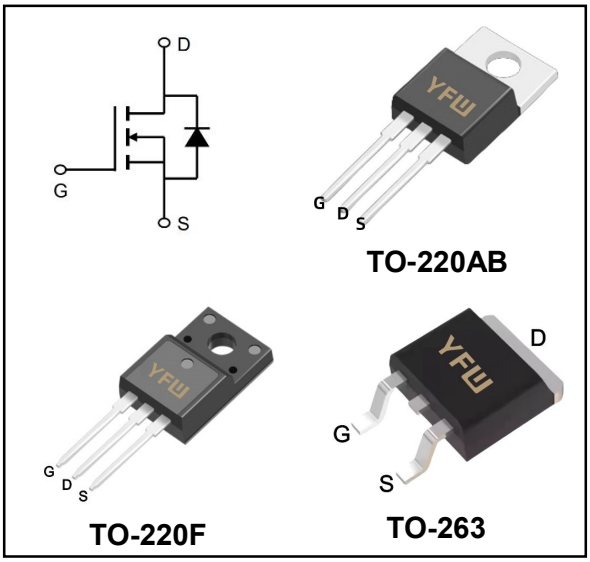
900V N-Plance ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	3A
V_{DSS}	900V
R_{DSON}-typ(@V_{GS}=10V)	< 4.8Ω



Application

- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)

Maximum Ratings at Tc=25°C unless otherwise specified

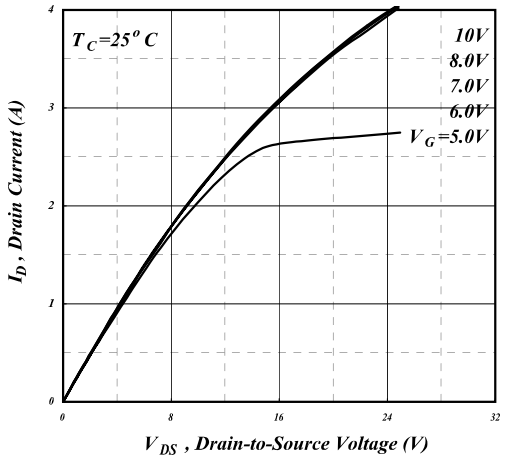
Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	900	V
Gate - Source Voltage	V_{GS}	±30	V
Drain Current, V_{GS} @ 10V[4] T_C=25℃	I_D	3	A
Drain Current, V_{GS} @ 10V[4] T_C=100℃	I_D	1.89	A
Pulsed Drain Current[1]	I_{DM}	10	A
Total Power Dissipation T_C=25 ℃	P_D	25	W
Single Pulse Avalanche Energy[3]	E_{AS}	4.5	mJ
Avalanche Current	I_{AR}	3	A
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C
Maximum Thermal Resistance, Junction-case	$R_{\theta JC}$	5	°C/W
Maximum Thermal Resistance, Junction-ambient	$R_{\theta JA}$	65	°C/W

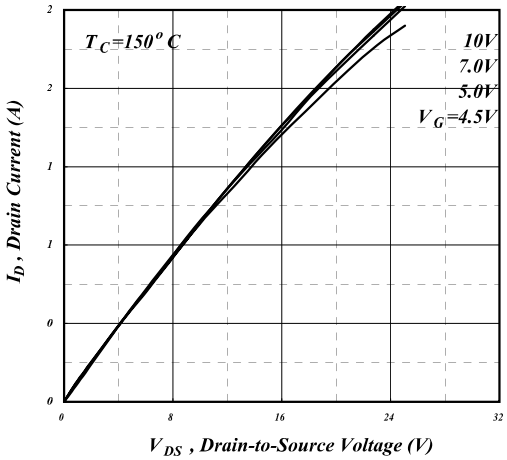
Maximum Ratings at Tc=25°C unless otherwise specified

