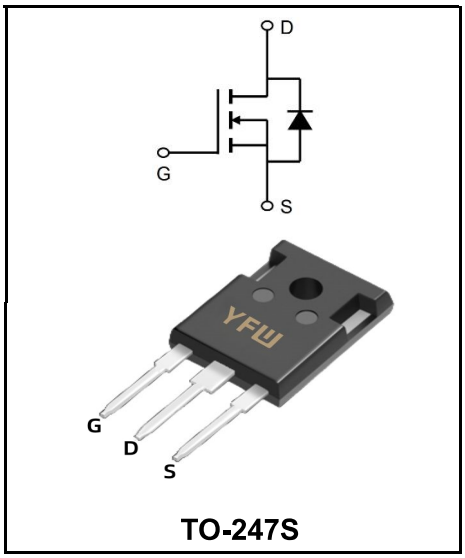
900V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	9A
V_{DS}	900V
R_{DSON}-typ(@V_{GS}=10V)	＜1.1Ω(Typ:0.92mΩ)



TO-247S

FEATURES

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

APPLICATIONS

- High Efficiency Switch
- Motor driven
- Ammeter
- UPS 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		5.8	A
Pulsed Drain Current (Note1)	I_{DM}	36	A
Power Dissipation	P_D	60	W
Derating Factor above 25°C		0.48	W/°C
Single Pulse Avalanche Energy	E_{AS}	900	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.7	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W

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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	900	975	-	V
Drain-Source Leakage Current	V_{DS} = 900 V, V_{GS} = 0 V, Ta=25°C	I_{DSS}	-	-	1	μA
	V_{DS} = 720 V, V_{GS} = 0 V,Ta=125°C		-	-	250	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	$V_{GS(th)}$	3	3.8	5	V
Drain-Source On-State Resistance	V_{GS} = 10 V, I_D =4.5 A	$R_{DS(ON)}$	-	0.92	1.1	Ω
Forward Transconductance	V_{DS} = 15 V, I_D = 4.5 A	gfs	-	10	-	S
Gate resistance	f = 1.0MHz	Rg	-	2	-	Ω
Input Capacitance	V_{GS} = 0 V V_{DS} = 25 V f = 1 MHz	C_{iss}	-	2712	-	pF
Output Capacitance		C_{oss}	-	208	-	
Reverse Transfer Capacitance		C_{rss}	-	17	-	
Turn-on Delay Time(Note2)	I_D = 9A V_{DD} = 450 V R_G= 25 Ω	$t_{d(on)}$	-	13	-	ns
Rise Time(Note2)		t_r	-	7	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	67	-	
Fall Time(Note2)		t_f	-	24	-	
Total Gate Charge(Note2)	I_D = 9A V_{DD} =450 V V_{GS} = 10 V	Q_g	-	62	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	10	-	
Gate to Drain Charge(Note2)		Q_{gd}	-	21	-	
Maximun Body-Diode Continuous Current		I_S	-	-	9	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	35	A
Drain-Source Diode Forward Voltage	I_{SD} = 9A，V_{GS} = 0 V,	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	I_{SD} = 9A, V_{GS} = 0 V, dI_F / dt = 100 A/μs	t_{rr}	-	309	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	1908	-	μC

