

-60V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-90A
V_{DSS}	-60V
R_{DS(on)-typ}(@V_{GS}=-10V)	< 11mΩ (Typ: 7.0mΩ)
R_{DS(on)-typ}(@V_{GS}=-4.5V)	< 14mΩ (Typ: 9.0mΩ)

DESCRIPTION

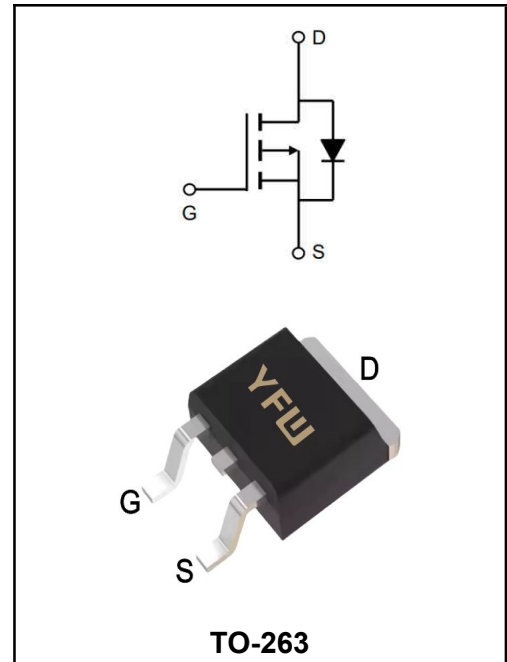
The YFW90P06AS is the new generation trench P-ch MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high efficiency power management applications

FEATURES

- ♦ High - speed switching
- ♦ Excellent gate charge x $R_{DS(ON)}$ product (FOM)
- ♦ for extremely low $R_{DS(ON)}$
- ♦ 100% UIS Tested
- ♦ 100% Avalanche Tested
- ♦ Lead-Free, Halogen-Free; RoHS Compliant

APPLICATIONS

- ♦ LED Applications
- ♦ Load Switch
- ♦ Power Management
- ♦ Quick Charger



Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous ^(Note 2)	T _c =25°C	I_D	-90	A
	T _c =70°C		-78	A
-Pulsed ^(Note 1 Note 2)		I_{DM}	-400	A
Single Pulse Avalanche Energy ^(Note 3)		E_{AS}	400	mJ
Maximum Power Dissipation	T _c =25°C	P_D	240	W
	T _c =70°C		185	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction-Ambient		R_{θJA}	62	°C /W
Thermal Resistance Junction-Case		R_{θJC}	0.5	°C/W

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

Parameter	TestConditions	Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	BV_{DSS}	-60			V
Zero Gate Voltage Drain Current	V _{DS} =-48V , V _{GS} =0V	I_{DSS}			-1.0	uA
Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V	I_{GSS}			±100	nA
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =-250uA	V_{GS(th)}	-1.0	-1.8	-3	V
Drain-Source On-State Resistance	V _{GS} =-10V , I _D =-20A	R_{DS(ON)}		7.0	11	mΩ
	V _{GS} =-4.5V , I _D =10A			9.0	14	mΩ
Forward Transconductance	V _{GS} =-10V , I _D =-3A	g_{FS}		18		S
Input Capacitance	V _{DS} =-25V V _{GS} =0 V f =1.0MHz	C_{iss}		8500		pF
Output Capacitance		C_{oss}		460		pF
Reverse Transfer Capacitance		C_{rss}		280		pF
Total Gate Charge	V _{DS} =-30V I _D =-5A V _{GS} =-10V	Q_g		130		nC
Gate-Source Charge		Q_{gs}		26		nC
Gate-Drain Charge		Q_{gd}		13		nC
Turn-On Delay Time	V _{DD} =-30V I _D =-1A V _{GS} =-10V R _{GEN} =5Ω	t_{d(on)}		78		ns
Rise Time		T_r		210		ns
Turn-Off Delay Time		t_{d(OFF)}		420		ns
Fall Time		t_f		190		ns
Diode Forward Voltage	V _{GS} =0V , I _S =-20A	V_{SD}			-1.2	V

Notes:

- 1、Pulse Test Width < 300us,Duty Cycle< 2%
- 2、Drain current limited by maximum junction temperature.
- 3、Starting T_j=25°C ,L=0.5mH,V_{DD}=-30V,V_{GS}=-10V ,R_G=25Ω
- 4、Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