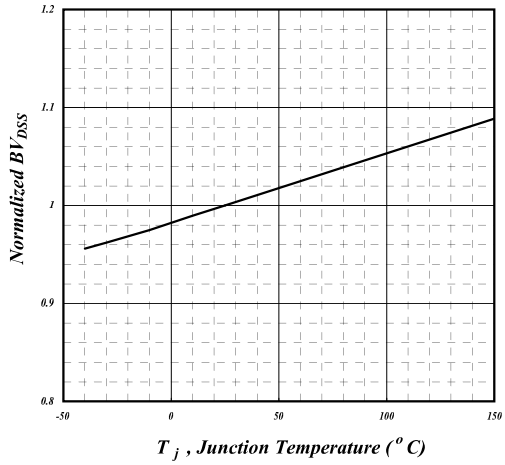
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	900	-	-	V
Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=1.2A	$R_{DS(ON)}$	-	-	4.8	Ω
Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	$V_{GS(th)}$	2	-	4	V
Forward Transconductance	V_{DS}=10V, I_D=1A	g_{fs}	-	2	-	S
Drain-source leakage current	V_{DS}=720V , V_{GS}=0V	I_{DSS}	-	-	25	μA
Gate Source Leakage	V_{GS}=±30V， V_{DS}=0V	I_{GSS}	-	-	±100	nA
Total Gate Charge	I_D=1A V_{DS}=540V V_{GS}=10V	Q_g	-	18	29	nC
Gate-Source Charge		Q_{gs}	-	3.5	-	
Gate-Drain ("Miller") Charge		Q_{gd}	-	7	-	
Turn-on delay time	V_{DD}=300V I_D=1A R_G=50Ω V_{GS}=10V	$t_{d(on)}$	-	20	-	ns
Rise Time		T_r	-	14	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	105	-	
Fall Time		t_f	-	24	-	
Input Capacitance	V_{DS}=25V V_{GS}=0V f=1MHz	C_{iss}	-	800	1280	pF
Output Capacitance		C_{oss}	-	55	-	
Reverse Transfer Capacitance		C_{rss}	-	4	-	
Gate Resistance	f=1MHz	R_G	-	4	6	Ω
Forward voltage[2]	V_{GS}=0V , I_S=1.2A	V_{SD}	-	-	1.5	V
Reverse Recovery Time	I_S=1A, V_{GS}=0V dI_{SD}/dt=100A/μs,	t_{rr}	-	320	-	ns
Reverse Recovery Charge		Q_{rr}	-	1.3	-	nC

Notes:
1.Pulse width limited by max. junction temperature.
2.Pulse test
3.Starting Tj=25oC , VDD=50V , L=1mH , RG=25Ω
4.Ensure that the junction temperature does not exceed T Jmax..

Ratings and Characteristic Curves







DSS v.s. Junction Temperature

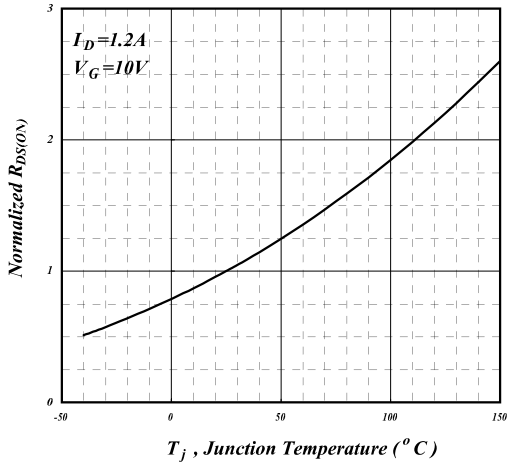
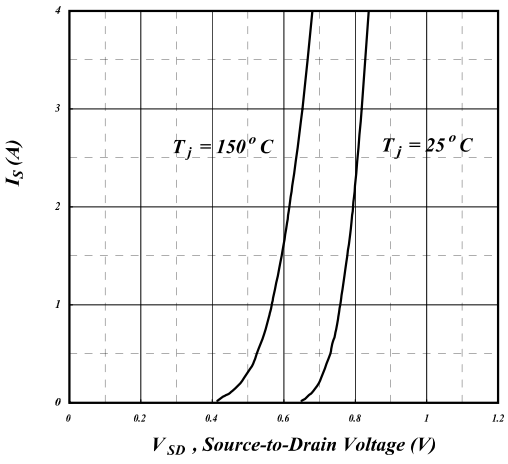