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

Ratings and Characteristic Curves

Figure 1. Maximum Effective Thermal Impedance, Junction-to-Case

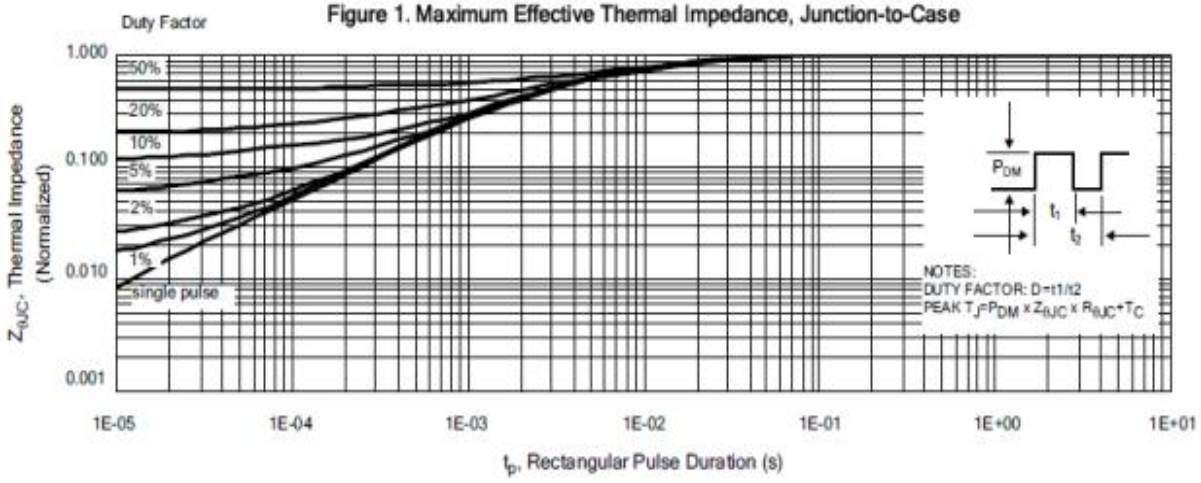


Figure 2. Maximum Power Dissipation vs Case Temperature

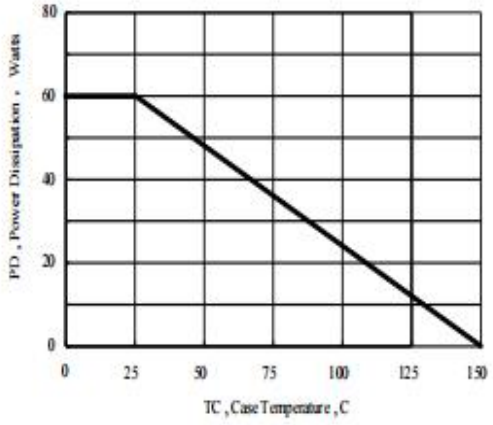


Figure3. Maximum Continuous Drain Current vs Case Temperature

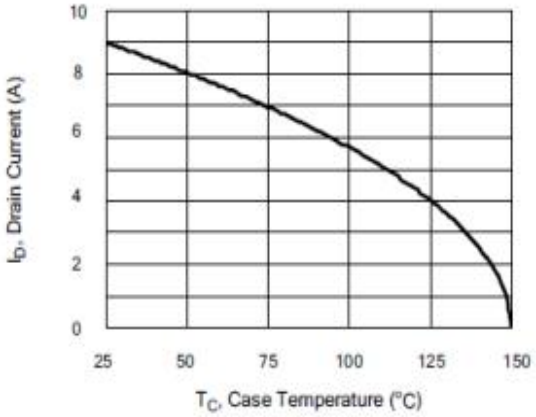


Figure 4. Typical Output Characteristics

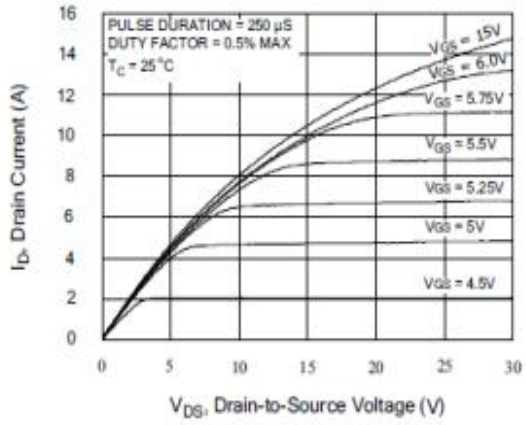
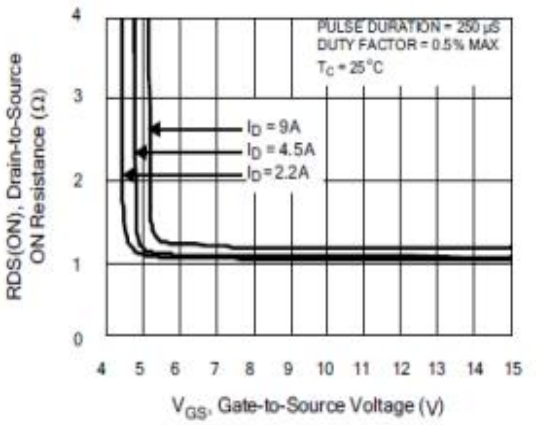


