

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 6.4mΩ (Typ:5.5mΩ)

Features

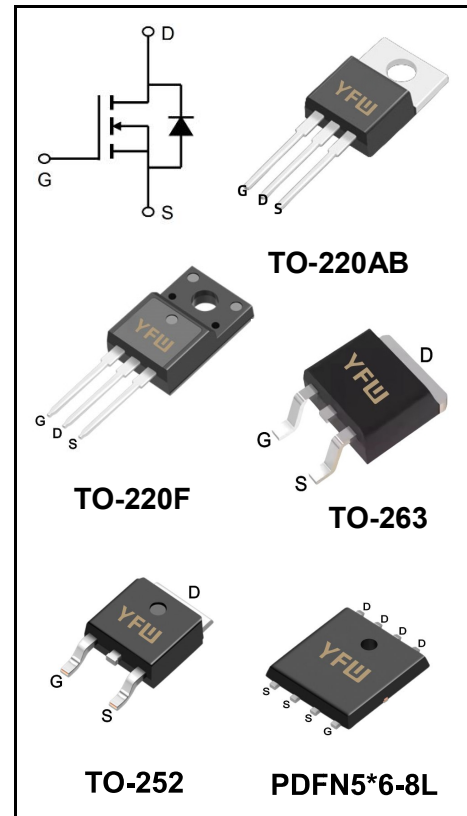
- ◆ Best-in-Class FOM
- ◆ Low Gate Charge
- ◆ High Current Capability
- ◆ **YFW-SGT technology**

Application

- ◆ Power Management in Telecom., Industrial Automation
- ◆ Motor Driving in Power Tool, E-vehicle, Robotics
- ◆ Current Switching in DC/DC&AC/DC(SR) Sub-system

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 Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous drain current	I_D	80	A
Pulsed Drain Current (Note1)	I_{DM}	320	A
Power Dissipation	P_D	96	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	216	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	°C
Thermal Resistance Junction-Case	R_{θJC}	1.7	°C/W
Thermal Resistance, Junction--Ambient	R_{θJA}	50	°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}	100	-	-	V
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	V_{GS(th)}	1.2	-	2.5	V
Drain-source on-state resistance	V _{GS} =10V, I _D =20A	R_{DS(ON)}	-	5.5	6.4	mΩ
	V _{GS} =4.5V, I _D =15A		-	7.5	9.4	
Gate-Source Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	I_{GSS}	-	-	±100	nA
Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V	I_{DSS}	-	-	1	μA
Input Capacitance	V _{GS} =0V V _{DS} =50V f=1MHz	C_{iss}	-	2420	-	pF
Output Capacitance		C_{oss}	-	900	-	
Reverse Transfer Capacitance		C_{rss}	-	35	-	
Turn-on delay time(Note2)	V _{GS} =10V V _{DS} =50V R _G =3Ω I _D =20A	t_{d(on)}	-	11.2	-	ns
Rise Time(Note2)		T_r	-	23	-	
Turn-Off Delay Time(Note2)		t_{d(OFF)}	-	38	-	
Fall Time(Note2)		t_f	-	15.3	-	
Total Gate Charge(Note2)	I _D =20A V _{DS} =50V V _{GS} =10V	Q_g	-	43	-	nC
Gate-Source Charge(Note2)		Q_{gs}	-	9.4	-	
Gate-Drain Charge(Note2)		Q_{gd}	-	10.3	-	
Maximun Body-Diode Continuous Current(Note2)		I_S	-	-	80	A
Drain-Source Diode Forward Voltage	I _S =20A, V _{GS} =0 V T _J =25 °C	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	T _J = 25°C, I _F = 20A di / dt = 100 A/μs	t_{rr}	-	42	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	46	-	nC