Fig 4. Normalized On-Resistance v.s. Junction Temperature



g 5. Forward Characteristic of Reverse Diode

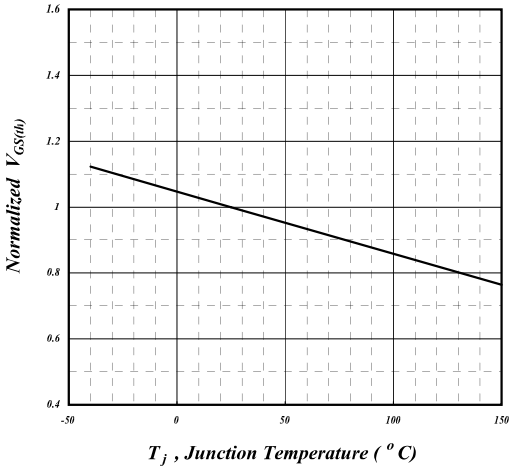


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Ratings and Characteristic Curves

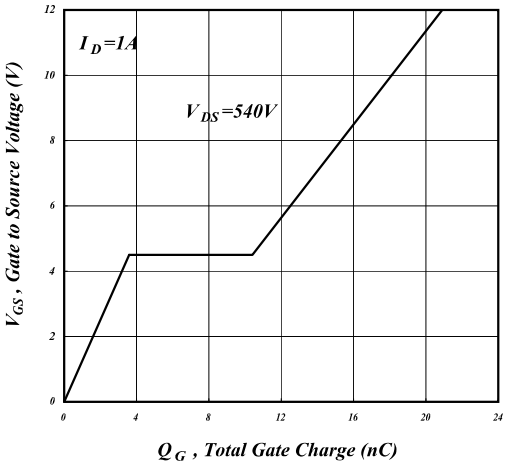


Fig 7. Gate Charge Characteristics

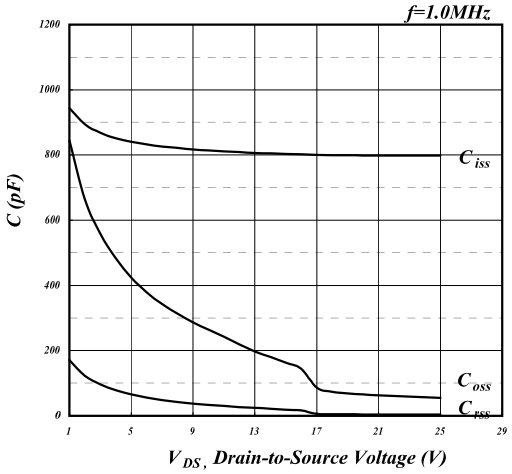


