

900V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

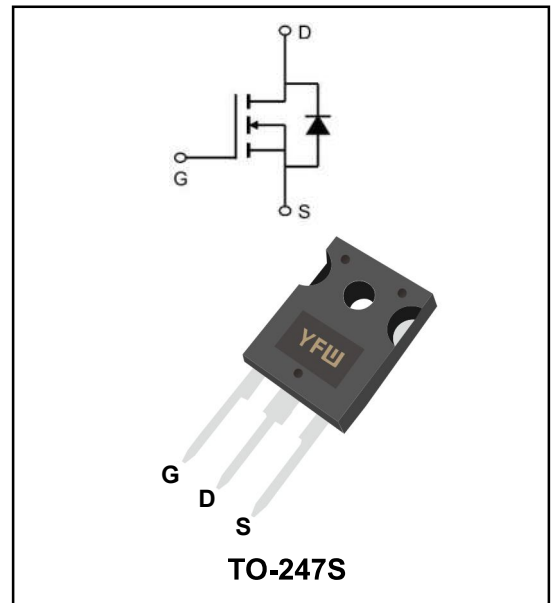
I_D	9A
V_{DS}	900V
R_{DS(on)}-typ(@V_{GS}=10V)	<1.2Ω(Typ:1.0Ω)

DESCRIPTION

The YFW9N90APS 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 T_c=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 T _c =25°C	I _D	9	A
Continue Drain Current T _c =100°C		6	A
Pulsed Drain Current (Note1)	I _{DM}	36	A
Single Pulse Avalanche Energy (Note2)	E _{AS}	605	mJ
Power Dissipation T _c =25°C	P _D	44	W
Thermal Resistance, Junction to Case	R _{θJC}	0.45	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	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, T _a =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,	t_{rr}	-	1276	-	ns
Reverse Recovery Charge	dI _F / dt = 100 A/μs	Q_{rr}	-	9	-	μC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J= 25°C, 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