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

Ratings and Characteristic Curves

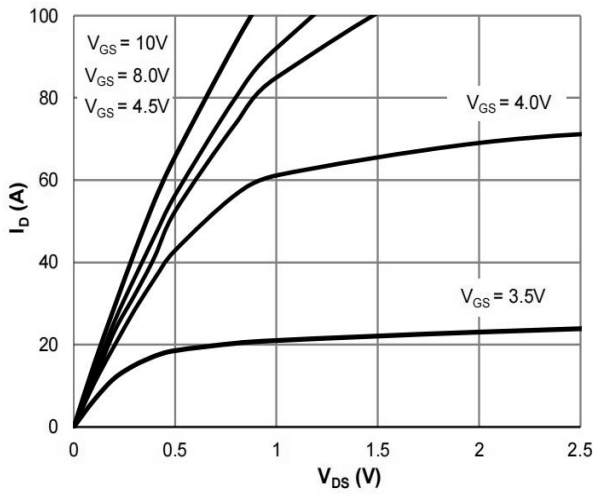


Figure 1: Saturation Characteristics

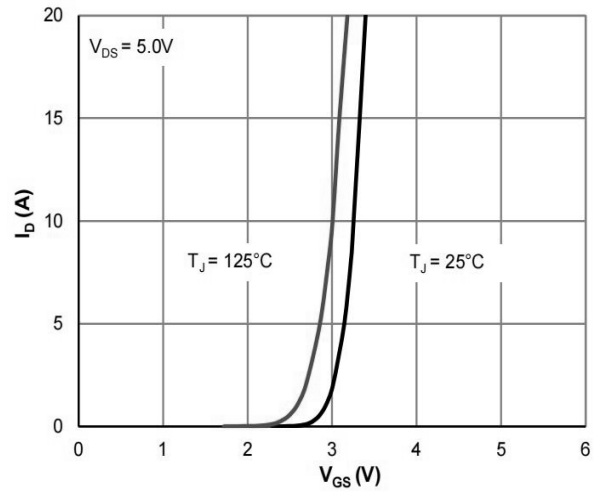


Figure 2: Transfer Characteristics

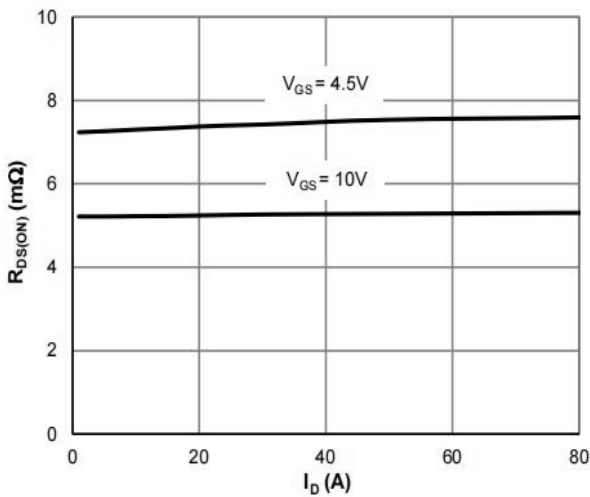


Figure 3: $R_{DS(ON)}$ vs. Drain Current

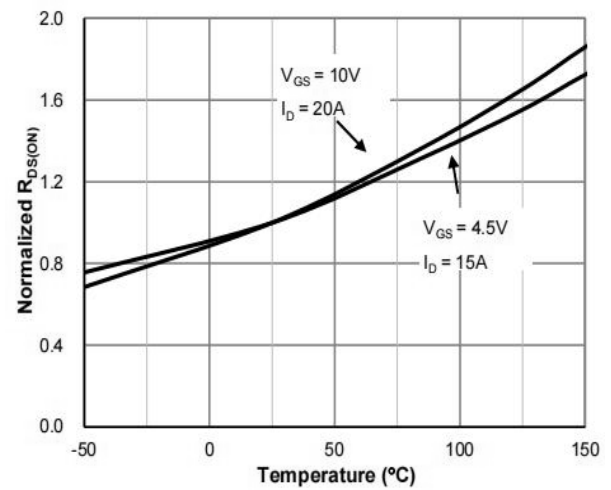


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

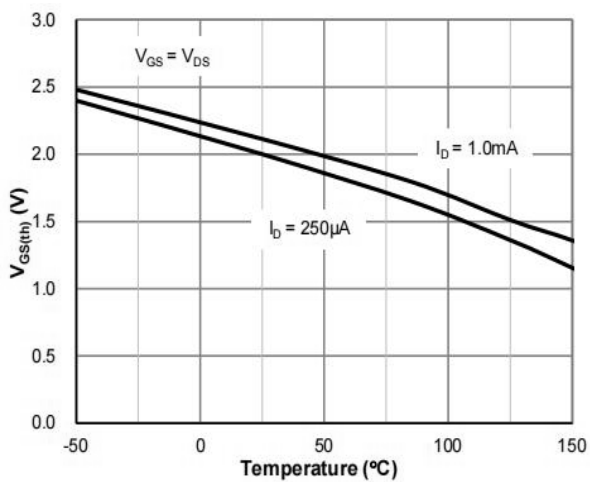


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

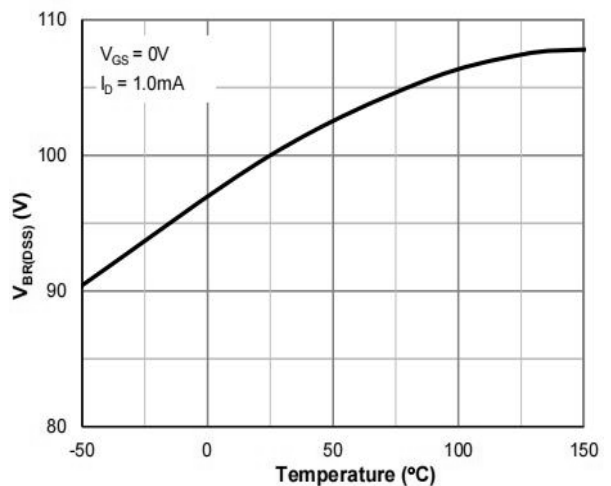


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Ratings and Characteristic Curves

