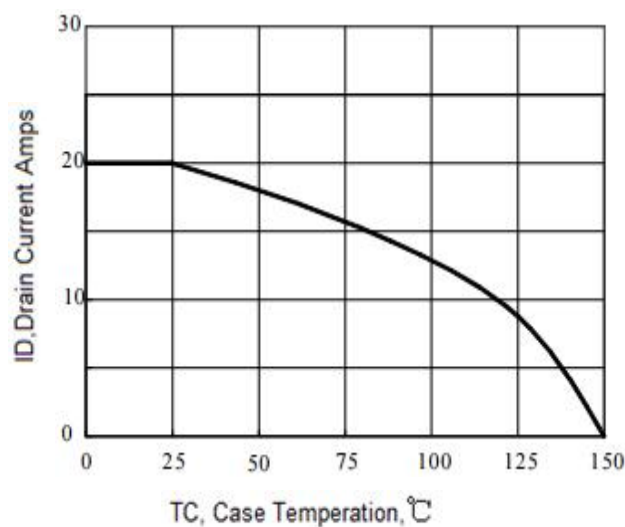
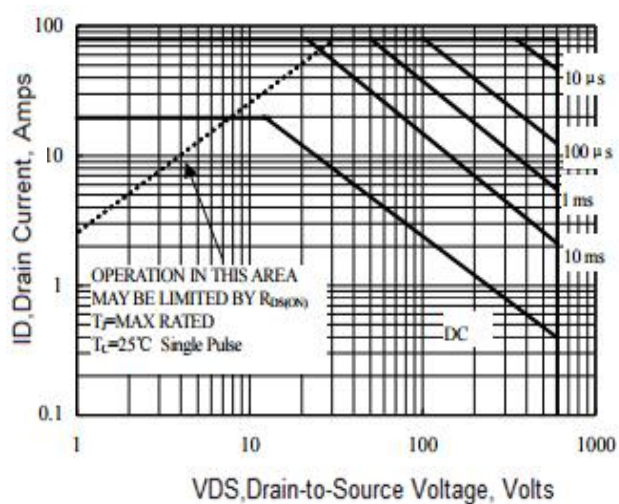
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

