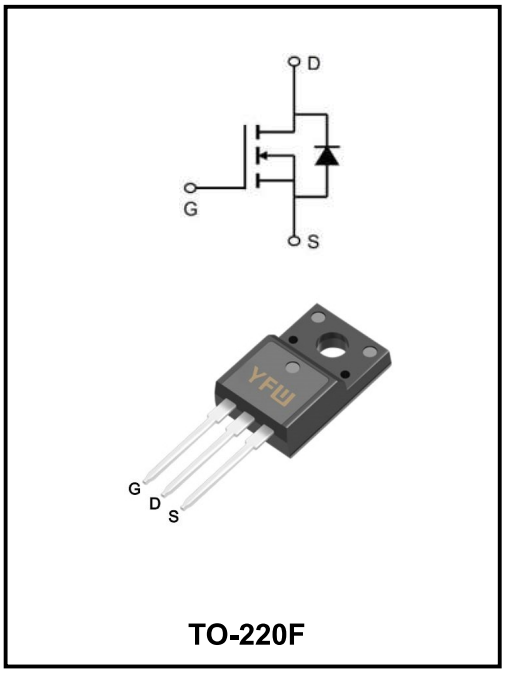
900V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	9A
V_{DS}	900V
R_{DSON}-typ(@V_{GS}=10V)	＜1.2Ω(Typ:1.0Ω)



TO-220F

Description

The YFW9N90AF is silicon N-channel Enhanced VDMOSFETs,is obtained by the self-aligned planar Technology which reduce the conduction loss,improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

APPLICATIONS

- LED power supplies
- Cell Phone Charger
- Standby Power

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current Tc=25°C	I_D	9	A
Continue Drain Current Tc=100°C		6	A
Pulsed Drain Current (Note1)	I_{DM}	36	A
Single Pulse Avalanche Energy	E_{AS}	605	mJ
Power Dissipation Tc=25°C	P_D	108	W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.15	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	40	°C/W
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	900	-	-	V
Drain-Source Leakage Current	V_{DS} = 900 V, V_{GS} = 0 V, Ta=25°C	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 30 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	2	3	4	V
Drain-Source On-State Resistance(Note2)	V_{GS} = 10 V, I_D =4.5 A	$R_{DS(ON)}$	-	1.0	1.2	Ω
Input Capacitance	V_{GS} = 0 V V_{DS} = 25 V f = 1 MHz	C_{iss}	-	2500	-	pF
Output Capacitance		C_{oss}	-	186	-	
Reverse Transfer Capacitance		C_{rss}	-	23	-	
Turn-on Delay Time	I_D = 9A V_{DD} = 450 V R_G= 25 Ω	$t_{d(on)}$	-	50	-	ns
Rise Time		t_r	-	55	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	295	-	
Fall Time		t_f	-	122	-	
Total Gate Charge	I_D = 9A V_{DD} =720 V V_{GS} = 10 V	Q_g	-	86	-	nC
Gate to Source Charge		Q_{gs}	-	12	-	
Gate to Drain Charge		Q_{gd}	-	45	-	
Maximun Body-Diode Continuous Current		I_S	-	-	9	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	36	A
Drain-Source Diode Forward Voltage	I_{SD}= 4.5A， V_{GS} = 0 V,	V_{SD}	-	-	1.4	V
Reverse Recovery Time	I_{SD} = 9A, V_{GS} = 0 V, dI_F / dt = 100 A/μs	t_{rr}	-	1276	-	ns
Reverse Recovery Charge		Q_{rr}	-	9	-	μC

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J= 25℃, V_{DD}=100V, V_G=10V, L= 10mH, I_{AS}= 11A
3. Pulse Test: Pulse Width<300μs, Duty Cycle≤1%

