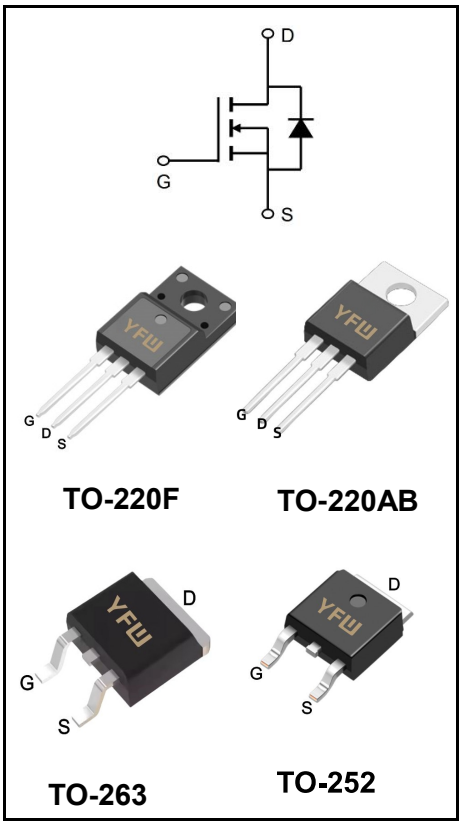
500V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	500V
R_{DSON}-typ(@V_{GS}=10V)	＜0.56Ω(Typ:0.45Ω)



FEATURES

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

APPLICATIONS

- Power switch circuit of adaptor and charger.

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	Symbols	Value			Units
		220AB/263	220F	252	
Drain-Source Voltage	V_{DS}	500			V
Gate - Source Voltage	V_{GS}	±30			V
Continuous drain current	I_D	10			A
Pulsed Drain Current (Note1)	I_{DM}	40			A
Power dissipation	P_D	130	40	130	W
Single Pulse Avalanche Energy(Note1)	E_{AS}	580			mJ
Operating Temperature Range	T_J	150			°C
Storage Temperature Range	T_{STG}	-55 to +150			°C
Thermal Resistance, Junction-case	$R_{\theta JC}$	0.96	3.13	0.96	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	62.5	62.5	°C/W

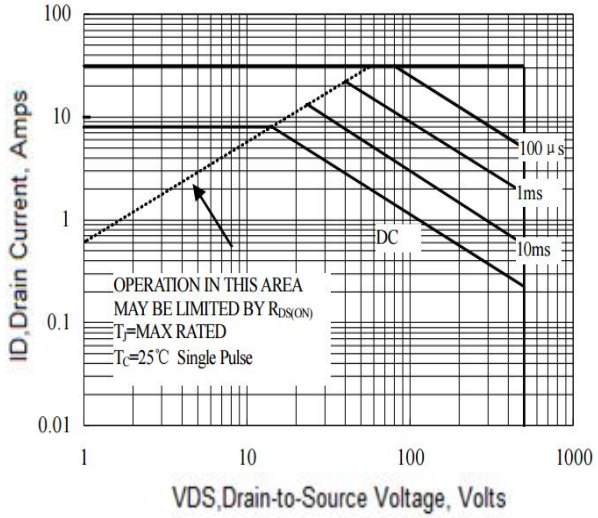
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

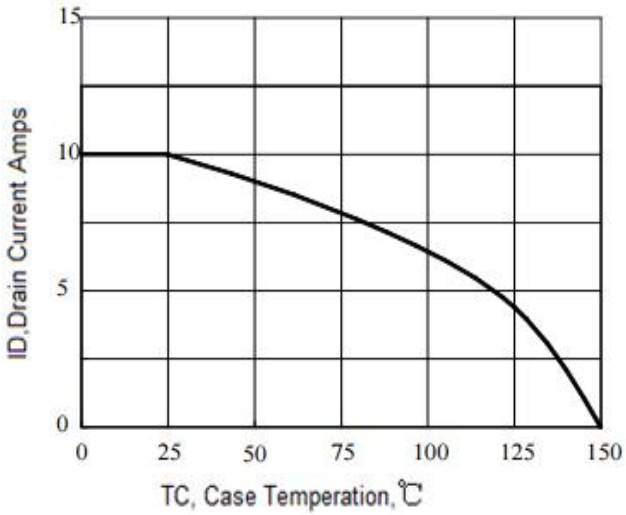
Maximum Ratings at Tc=25°C unless otherwise specified

