

200V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	50A
V_{DSS}	200V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<58m\Omega$ (Typ: $48m\Omega$)

FEATURES

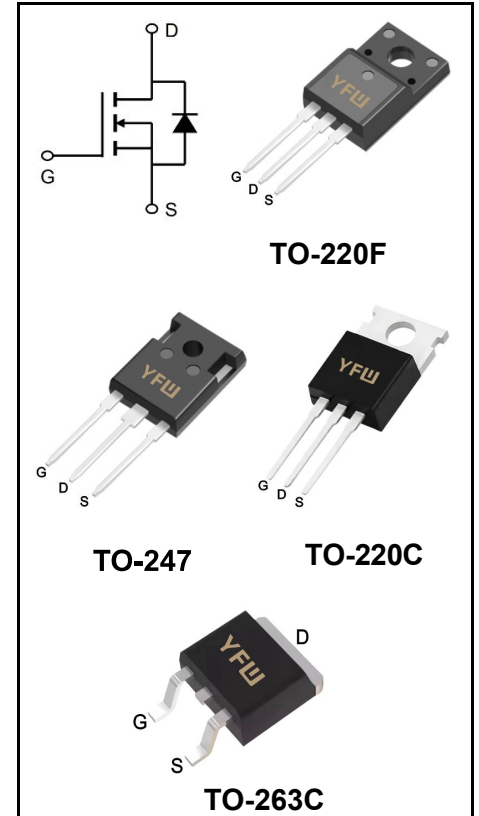
- ◆ This device is suitable for use as a
- ◆ Battery protection or in other Switching application.

APPLICATIONS

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

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°C maximum, 10s per JESD 22-B106



Maximum Ratings at $T_c=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	200	V
Gate - Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	50	A
Pulsed Drain Current (Note1)	I_{DM}	200	A
Power Dissipation	P_D	158	W
Single Pulse Avalanche Energy	E_{AS}	800	mJ
Operating Junction Temperature Range	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.79	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	$^\circ\text{C/W}$