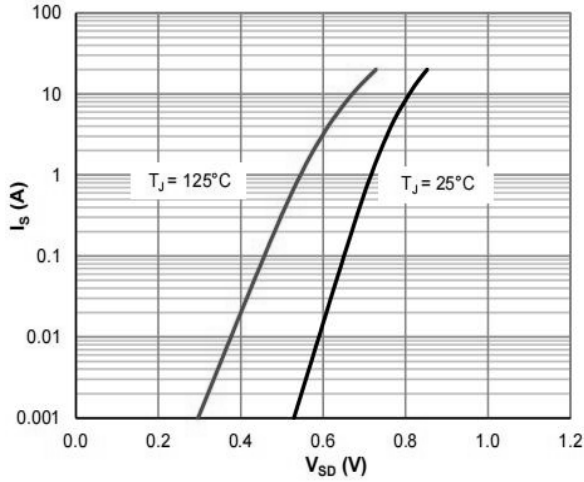


Figure 7: Body-Diode Characteristics

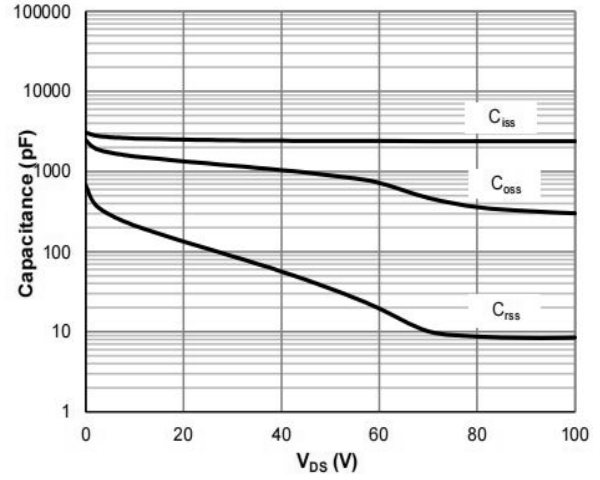


Figure 8: Capacitance Characteristics

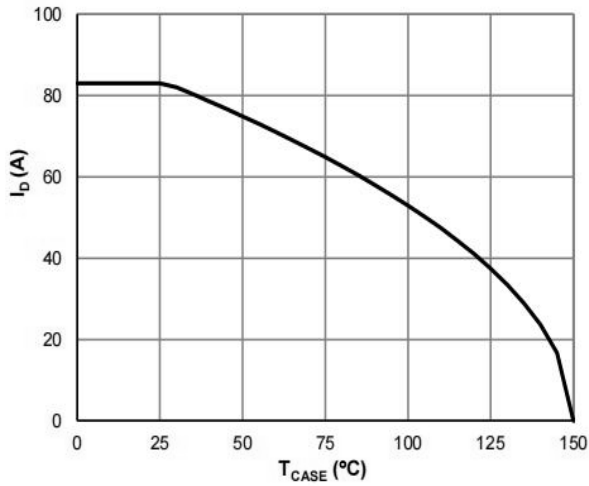


Figure 9: Current De-rating