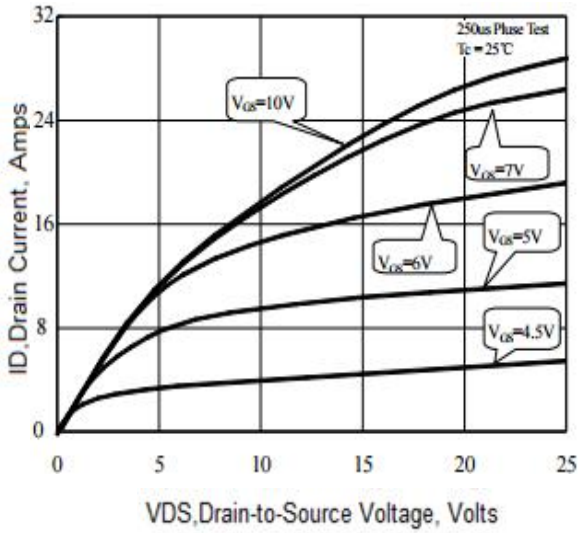
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	500	-	-	V
Drain-Source Leakage Current	V_{DS}=500V , V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate-Source Leakage Current	V_{DS} = ±30V, V_{GS} = 0 V	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	2.0	-	4	V
Drain-Source On-State Resistance	V_{GS} = 10 V, I_D =5 A	$R_{DS(ON)}$	-	0.45	0.56	Ω
Forward Transconductance	V_{GS}=15V, I_D=5A	gfs	-	10	--	S
Input Capacitance	V_{GS}=0V V_{DS}=25V f=1MHz	C_{iss}	-	1620	-	pF
Output Capacitance		C_{oss}	-	156	-	
Reverse Transfer Capacitance		C_{rss}	-	7	-	
Turn-on delay time	I_D = 10 A V_{DD} =250 V R_G= 10 Ω	$t_{d(on)}$	-	25	-	ns
Rise Time		T_r	-	20	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	50	-	
Fall Time		t_f	-	20	-	
Total Gate Charge	I_D = 10 A V_{DD} = 400 V V_{GS} = 10 V	Q_g	-	32	-	nC
Gate-Source Charge		Q_{gs}	-	8	-	
Gate-Drain Charge		Q_{gd}	-	12	-	
Diode forward current		I_S	-	-	10	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	40	A
Diode Forward Voltage	I_S=10A	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)		trr	-	398	-	ns
Reverse Recovery Charge(Note2)	I_{SD} = 10A, V_{GS} = 0 V, dI_F / dt = 100 A/μs	Qrr	-	2.5	-	μC

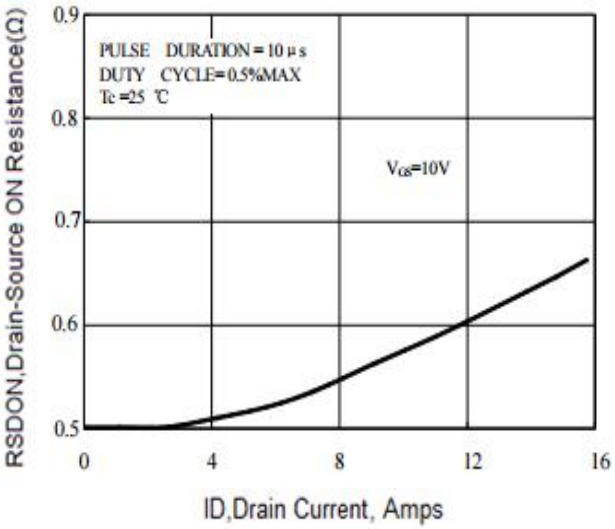
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