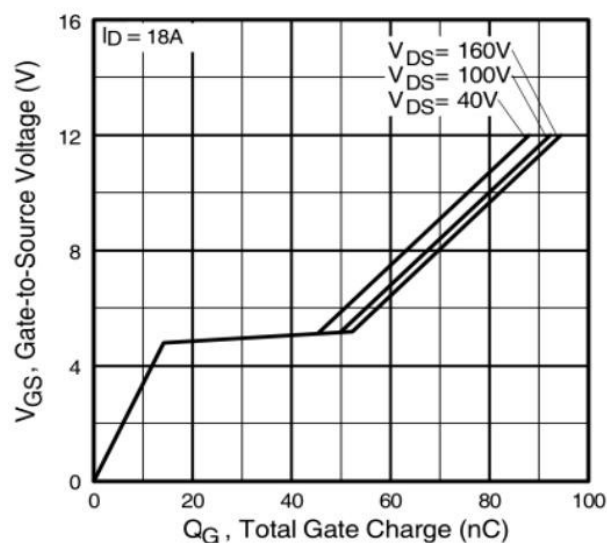
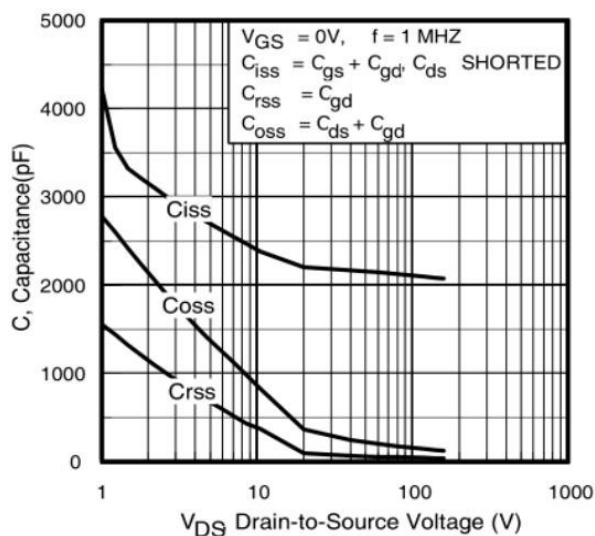
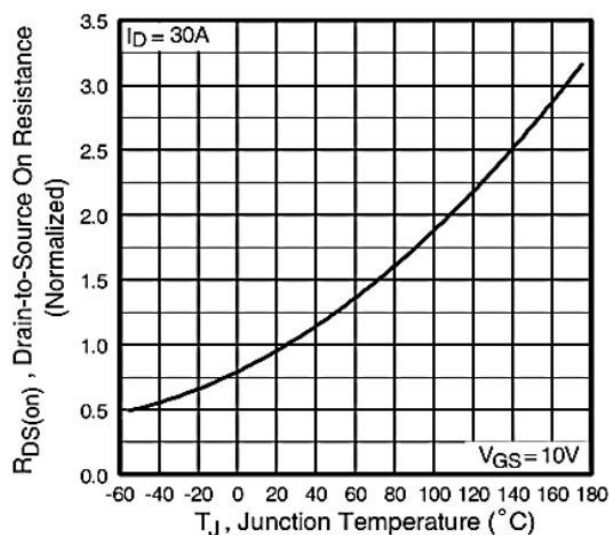
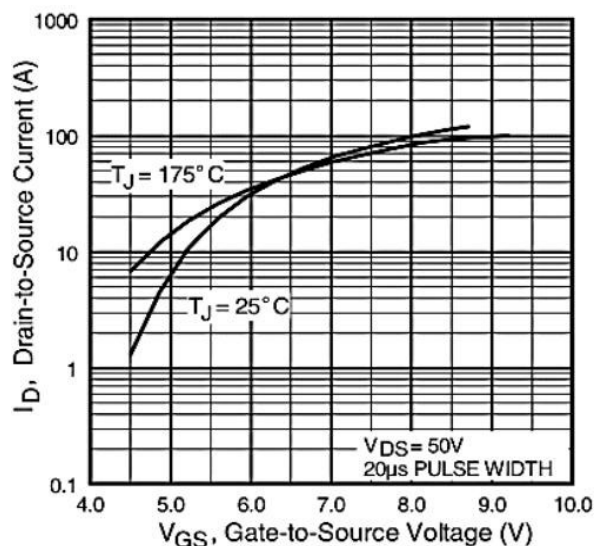
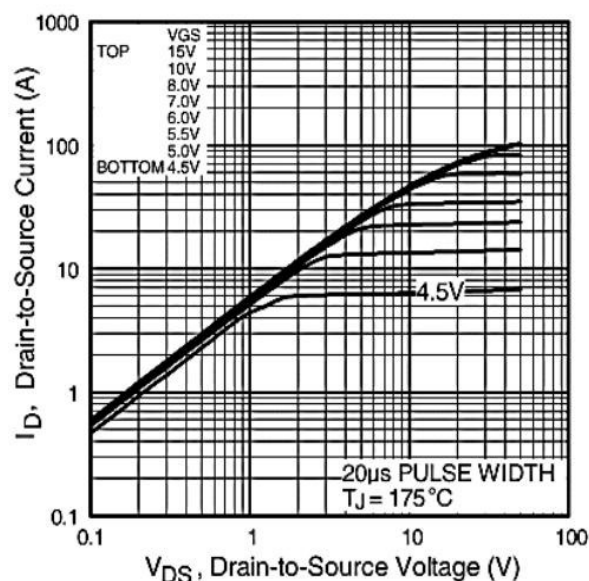
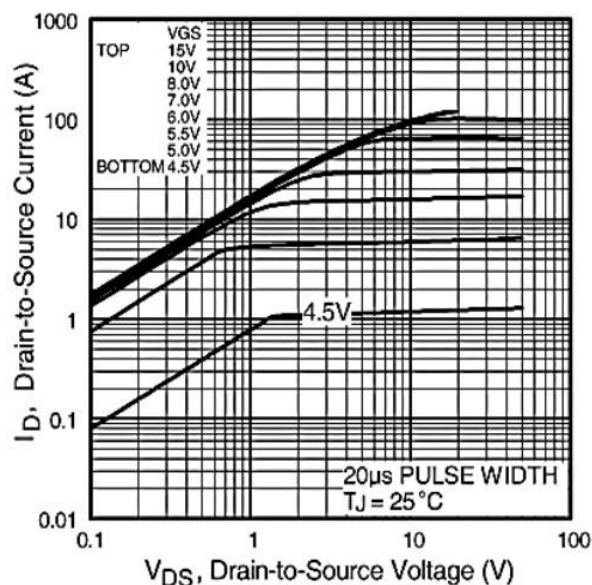
Note1: Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

