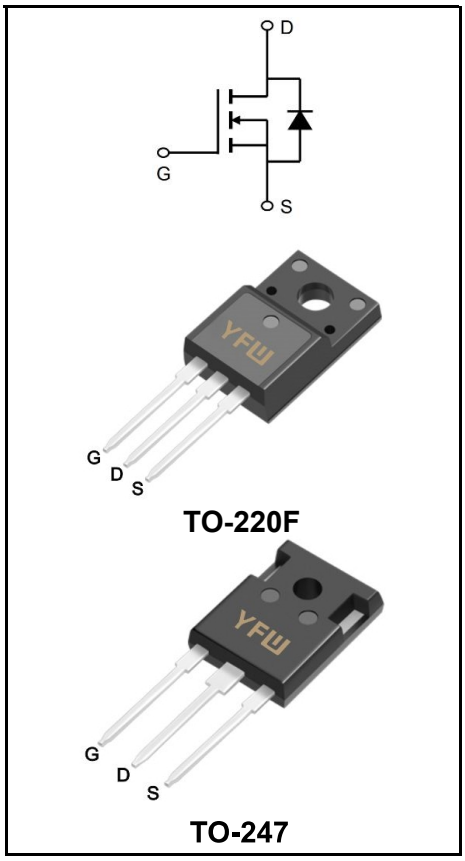
650V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	25A
V_{DSS}	650V
R_{DSON}-typ(@V_{GS}=10V)	＜0.42Ω(Type:0.3Ω)



FEATURES

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

Application

- LED power supplies
- Cell Phone Charger
- Standby Power

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°C unless otherwise specified

Characteristics	Symbol	Value		Unit
		220F	247	
Drain-Source Voltage	V_{DS}	650		V
Gate-Source Voltage	V_{Gs}	±30		V
Continue Drain Current	I_D	25		A
Pulsed Drain Current (Note1)	I_{DM}	100		A
Power Dissipation	P_D	280		W
Single Pulse Avalanche Energy(Note2)	E_{AS}	620		mJ
Operating Temperature Range	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Thermal Resistance, Junction to	$R_{\theta JC}$	0.5		°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	40		°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

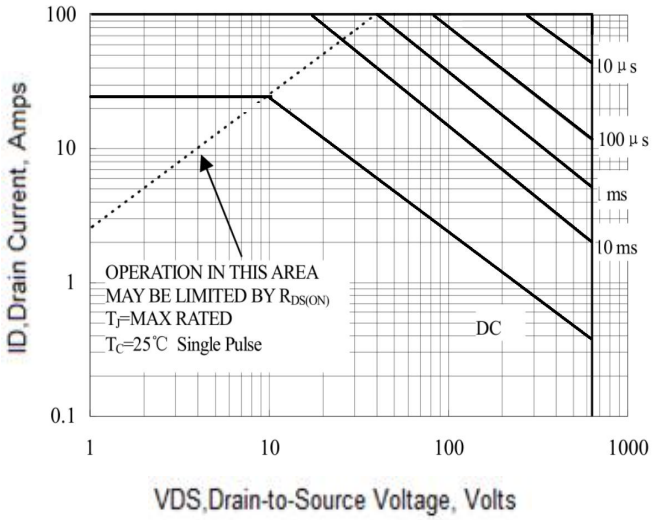
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	650	680	-	V
Drain-Source Leakage Current	V_{DS}=650V,V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS}=±30V,V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	V_{GS}=10V,I_D=12.5A	$R_{DS(on)}$	-	0.3	0.42	Ω
Forward Transconductance	V_{DS}=15V,I_D=10A	gfs	-	19	-	S
Input Capacitance	V_{GS}=0V,V_{DS}=2V, f = 200 KHz	C_{iss}	-	3761	-	pF
Output Capacitance		C_{oss}	-	270	-	pF
Reverse Transfer Capacitance		C_{rss}	-	22	-	pF
Turn-on Delay Time(Note2)	I_D = 12 A, V_{DD} = 325V, R_G= 10 Ω (Note3,4)	$t_{d(ON)}$	-	28	-	ns
Rise Time(Note2)		t_r	-	77	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	89	-	ns
Fall Time(Note2)		t_f	-	56	-	ns
Total Gate Charge(Note2)	I_D = 25 A, V_{DD} = 400 V, V_{GS} = 10 V	Q_G	-	70	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	25	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	34	-	nC