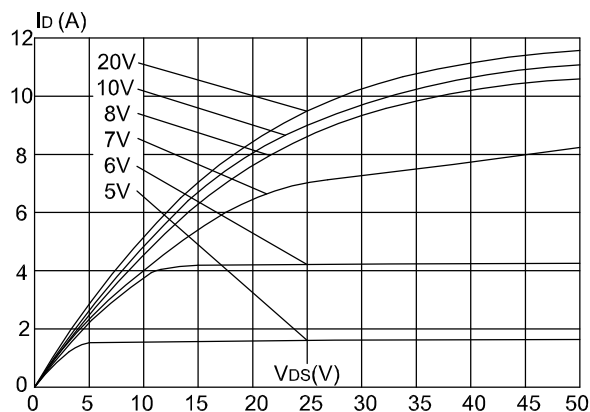


Figure 2: Typical Transfer Characteristics

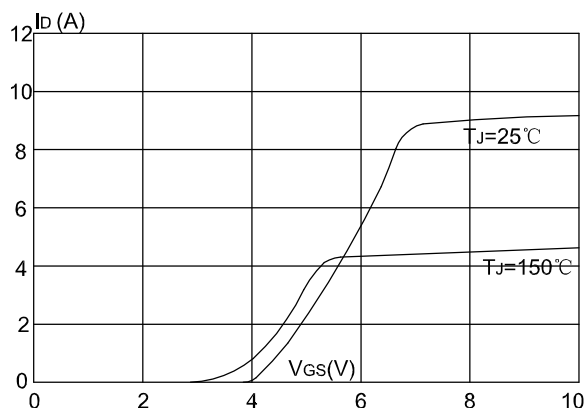


Figure 3: On-resistance vs. Drain Current

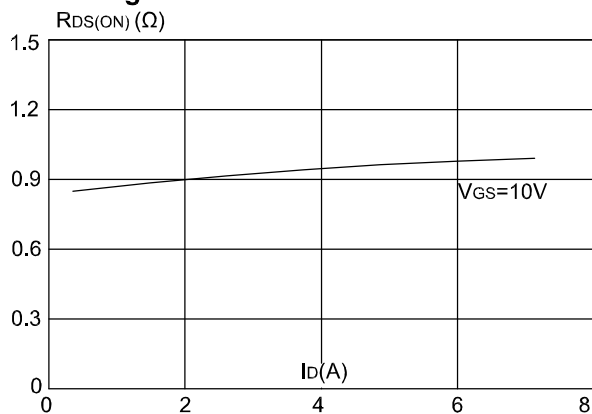


Figure 4: Body Diode Characteristics

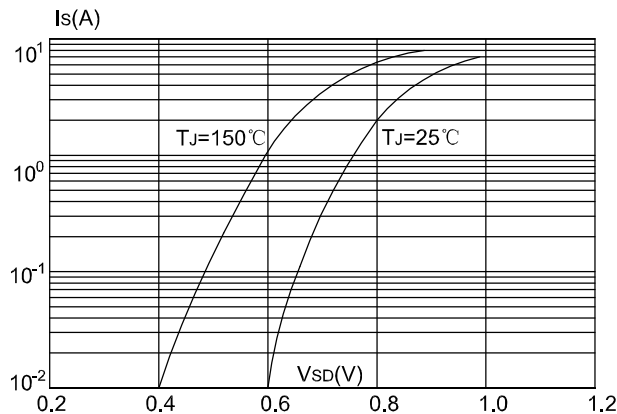


Figure 5: Gate Charge Characteristics

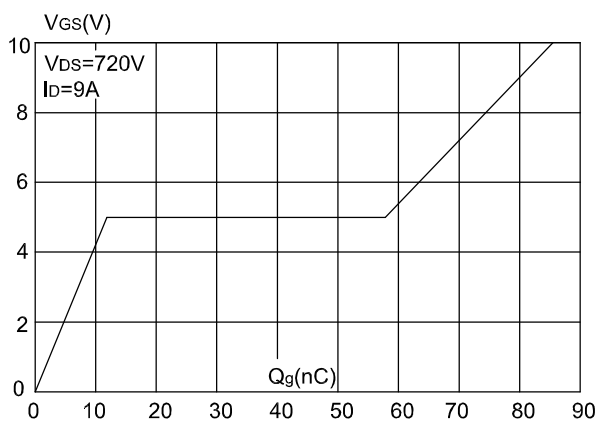
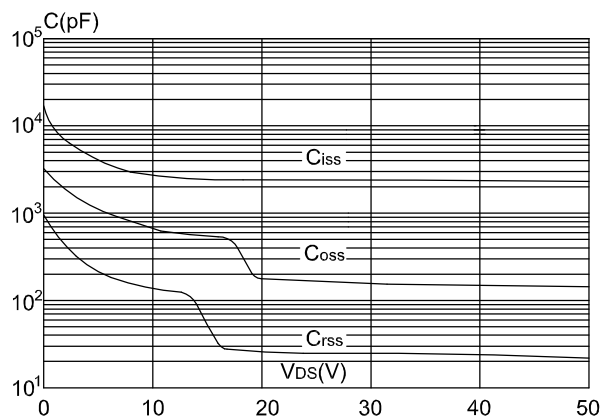