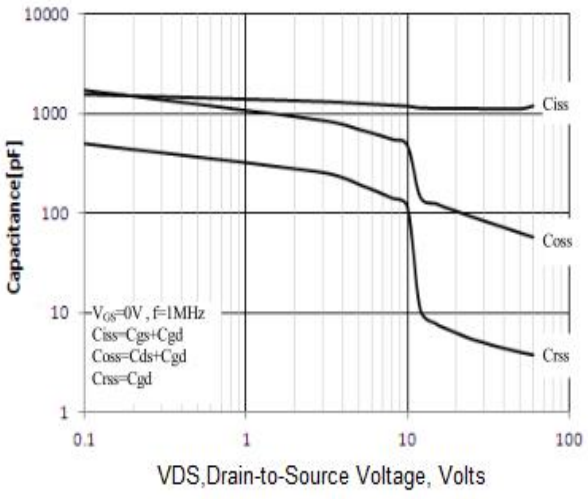
Ratings and Characteristic Curves

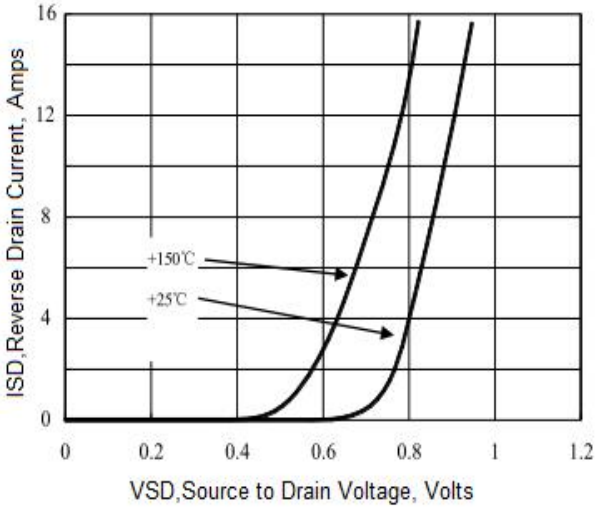




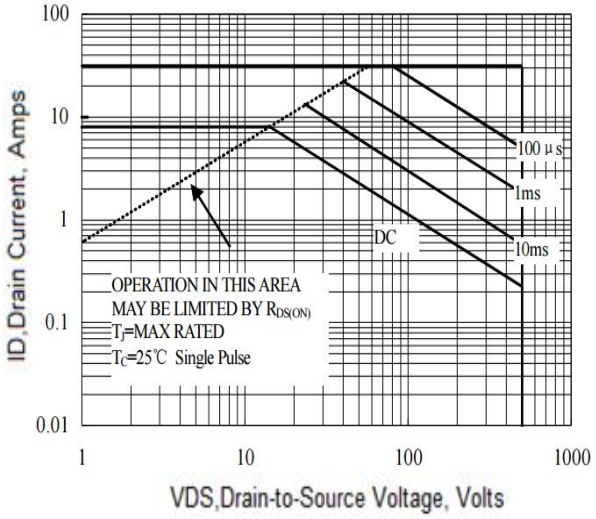


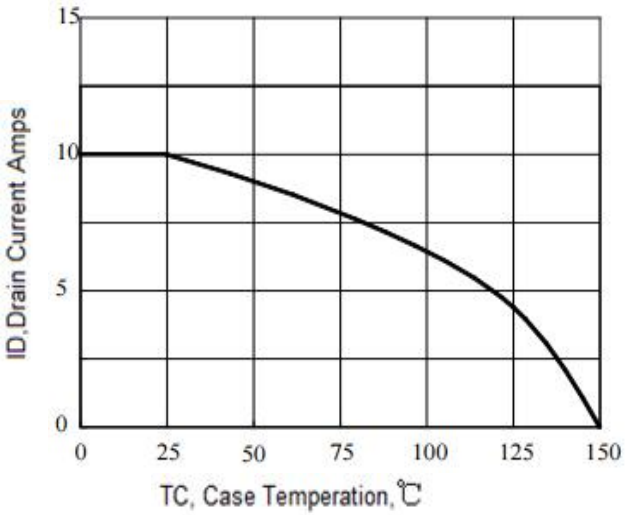