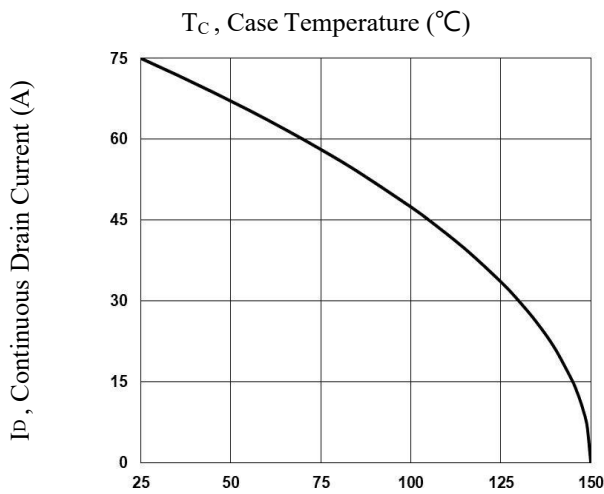


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

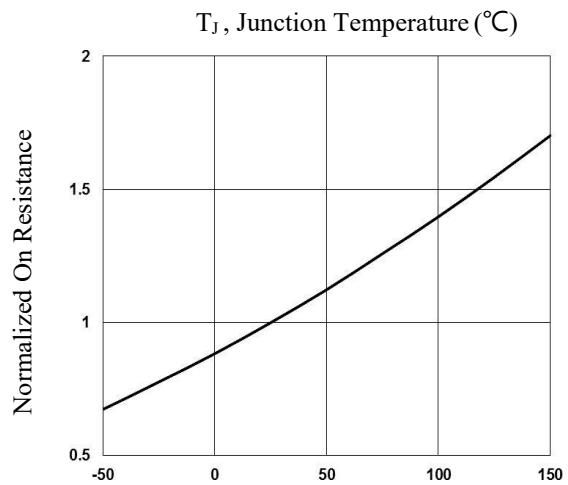


Fig.3 Normalized V_{th} vs. T_J

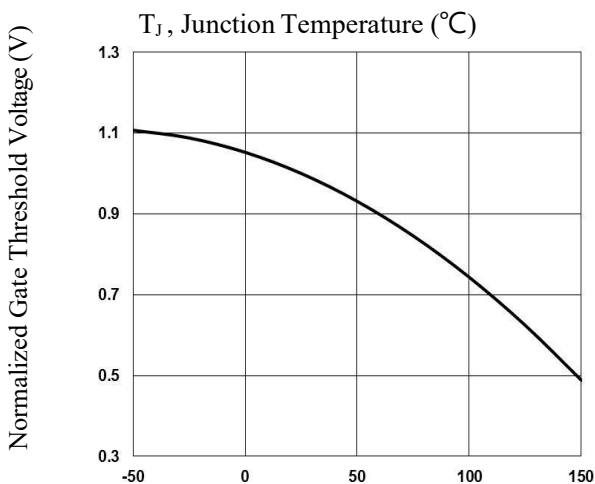


Fig.4 Gate Charge Waveform

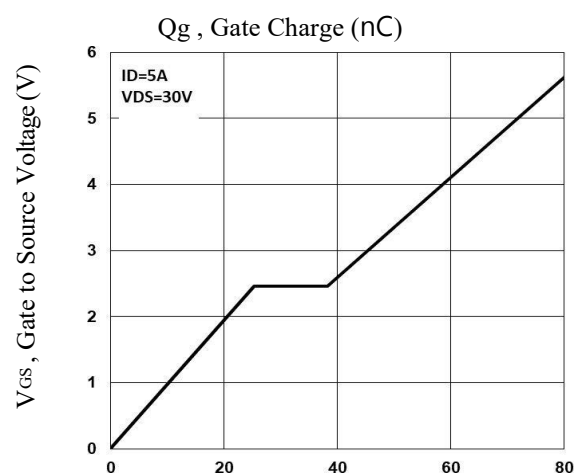


Fig.5 Typical Output Characteristics

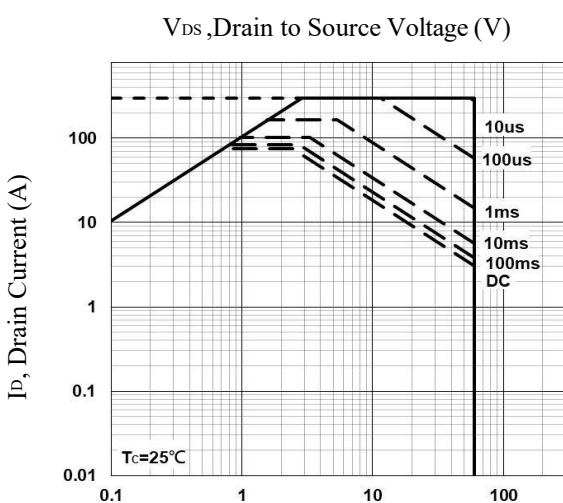
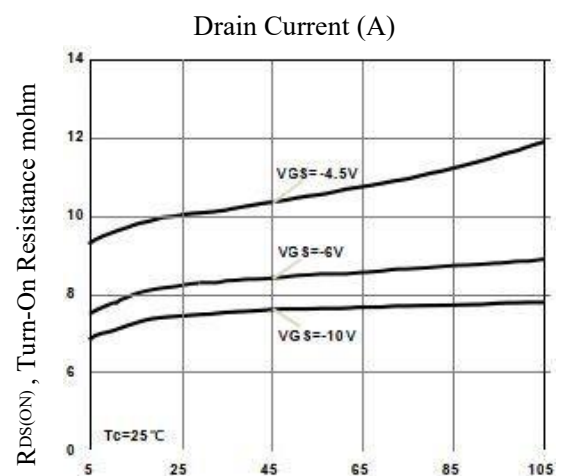