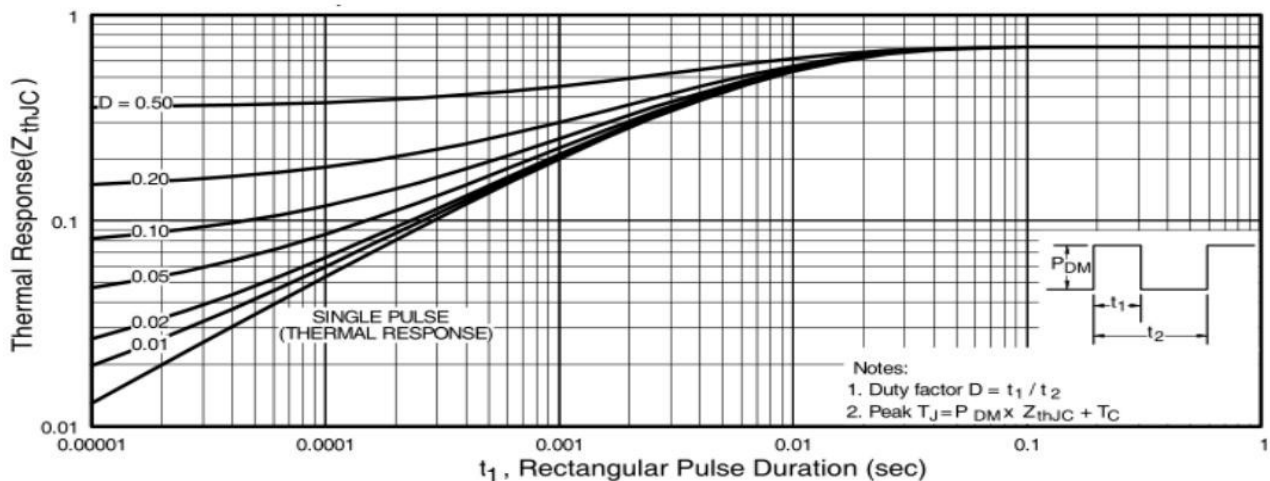
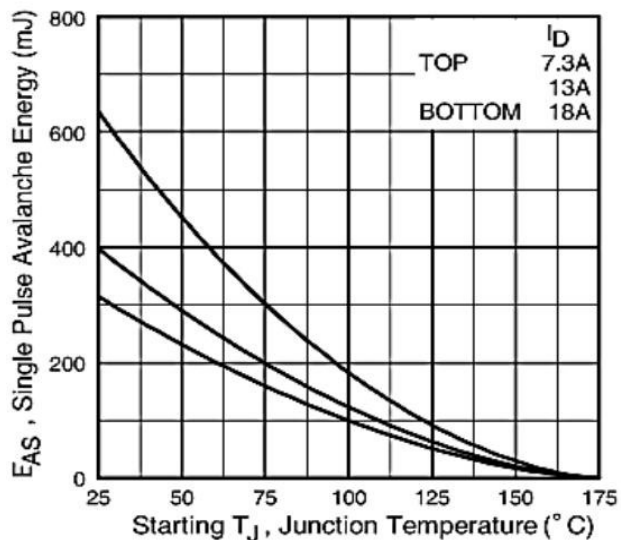
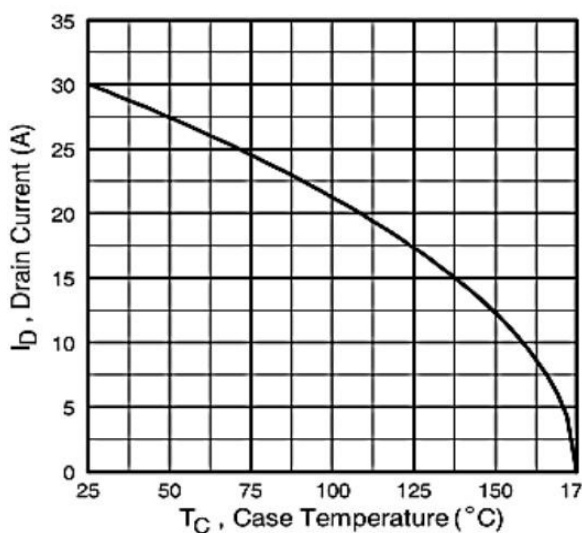
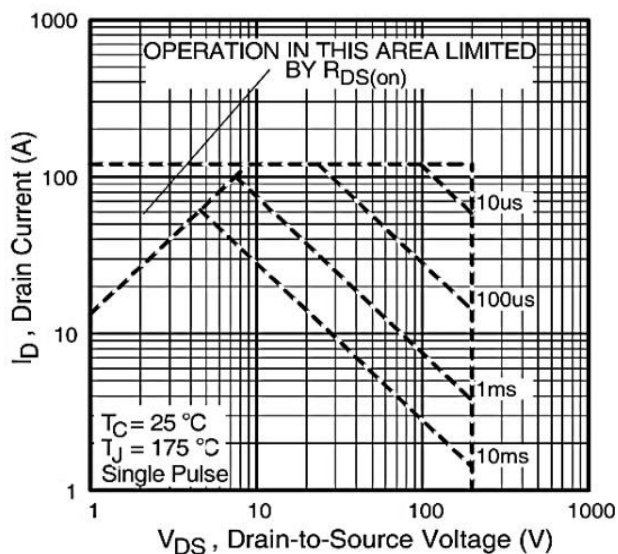
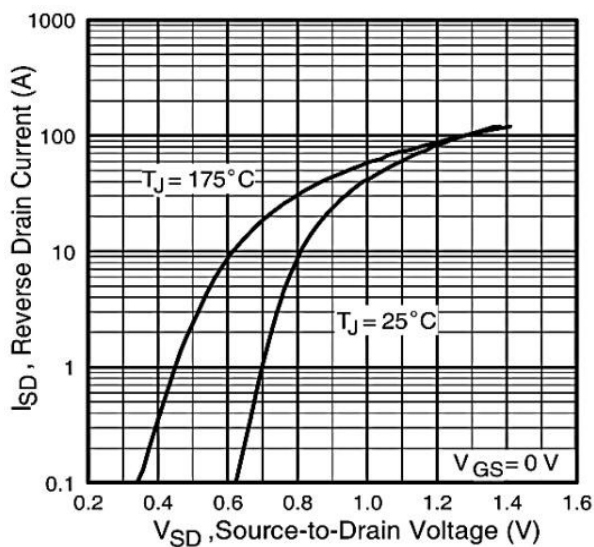
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	200	-	-	V
Drain -Source Leakage Current	$V_{DS} = 200 V, V_{GS} = 0 V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 V, I_D = 26A$	$R_{DS(ON)}$	-	48	58	m Ω
Forward Transconductance	$V_{DS} = 40 V, I_D = 14 A$	g_{fs}		24		S
Input Capacitance	$V_{GS} = 0 V,$ $V_{DS} = 25 V$ $f = 1MHz$	C_{iss}	-	2900	-	pF
Output Capacitance		C_{oss}	-	360	-	
Reverse Transfer Capacitance		C_{rss}	-	81	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DD}=100 V$ $R_G= 25\Omega$ $I_D = 28 A$	$t_{d(on)}$		28	-	ns
Rise Time		T_r		250	-	
Turn-Off Delay Time		$t_{d(OFF)}$		305	-	
Fall Time		t_f		220	-	
Total Gate Charge	$V_{DS}=160V$ $V_{GS}=10V$ $I_D=28A$	Q_g	-	105	-	nC
Gate-Source Charge		Q_{gs}	-	16	-	
Gate-Drain Charge		Q_{gd}	-	55	-	
Maximun Body-Diode Continuous Current		I_S	-	-	50	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	200	A
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=28A, T_J=25^\circ C$	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)	$T_J = 25^\circ C, I_F= 28A$ $di / dt = 100 A/\mu s$	t_{rr}	-	215	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	2	-	nC