Typical Characteristics

Figure1: Output Characteristics

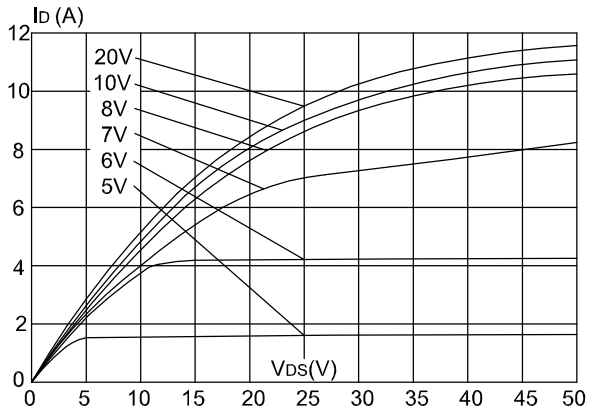


Figure 2: Typical Transfer Characteristics

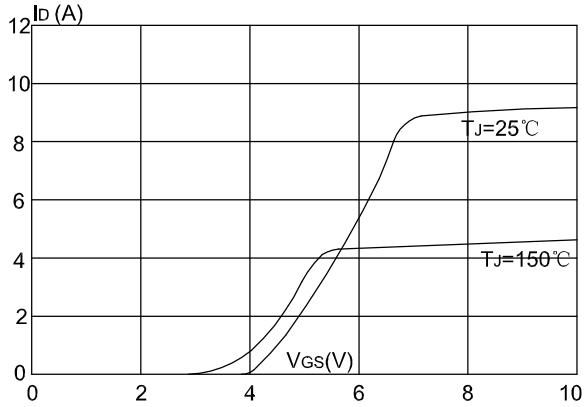


Figure 3: On-resistance vs. Drain Current

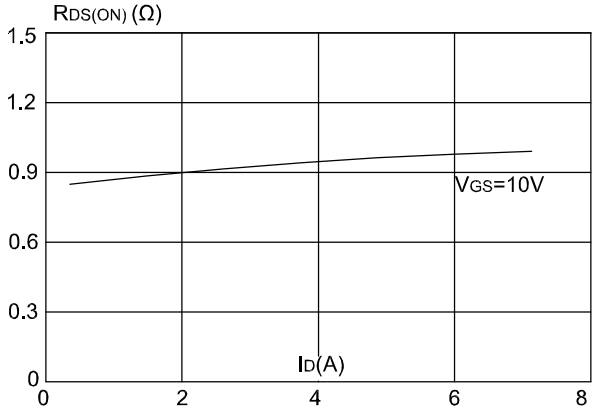


Figure 4: Body Diode Characteristics

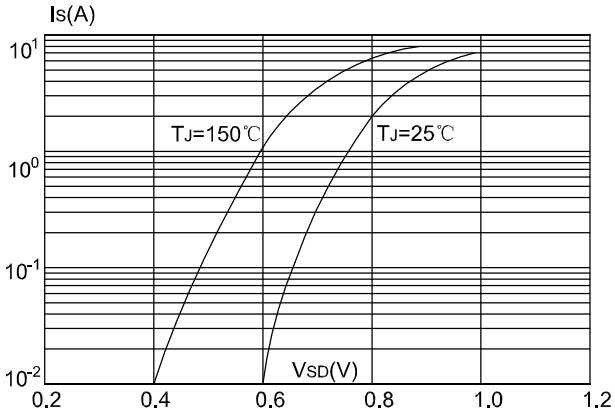


Figure 5: Gate Charge Characteristics

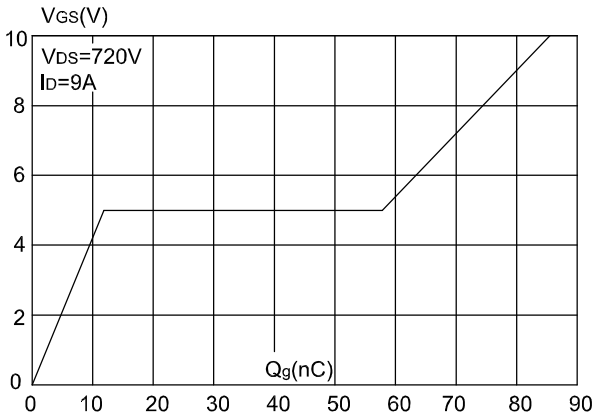
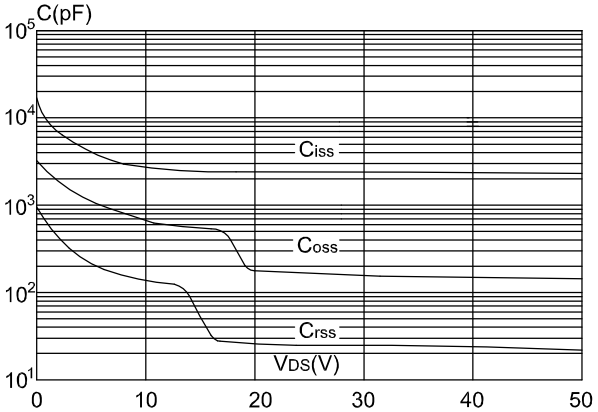