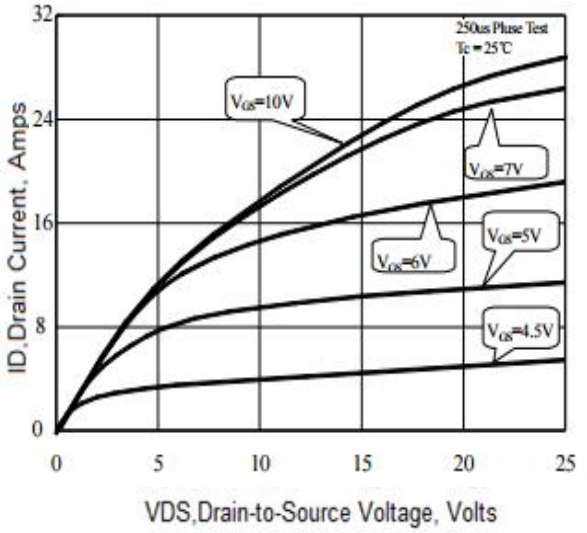


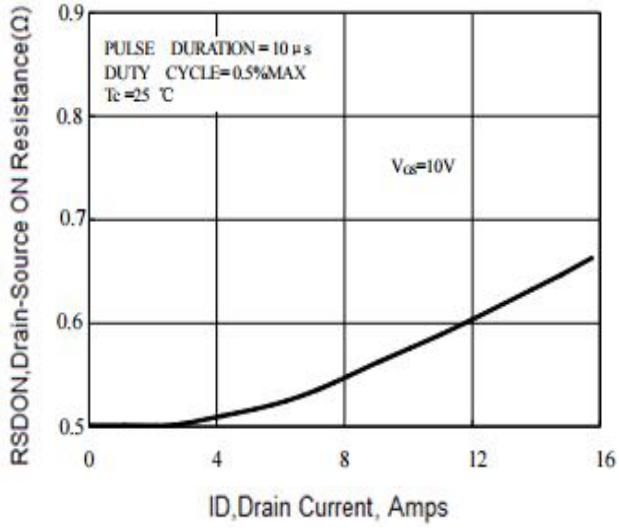


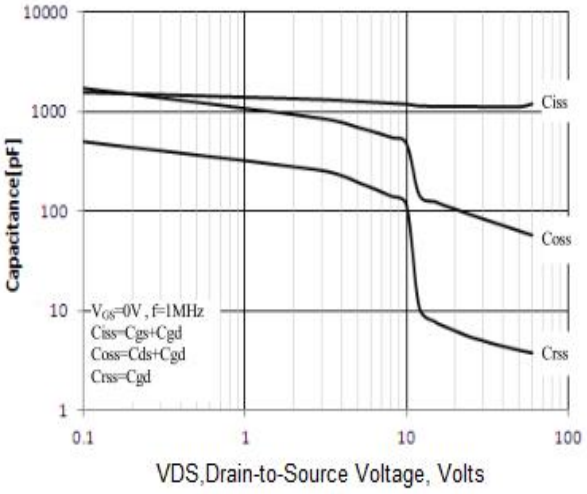
Ratings and Characteristic Curves

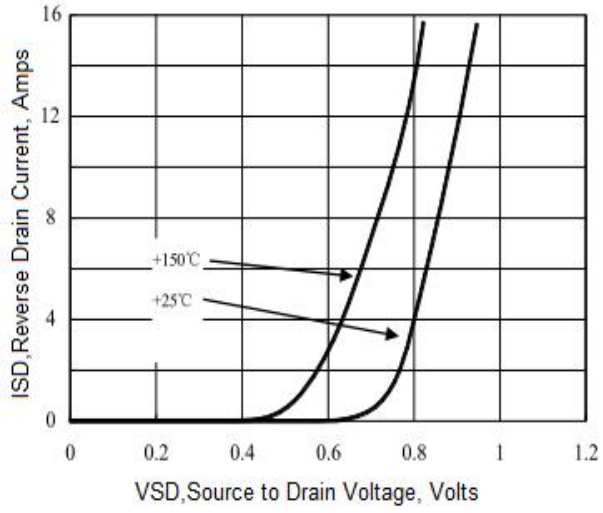