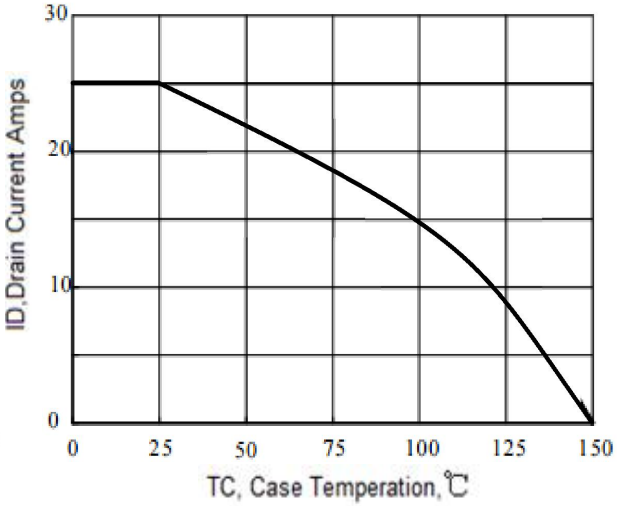
Electrical Characteristics at Tc=25°C unless otherwise specified

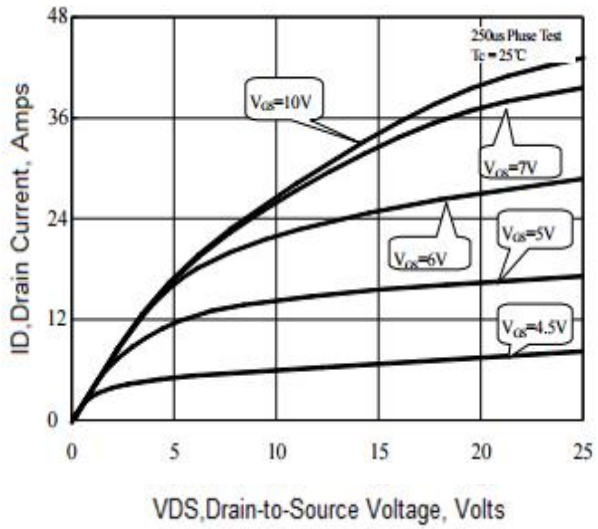
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	25	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	100	A
Drain-Source Diode Forward Voltage	I_{SD} =25A	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)	I_{SD}=20A,V_{GS}=0V, dI_F / dt = 100 A/μs (Note3)	trr	-	655	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	7.6	-	μC

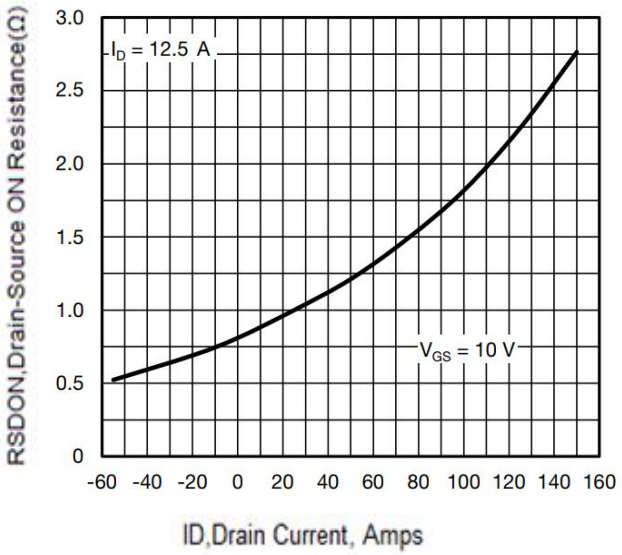
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