Fig 8. Typical Capacitance Characteristics

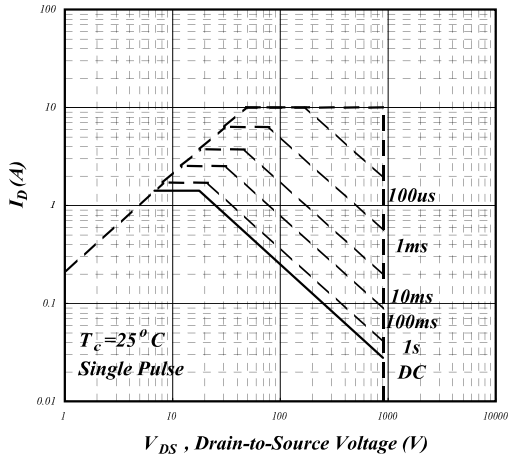


Fig 9. Maximum Safe Operating Area

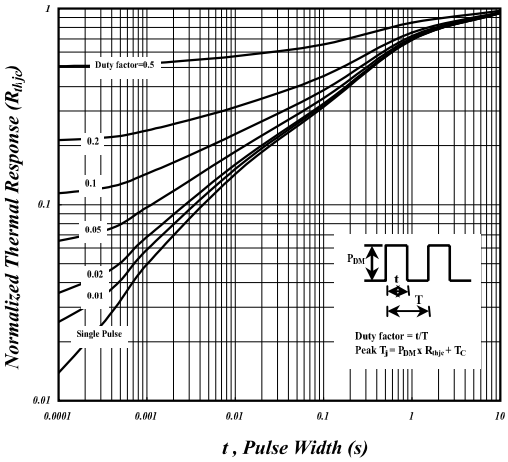


Fig 10. Effective Transient Thermal Impedance

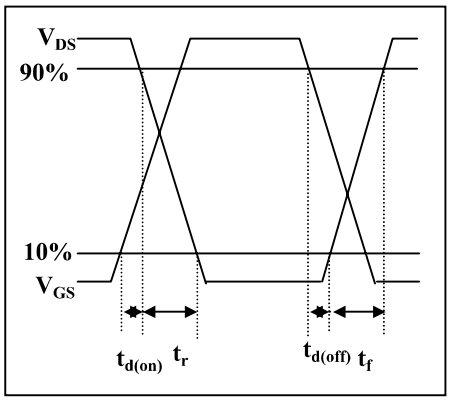


Fig 11. Switching Time Waveform

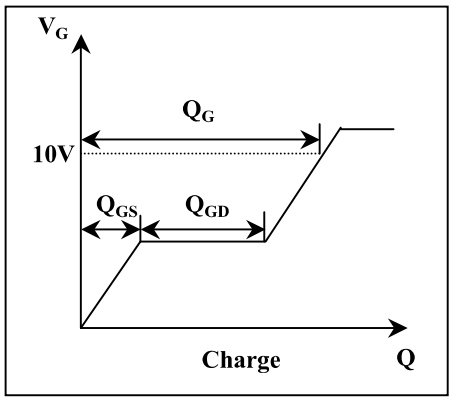
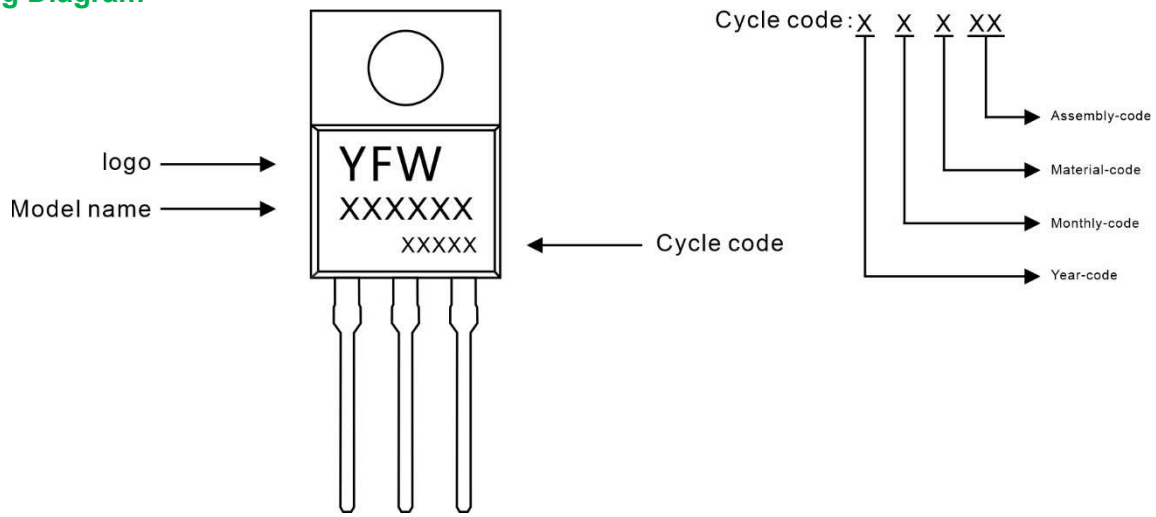