Fig.6 Turn-On Resistance vs. I_D



Typical Performance Characteristics

Fig.7 Capacitance Characteristics

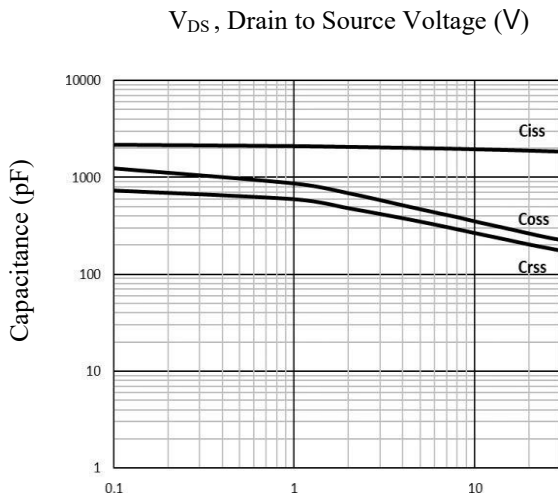


Fig.9 Maximum Safe Operation Area

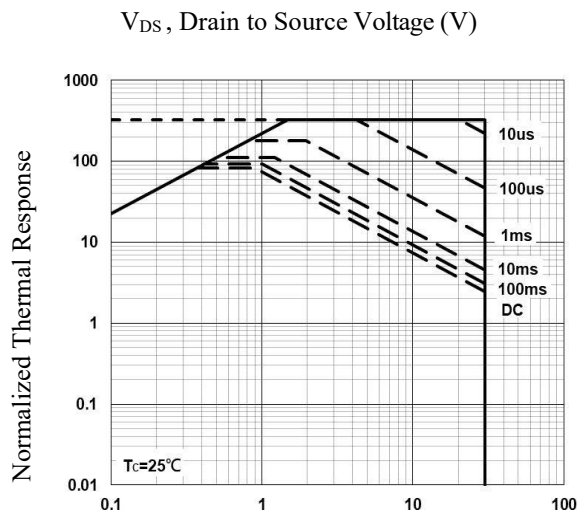


Fig.8 Normalized Transient Impedance

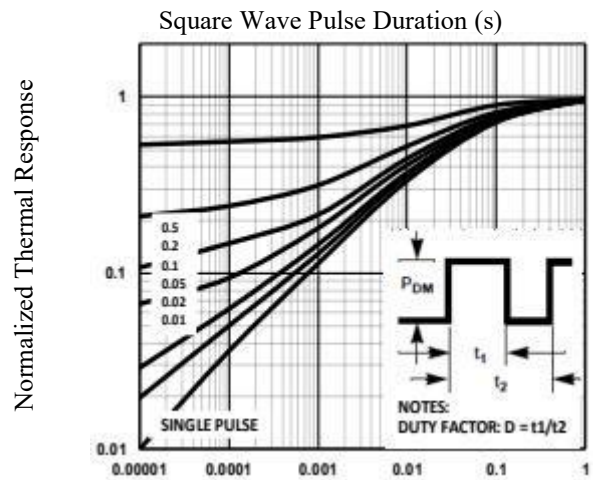


Fig.10 Body Diode Forward Voltage Variation with Source Current

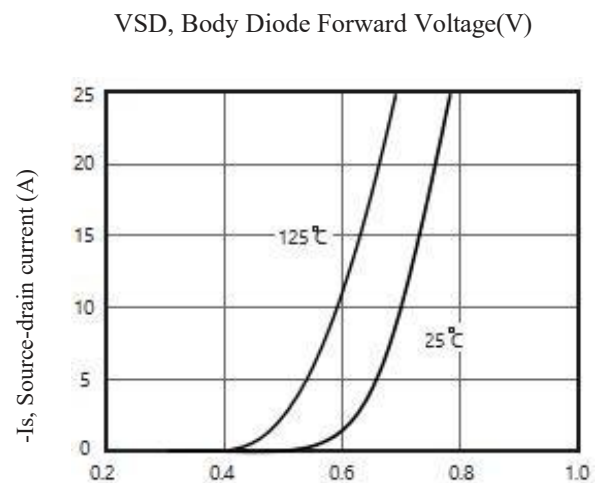


Figure 11a. Switching Test Circuit

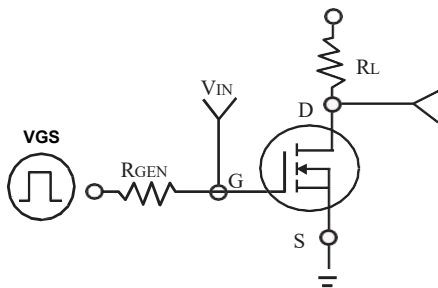