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

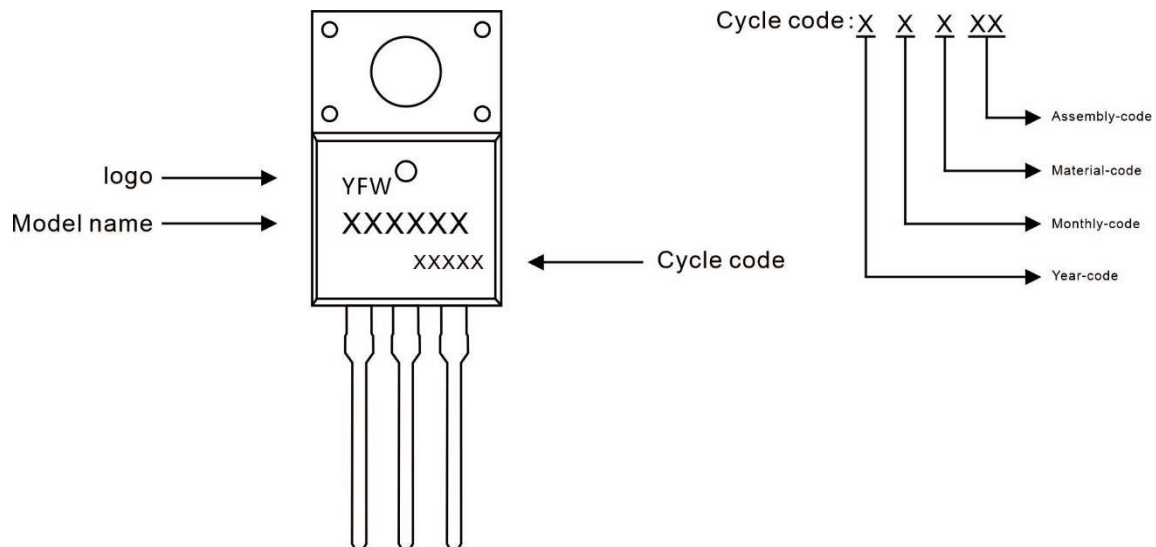
Ratings And Characteristic Curves



Ratings And Characteristic Curves



Marking Diagram



Ordering information

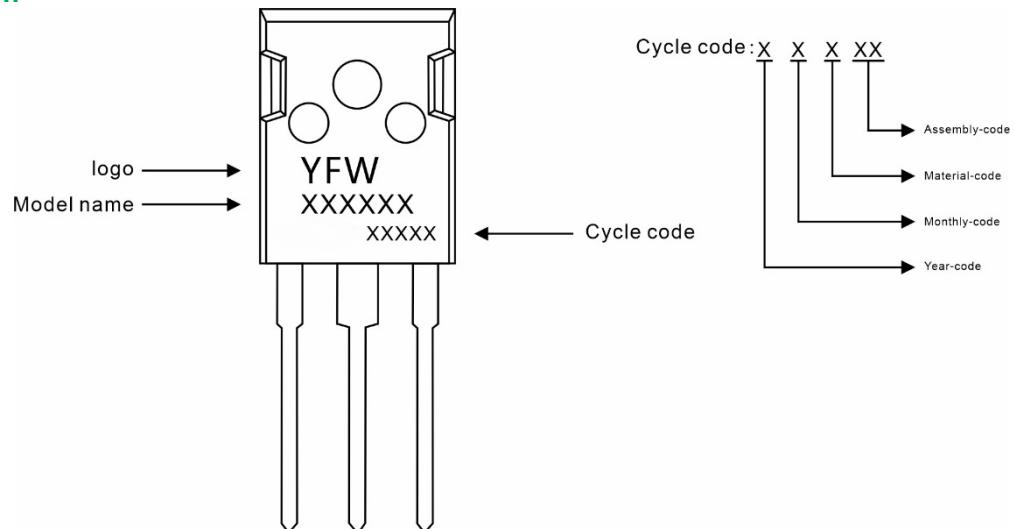
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW50N20AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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