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



Ratings and Characteristic Curves

Figure 6. Maximum Peak Current Capability

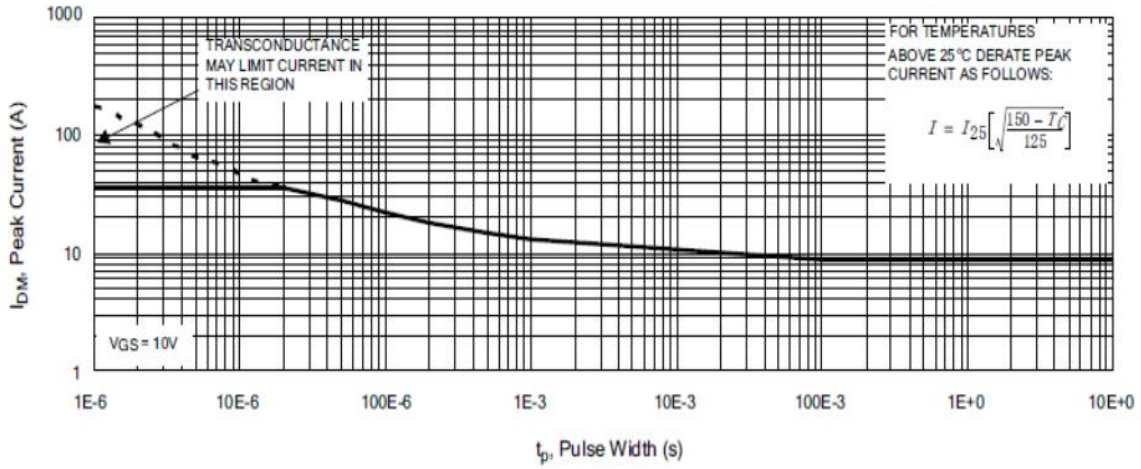


Figure 7. Typical Transfer Characteristics

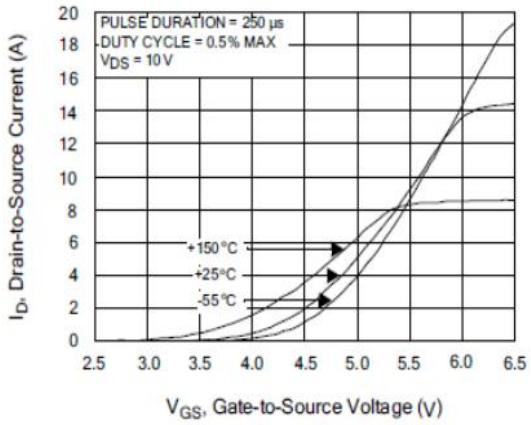


Figure8. Unclamped Inductive Switching Capability

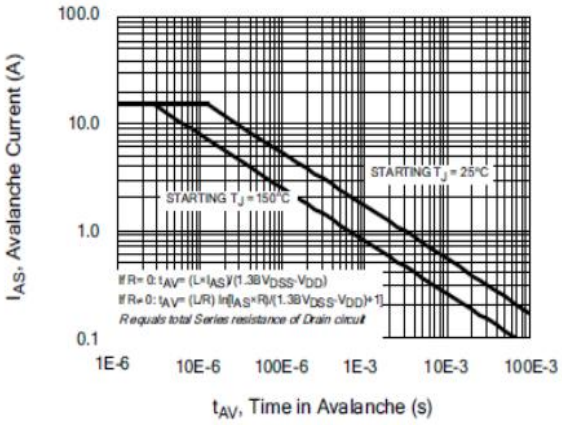


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

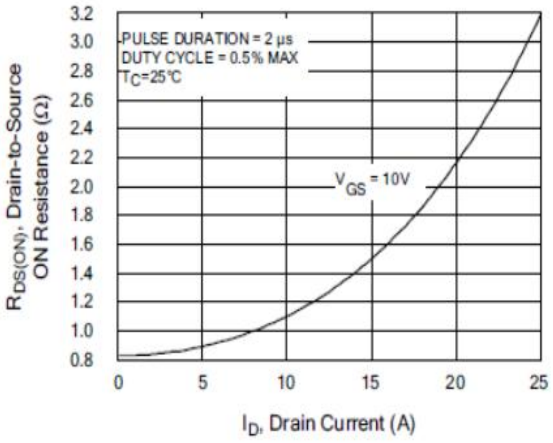
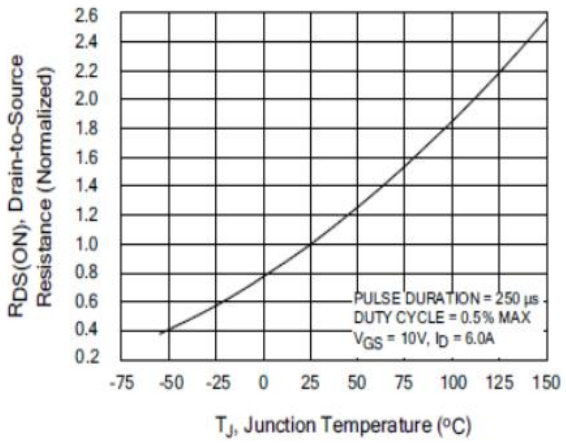