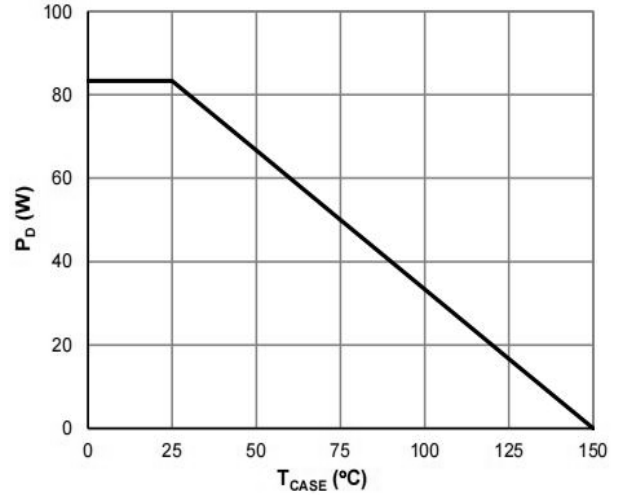


Figure 10: Power De-rating

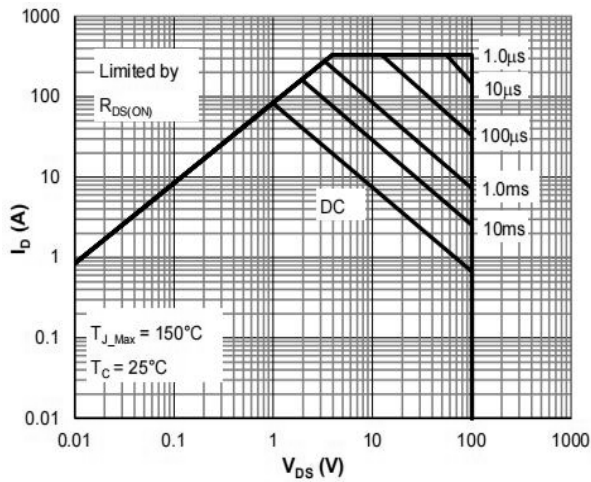


Figure 11: Maximum Safe Operating Area

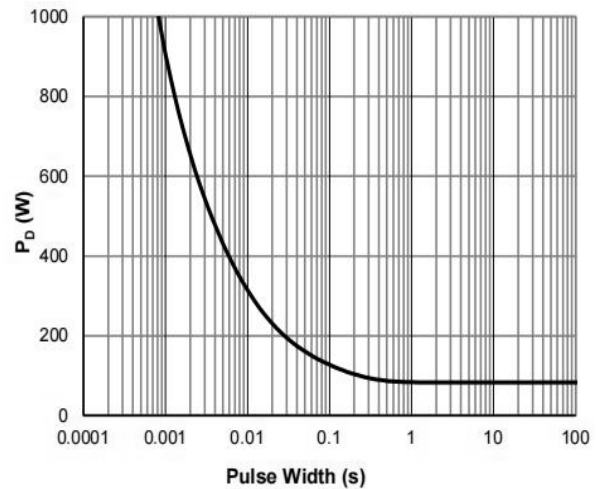
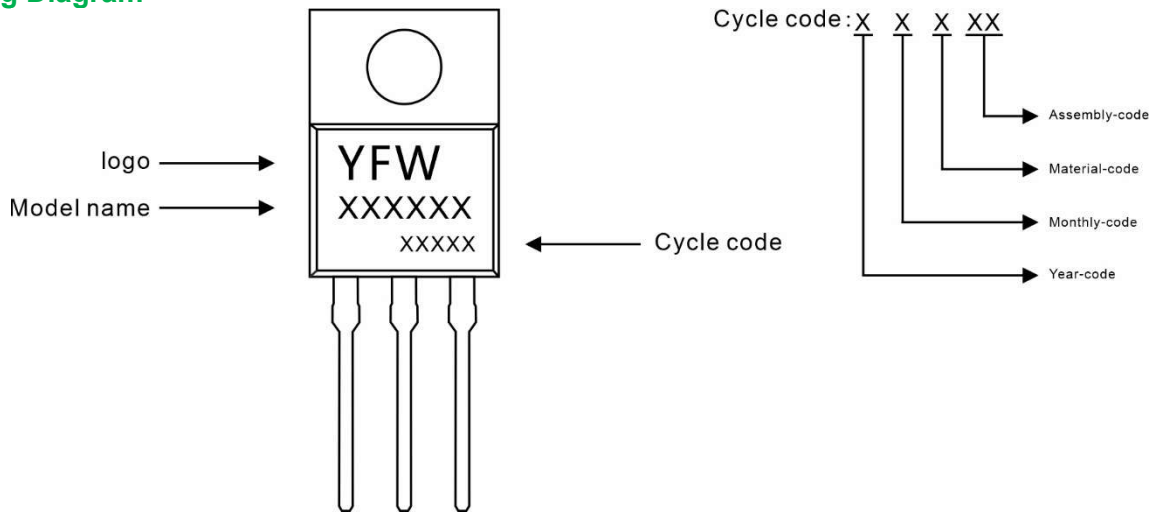