Fig 12. Gate Charge Waveform

Marking Diagram

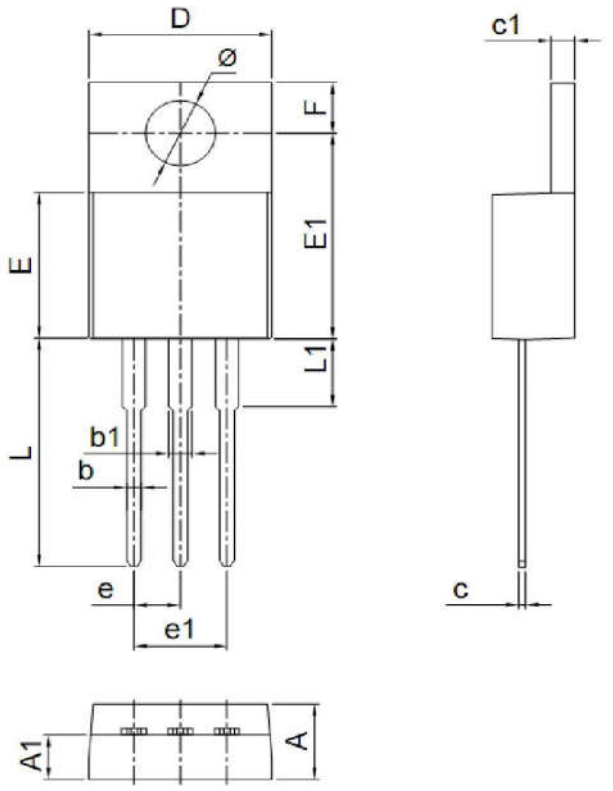


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW3N90AT	TO-220AB	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