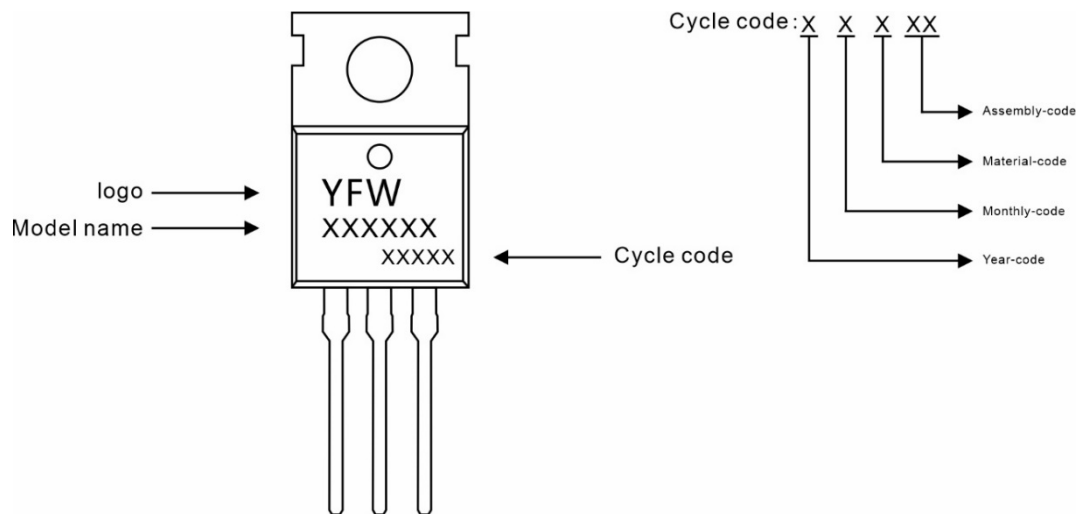
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW50N20AP	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

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

Marking Diagram



Ordering information

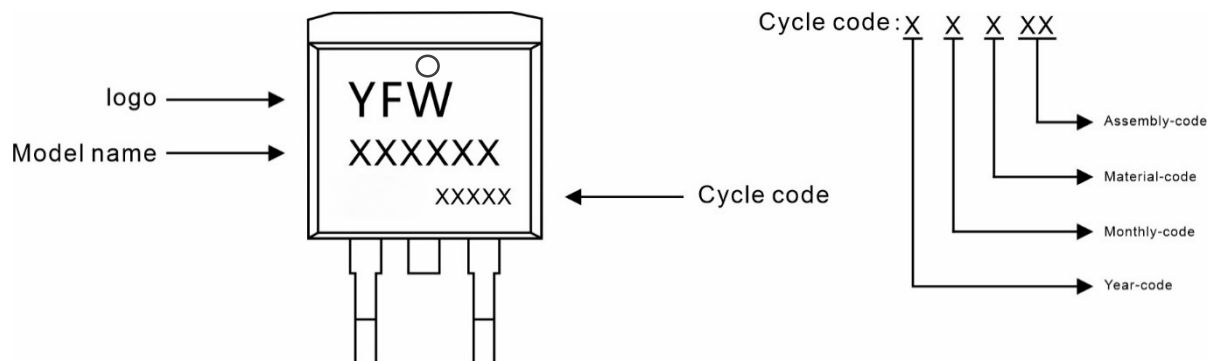
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW50N20AC	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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
YFW50N20ASC	TO-263C	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Cartron

Package Dimensions

TO-263C

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

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