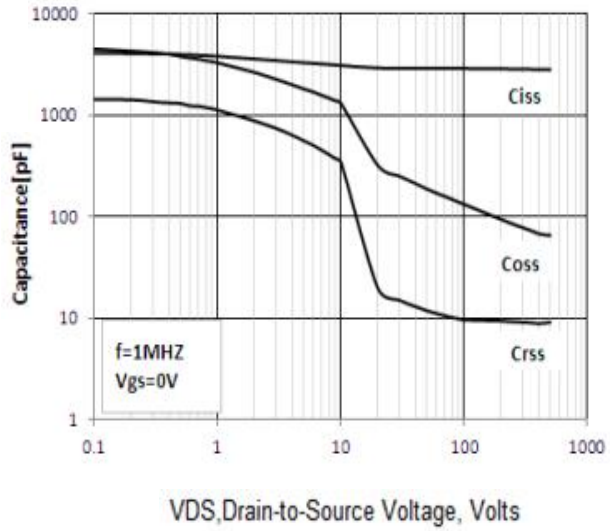
Ratings and Characteristic Curves

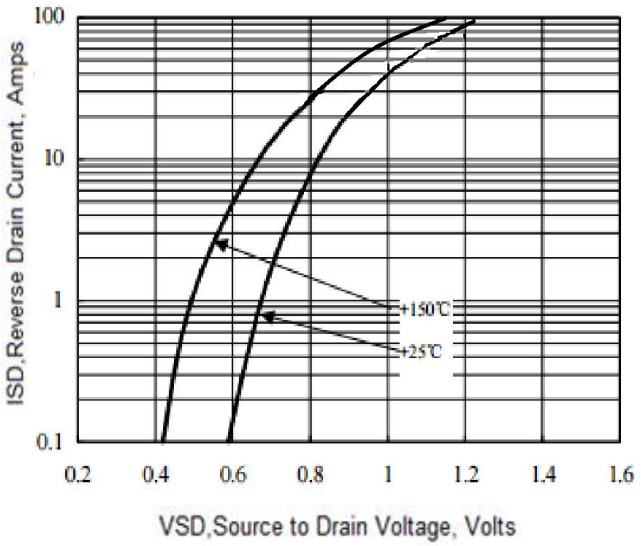




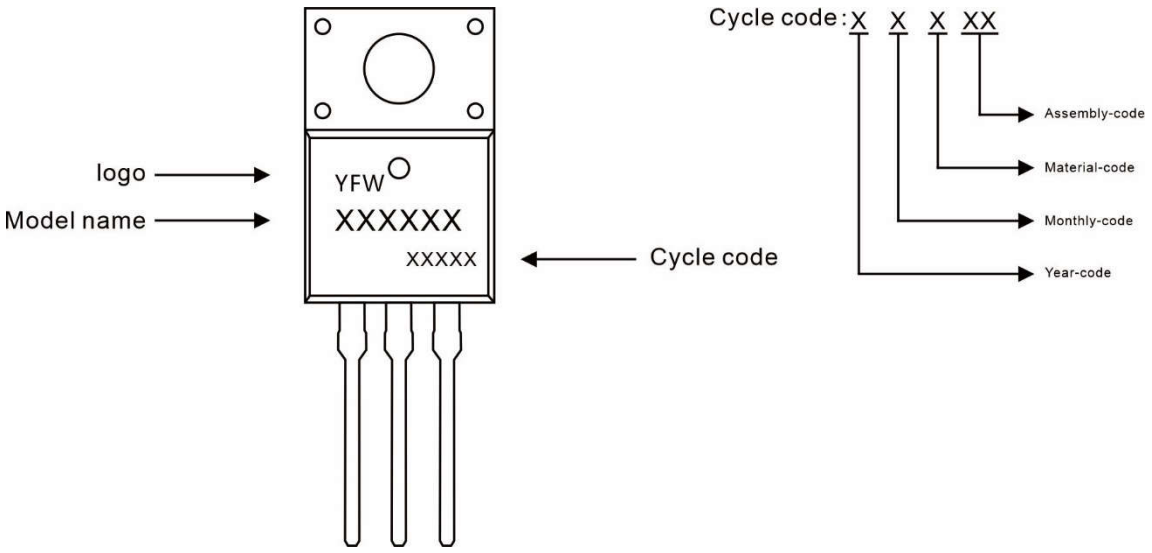








Marking Diagram

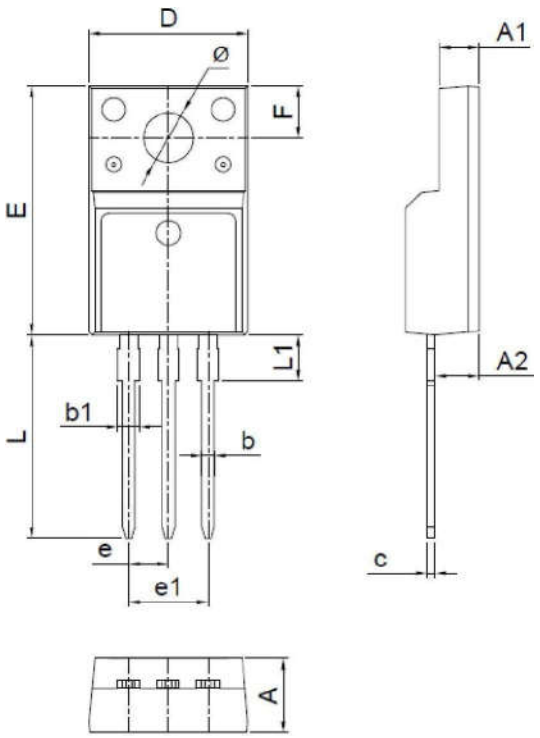


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW25N65AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

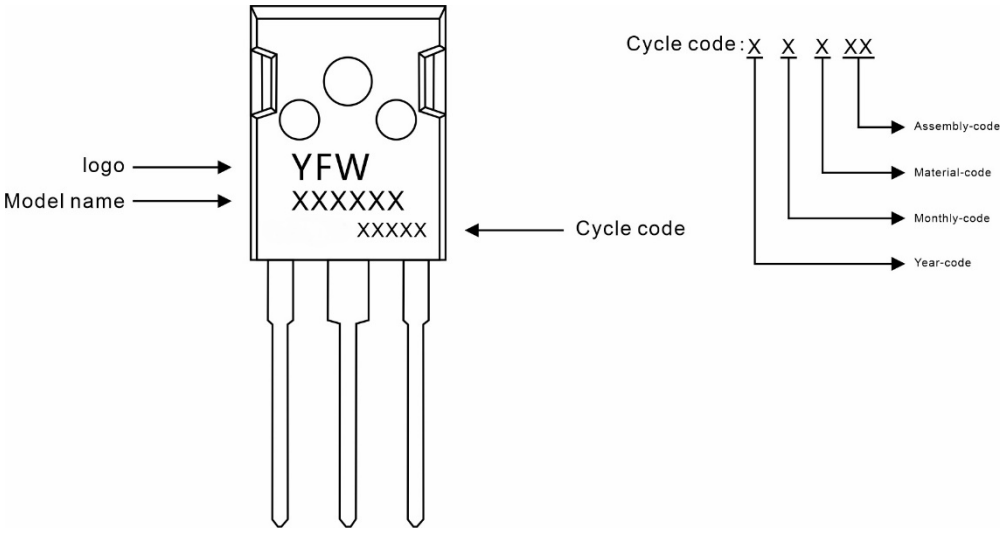
Package Dimensions