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

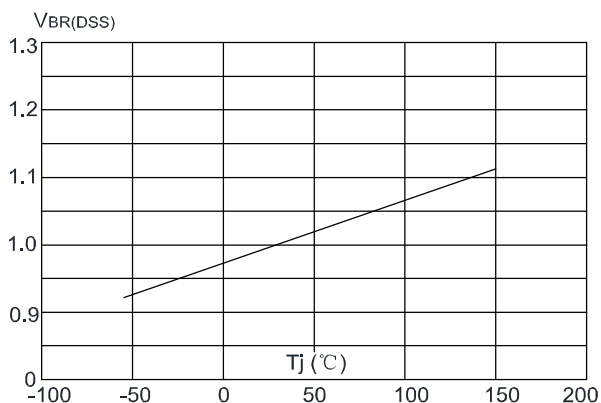


Figure 8: Normalized on Resistance vs. Junction Temperature

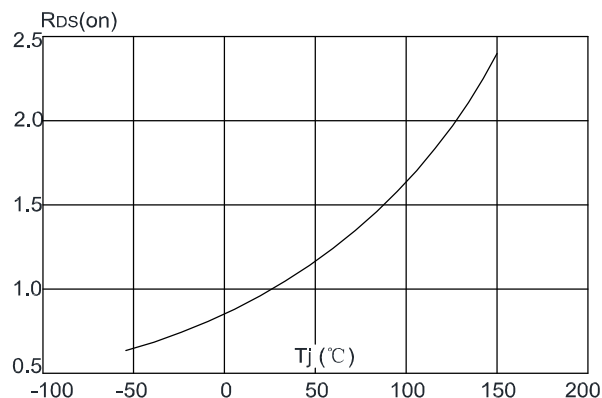


Figure 9: Maximum Safe Operating Area

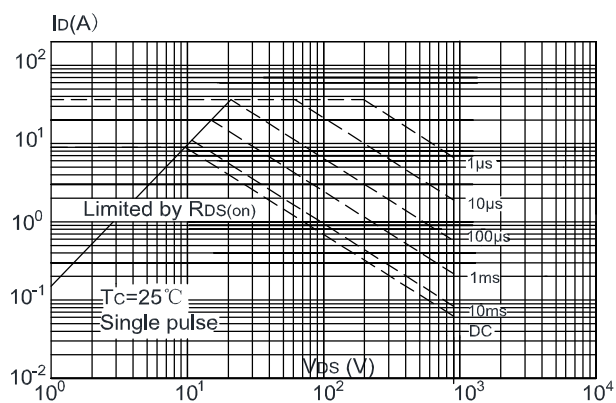


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

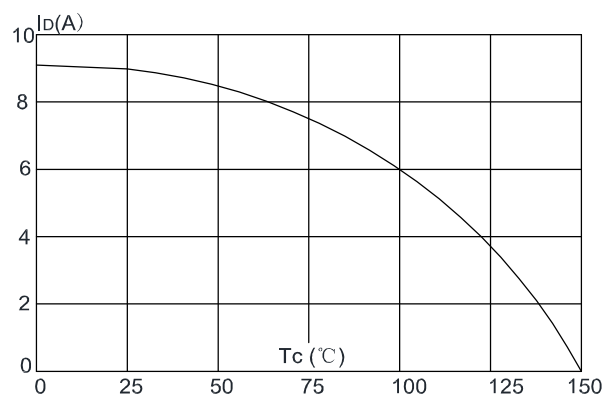
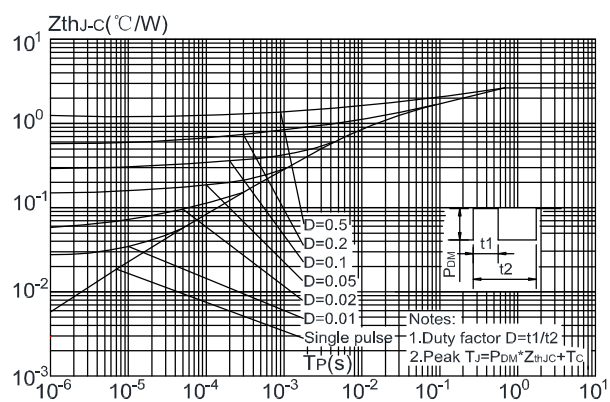
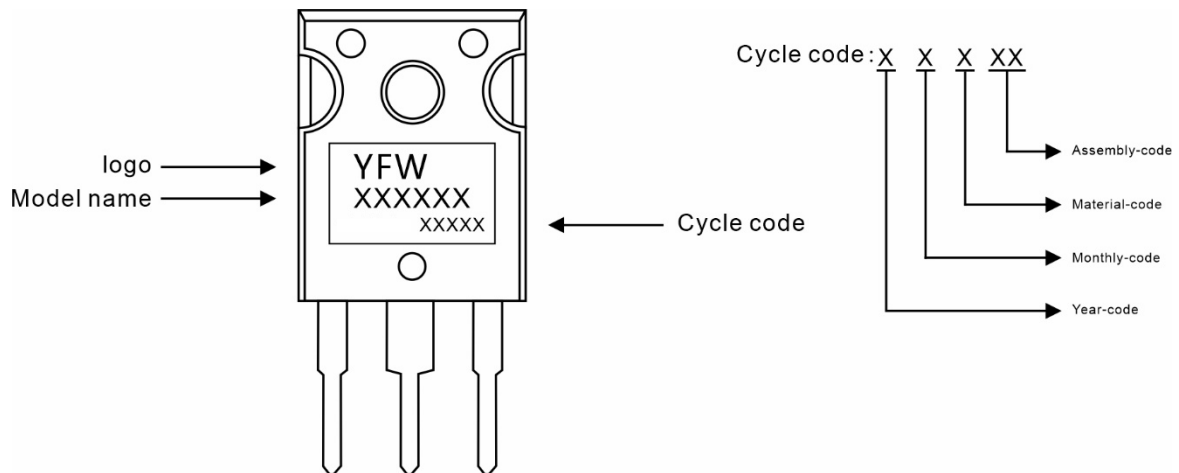


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW9N90APS	TO-247S	0.158oz(4.48g)	30pcs/tube	600PCS/Box 2400PCS/Carton

Package Dimensions

TO-247S

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
E	15.40	15.80	0.60	0.62
D	19.50	20.50	0.77	0.80
S	5.30	5.50	0.21	0.22
ØR	4.50	5.50	0.18	0.22
ØP	3.40	3.80	0.13	0.15
L	14.0	14.5	0.55	0.57
L1	3.70	4.30	0.15	0.17
L2	18.5		0.73	
e	5.20	5.70	0.20	0.22
b	1.15	1.25	0.04	0.05
b1	1.80	2.20	0.07	0.09
b2	2.80	3.20	0.11	0.13
A	4.80	5.00	0.19	0.20
c	0.40	0.70	0.01	0.02
A1	2.30	2.45	0.09	0.10

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