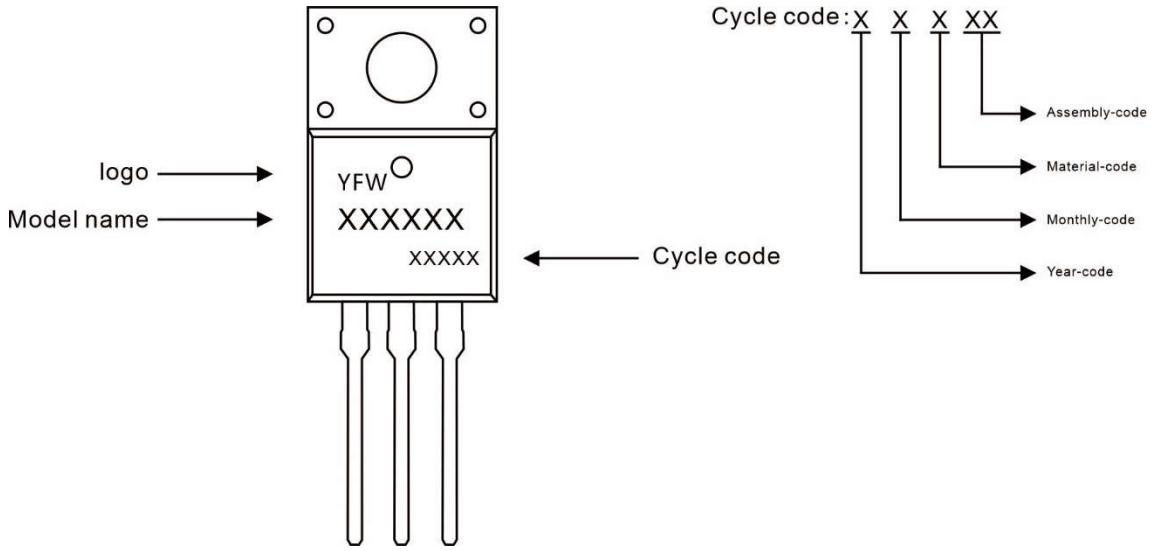








Marking Diagram

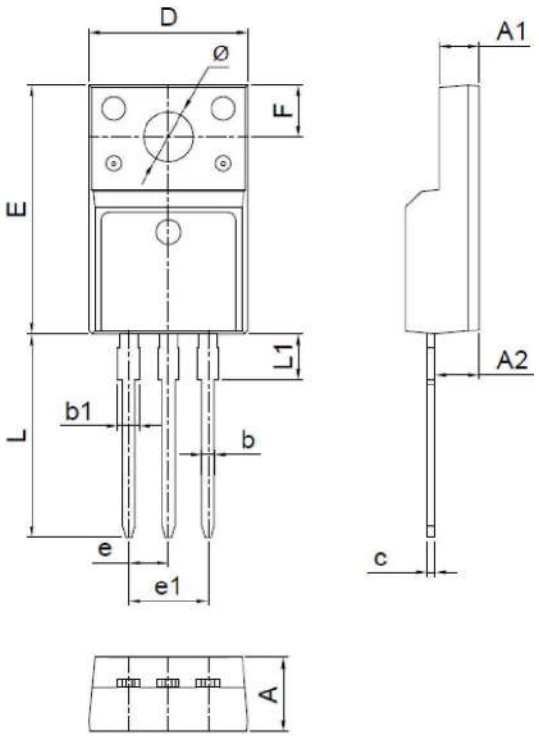


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW10N50AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