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

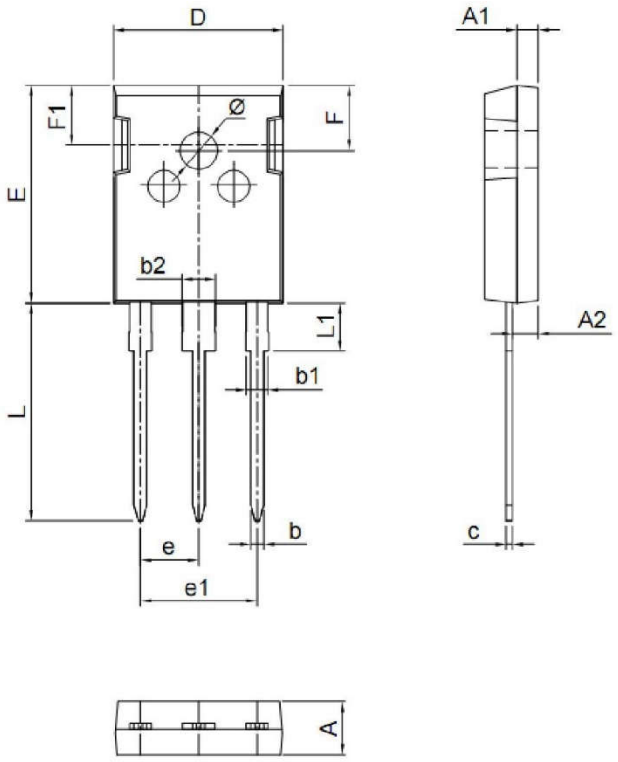


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW25N65AP	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

Disclaimer

The information presented in this document is for reference only. GuangDong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website https://www.yfwdiode.com, or consult YFW sales office for further assistance.