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

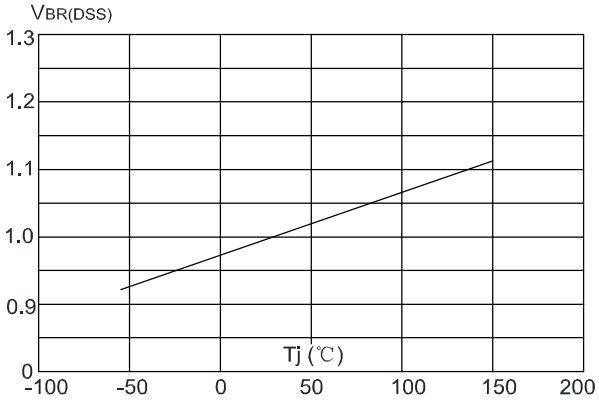


Figure 8: Normalized on Resistance vs. Junction Temperature

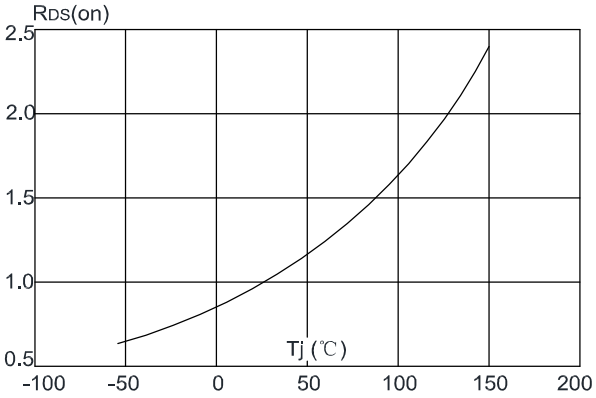


Figure 9: Maximum Safe Operating Area

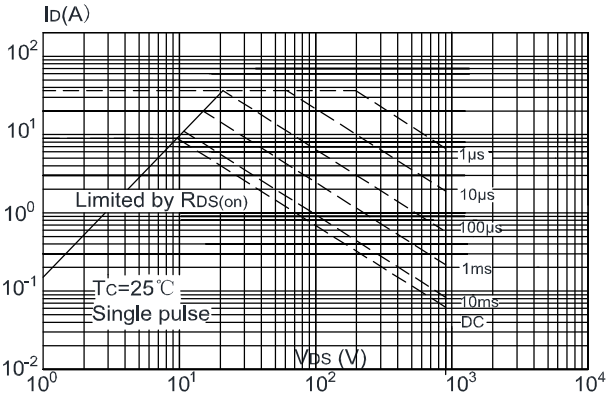


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

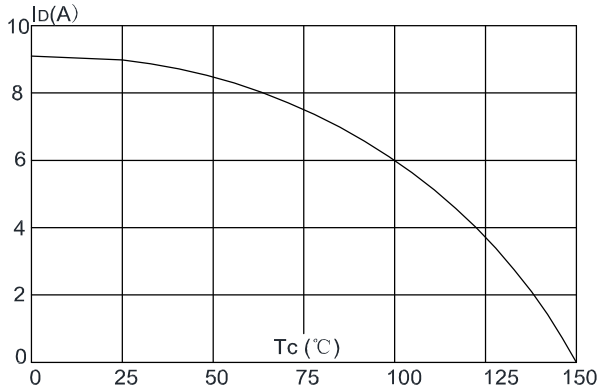