Figure 11b. Switching Waveforms

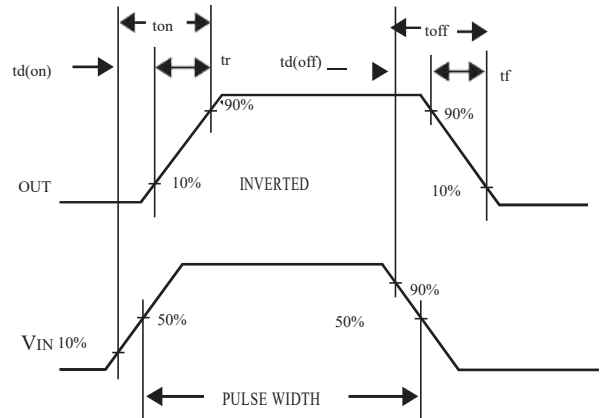


Figure 12a. Unclamped Inductive Test Circuit

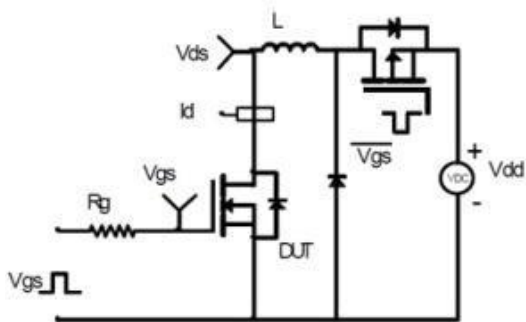
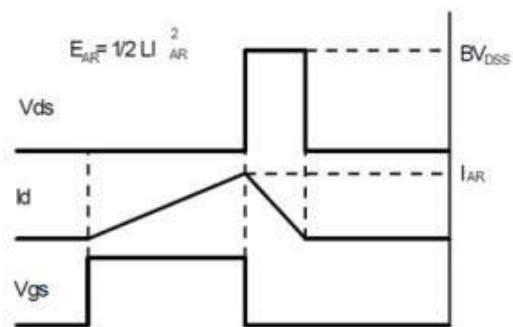
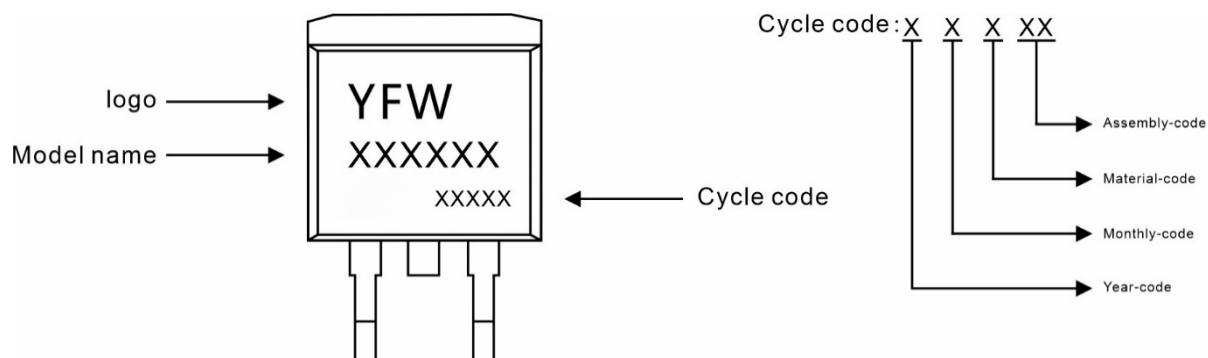


Figure 12b. Unclamped Inductive Waveforms



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW90P06AS	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

Disclaimer

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