Figure 12: Single Pulse Power Rating, Junction-to-Case

Marking Diagram



Ordering information

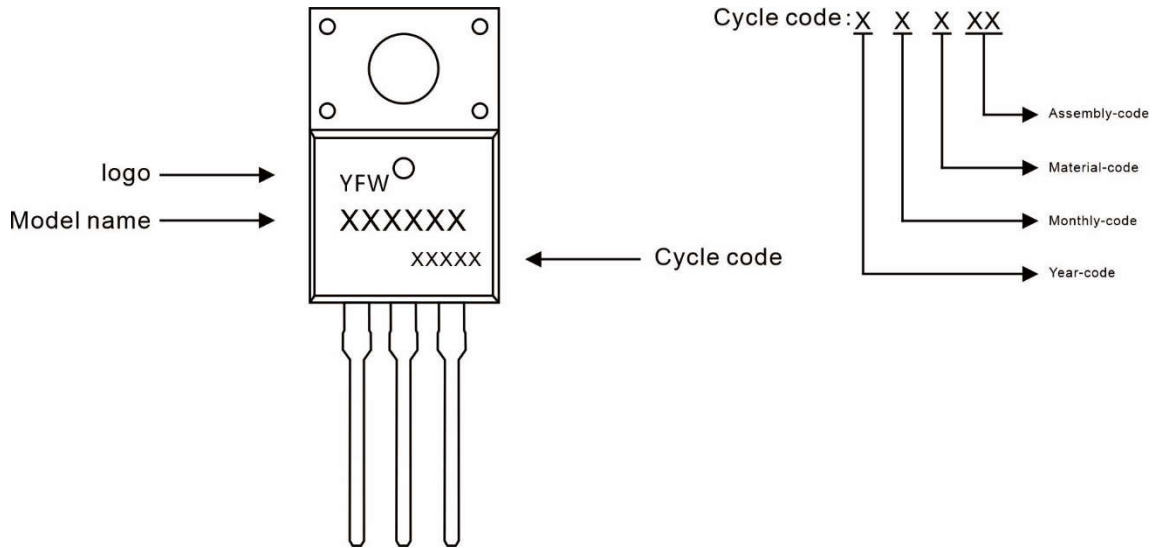
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG80N10AT	TO-220AB	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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