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature



Ratings and Characteristic Curves

Figure 13. Maximum Forward Bias Safe Operating Area

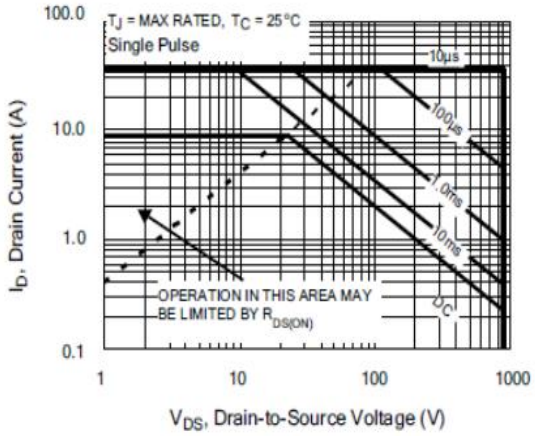


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

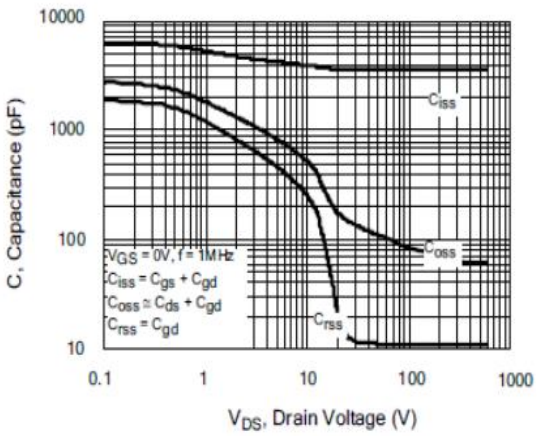


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

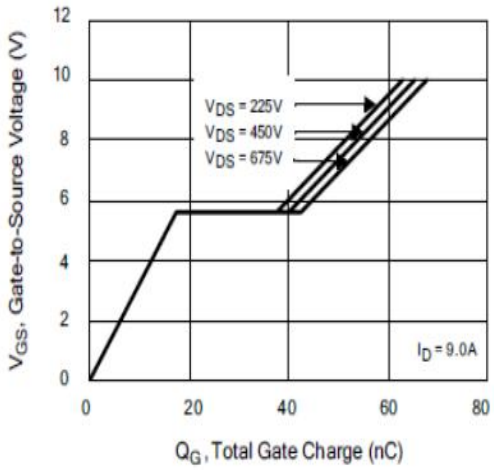
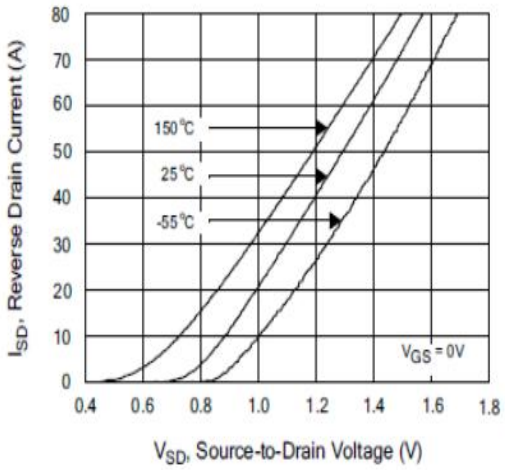
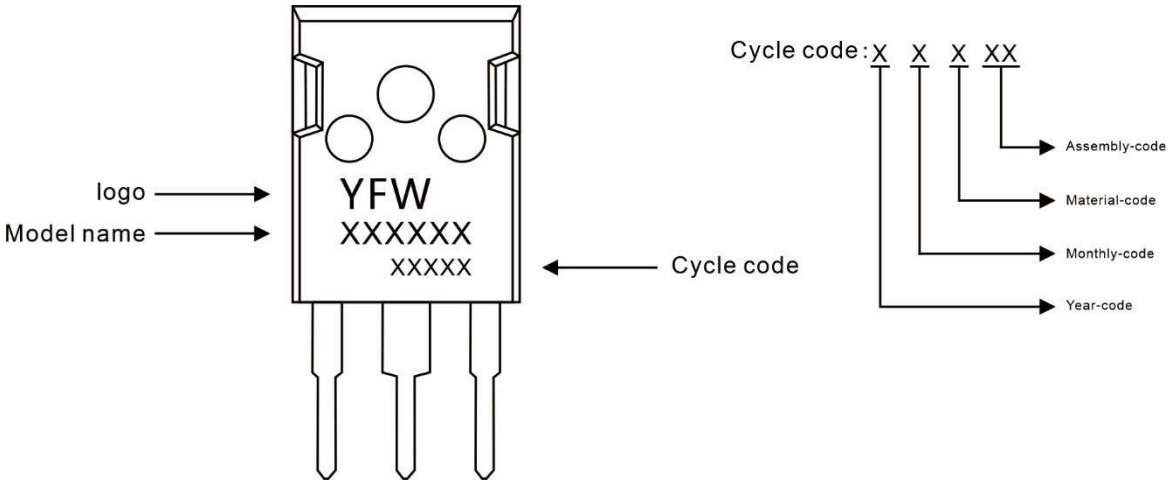


Figure 16. Typical Body Diode Transfer Characteristics



Marking Diagram

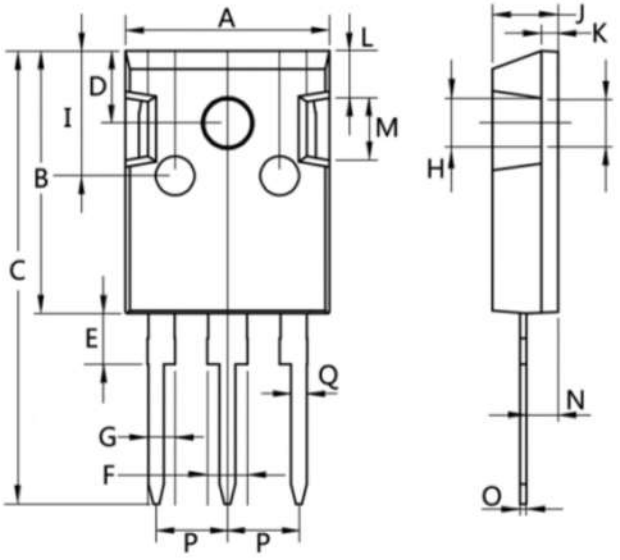


Ordering information

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



Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	15.0	16.0	0.59	0.63
B	19.5	20.5	0.77	0.81
C	33.5	35.5	1.32	1.40
D	5.0	6.0	0.20	0.24
E	3.5	4.5	0.14	0.18
F	2.5	3.5	0.10	0.14
G	1.75	2.5	0.07	0.14
H	3.0	4.0	0.12	0.16
I	9.0	11.0	0.35	0.43
J	4.9	5.1	0.19	0.20
K	1.0	1.3	0.04	0.05
L	3.75	4.25	0.15	0.17
M	4.75	5.25	0.19	0.21
N	1.8	2.2	0.07	0.09
O	0.45	0.6	0.018	0.024
P	5.08		0.2	
Q	1.2	1.3	0.05	0.051

Disclaimer

The information presented in this document is for reference only. GuangDong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website https://www.yfwdiode.com, or consult YFW sales office for further assistance.