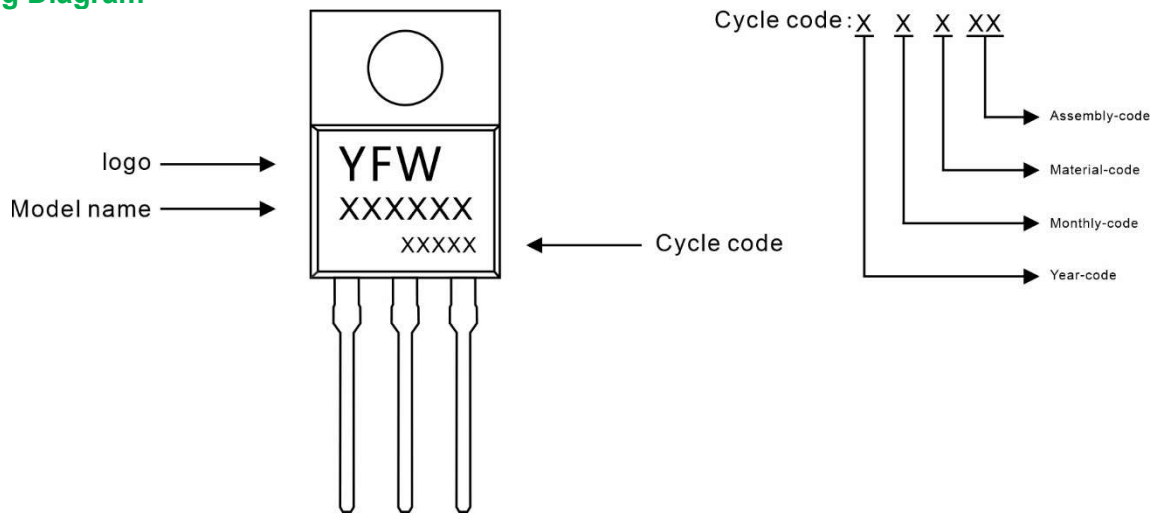
Package Dimensions

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

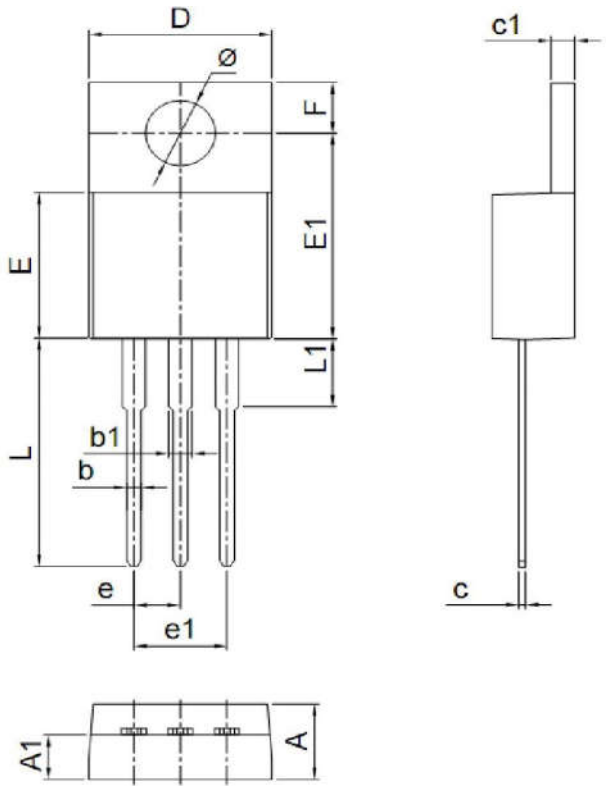


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW10N50AT	TO-220AB	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

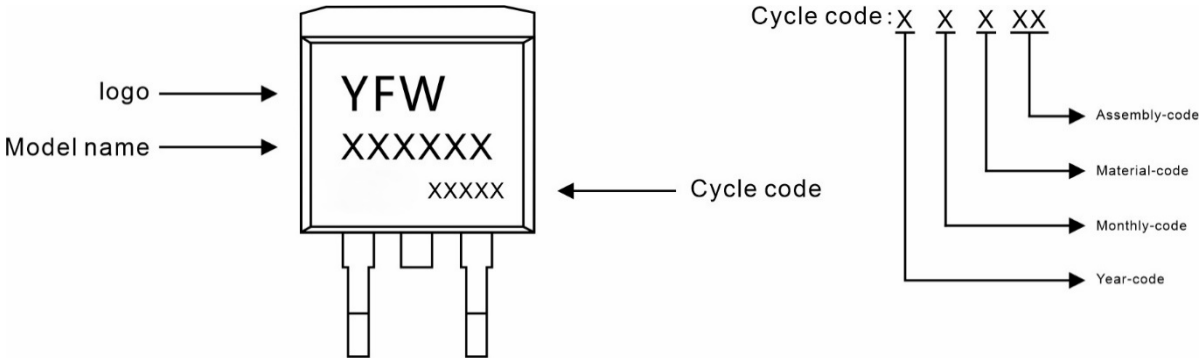
Package Dimensions

TO-220AB



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
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