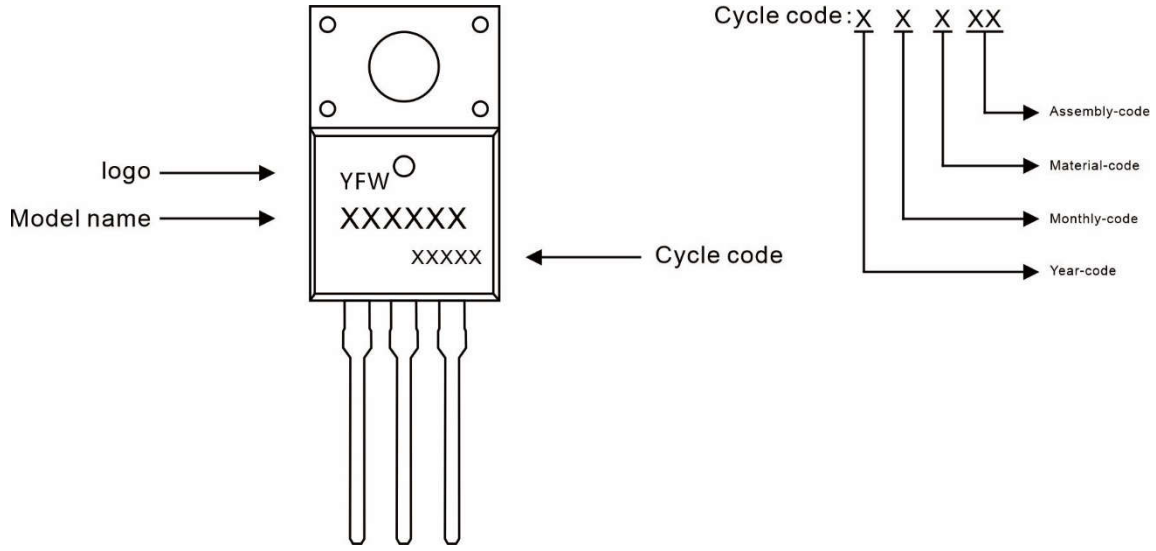
Package Dimensions

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

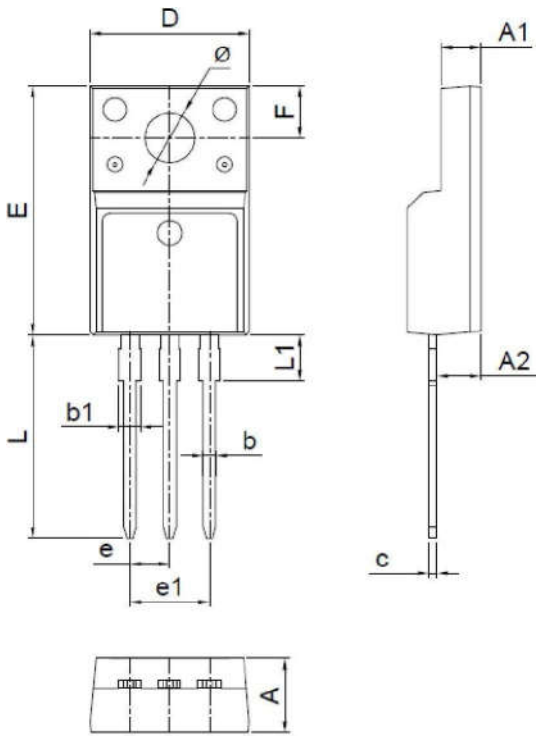


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW3N90AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

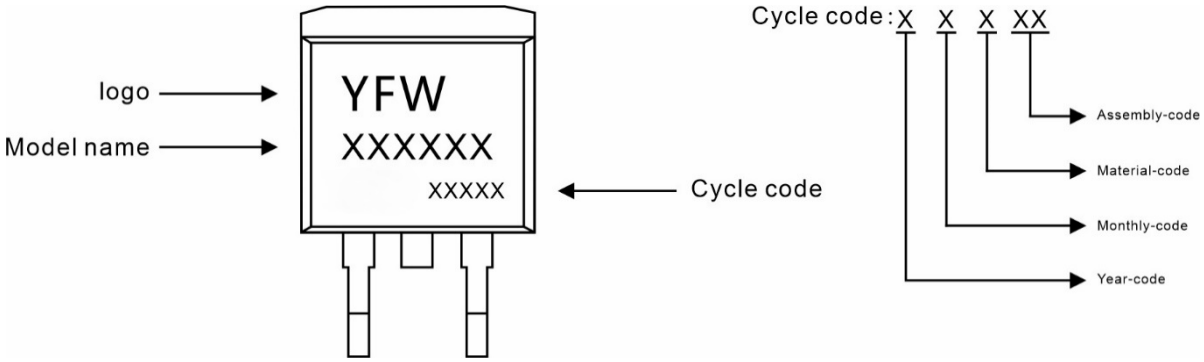
Package Dimensions

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

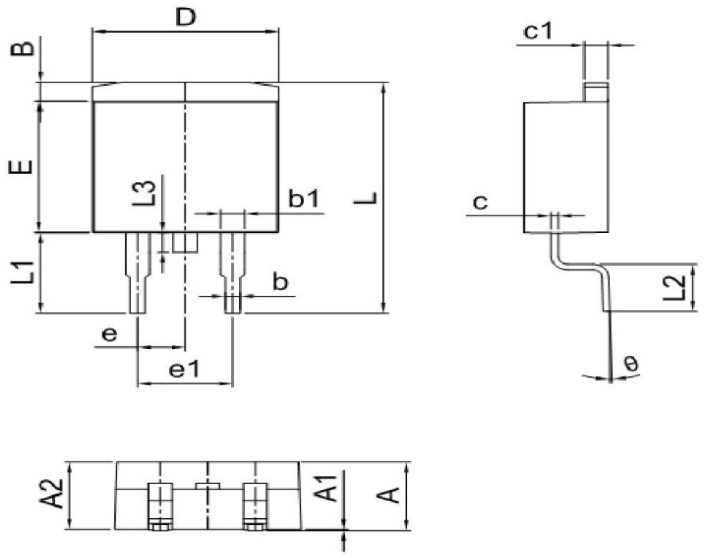


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW3N90AS	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

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