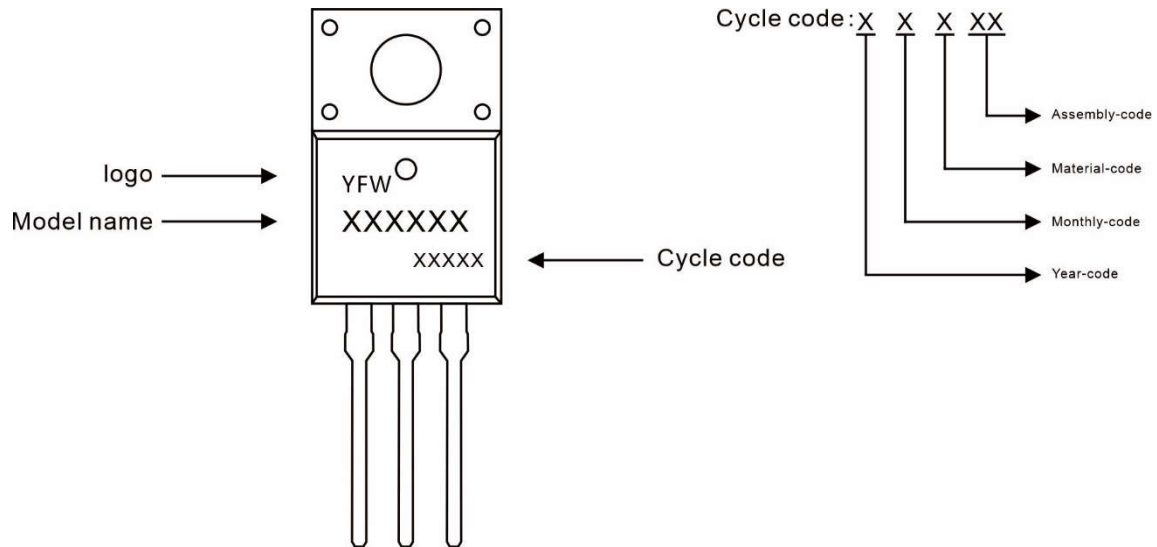
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	600	-	-	V
Drain-Source Leakage Current	$V_{DS}=600V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(ON)}$	-	0.325	0.45	Ω
Forward Transconductance	$V_{DS}=15V, I_D=10A$	g_{fs}	-	17	-	S
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2881	-	pF
Output Capacitance		C_{oss}	-	253	-	
Reverse Transfer Capacitance		C_{rss}	-	22	-	
Turn-on delay time(note2)	$I_D=20A$ $V_{DD}=250V$ $R_G=10\Omega$	$t_{d(on)}$	-	36	-	nS
Rise Time(note2)		T_r	-	72	-	
Turn-Off Delay Time(note2)		$t_{d(OFF)}$	-	160	-	
Fall Time(note2)		t_f	-	72	-	
Total Gate Charge(note2)	$I_D=20A$ $V_{DD}=400V$ $V_{GS}=10V$	Q_g	-	61	-	nC
Gate-Source Charge(note2)		Q_{gs}	-	15	-	
Gate-Drain Charge(note2)		Q_{gd}	-	23	-	
Maximun Body-Diode Continuous Current		I_S	-	-	20	A
Maximun Body-Diode Continuous Current(note2)		I_{SM}	-	-	80	A
Drain-Source Diode Forward Voltage	$I_{SD}=20A$	V_{SD}	-	-	1.4	V
Reverse Recovery Time(note2)	$V_{GS}=0V, I_{SD}=20A$ $diF/dt=100A/\mu s$	t_{rr}	-	422	-	nS
Reverse Recovery Charge(note2)		Q_{rr}	-	3.6	-	uC

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

Ratings and Characteristic Curves



Marking Diagram



Ordering information

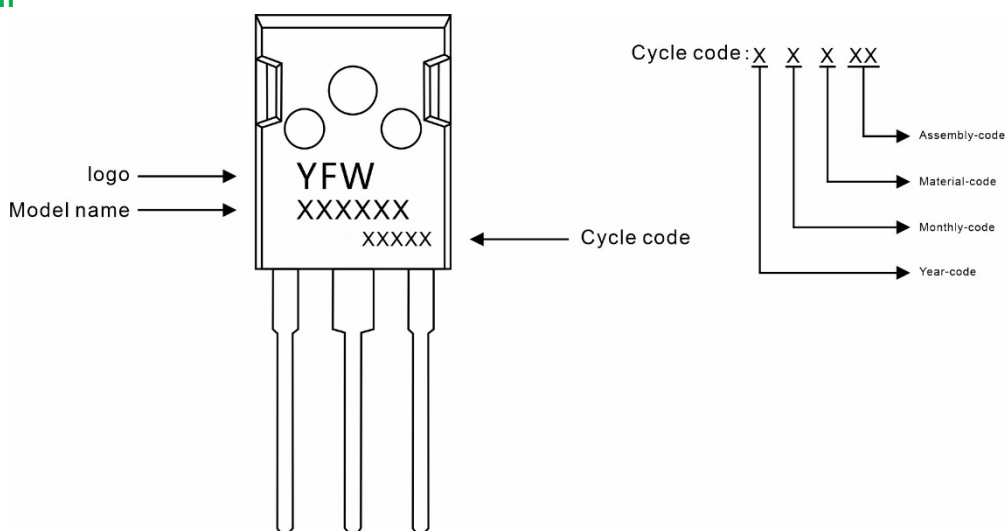
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW20N60AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW20N60AP	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

Package Dimensions

TO-247

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
b2	3.00	3.20	0.118	0.126
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
E	20.20	20.80	0.795	0.819
e	5.45 (BSC)		0.215 (BSC)	
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

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