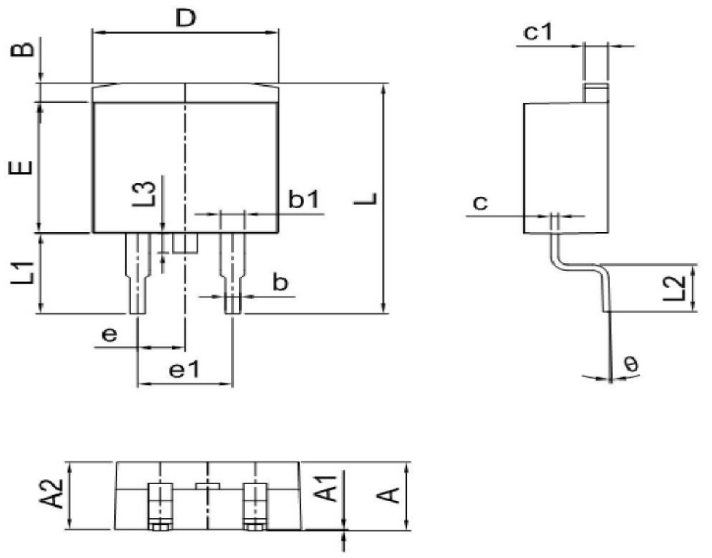


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW10N50AS	TO-263	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Carton

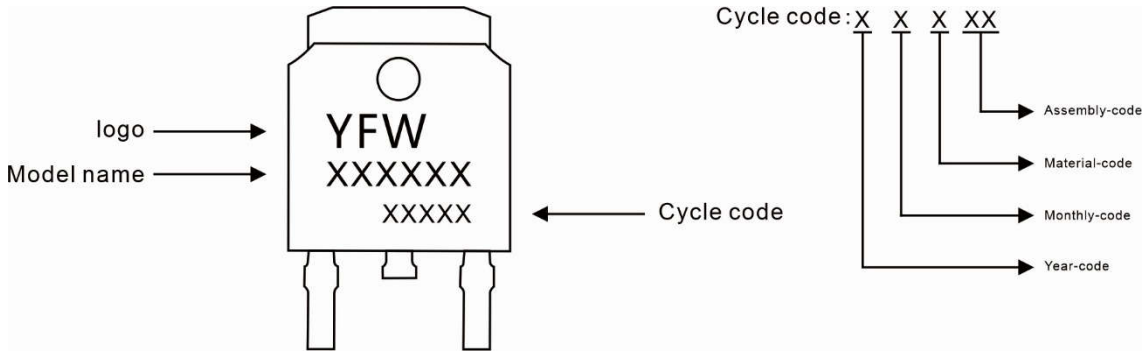
Package Dimensions

TO-263



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

Marking Diagram

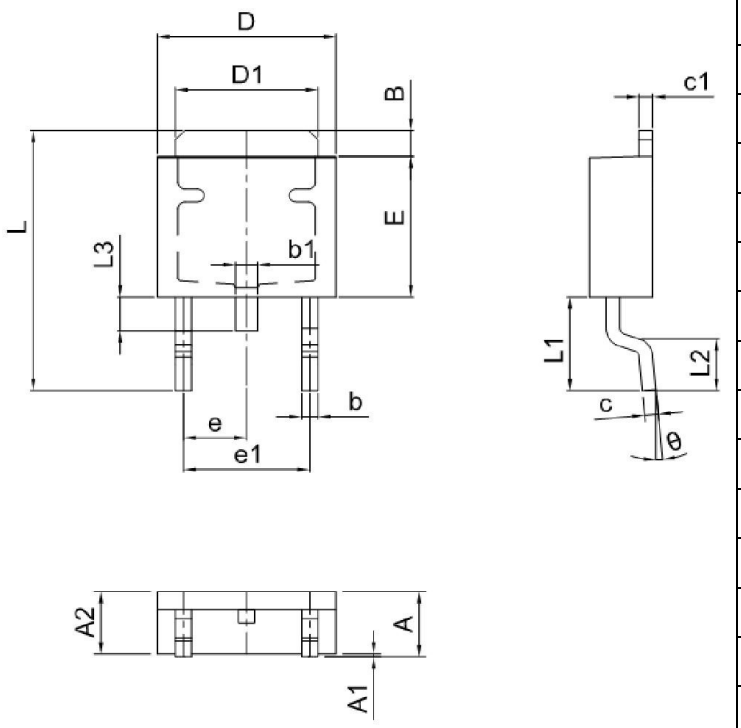


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW10N50AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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.