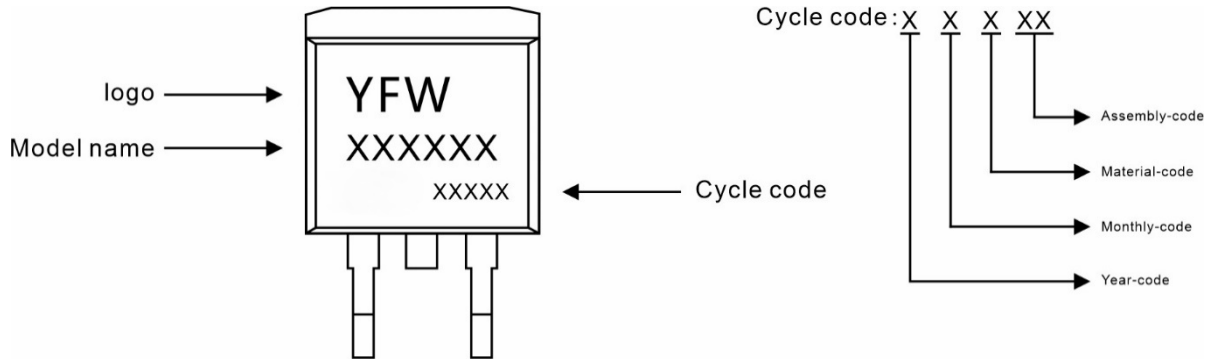
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG80N10AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

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

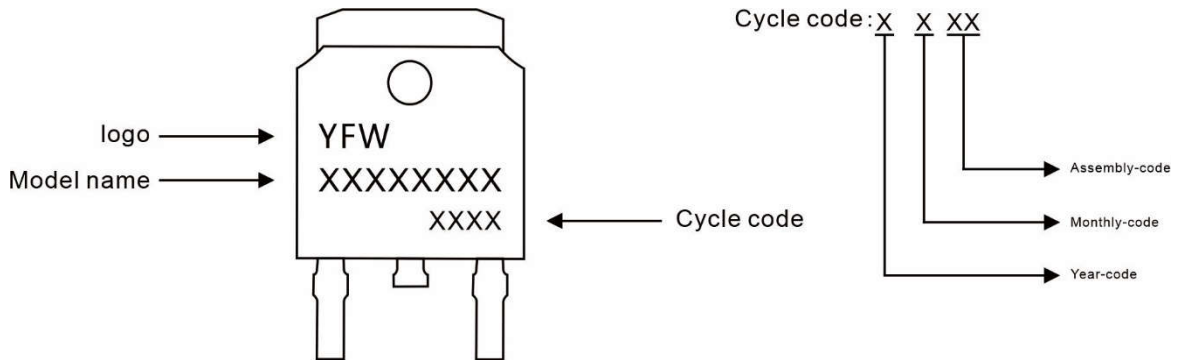
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG80N10AS	TO-263	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Carton

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

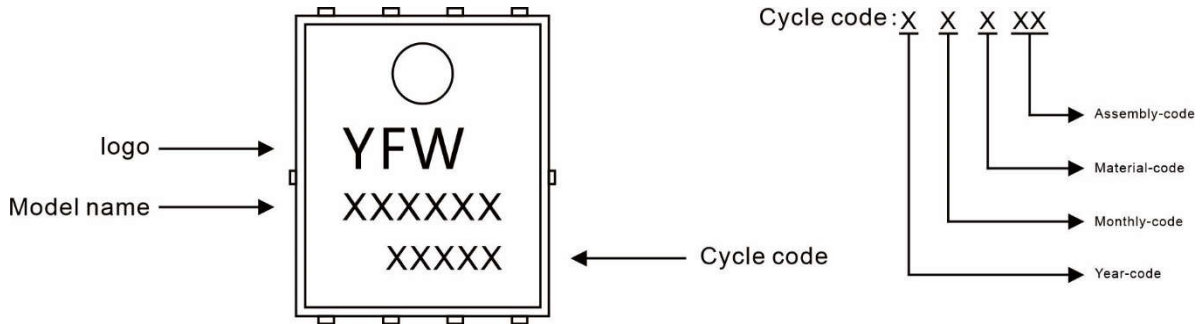
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG80N10AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Cartron

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

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG80N10NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L

Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.2	35	45
A2	0.204	0.304	8	12
b	0.4ref.		16ref.	
b1	0.2	0.4	8	16
D	5.0	5.3	197	209
D1	4.84	5.24	191	206
E	5.95	6.35	234	250
E1	3.275	3.675	129	145
E2	5.69	6.09	224	232
e	1.27typ.		50typ.	
K	1.29typ.		51typ.	
L	0.585	0.785	23	27
L1	0.7typ.		28typ.	

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