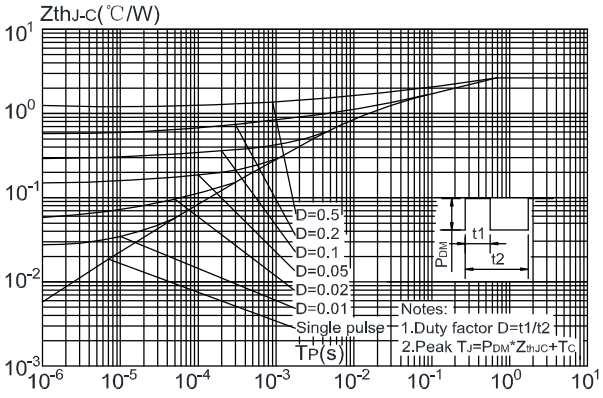
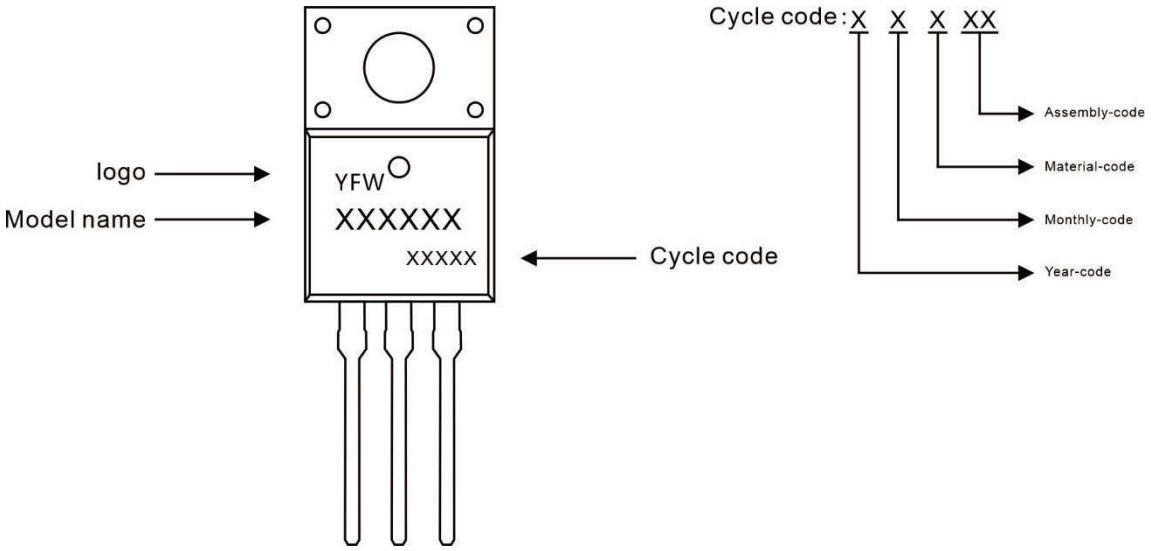


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Marking Diagram

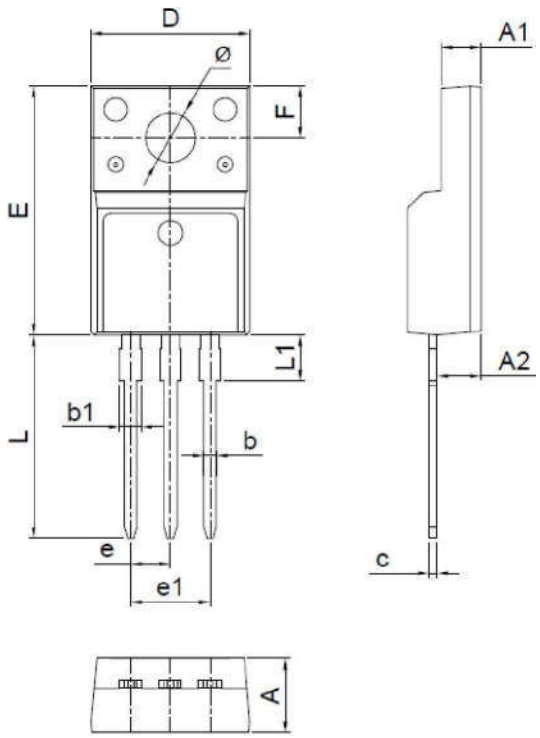


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW9N90AF	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

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