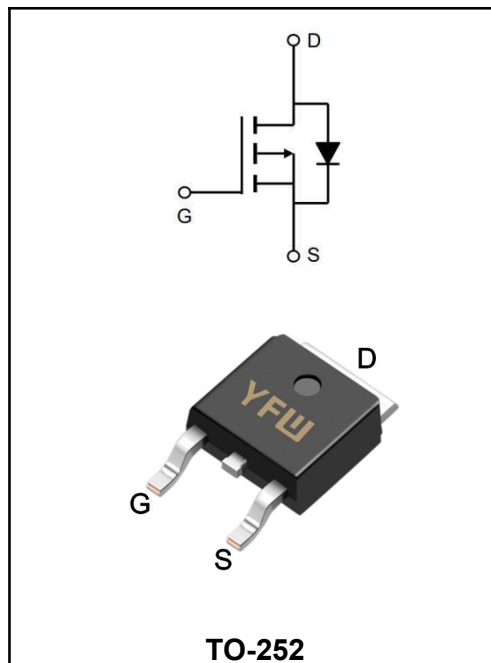


-100V P-Channel Enhancement MOSFET

MAIN CHARACTERISTICS

I_D	-13A
V_{DSS}	-100V
$R_{DS(on)-typ}(@V_{GS}=-10V)$	$< 231m\Omega$ (Typ:180 mΩ)
$R_{DS(on)-typ}(@V_{GS}=-4.5V)$	$< 262m\Omega$ (Typ:210 mΩ)



Features

- ◆ High - speed switching
- ◆ Excellent gate charge x Rds(ON) product (FOM)
- ◆ Super high density cell design for extremely low RDS(ON)
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ RoHS and Halogen - free compliant

ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}C$ unless otherwise noted)

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-100	V
Gate - Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous $T_C=25^{\circ}C$	I_D	-10	A
Drain Current-Continuous $T_C=70^{\circ}C$	I_D	-8	A
Pulsed Drain Current	I_{DM}	-40	A
Single Pulse Avalanche Energy	E_{AS}	46	mJ
Maximum Power Dissipation @ $T_C=25^{\circ}C$	P_D	54	W
Total Power Dissipation @ $T_C=70^{\circ}C$	P_D	34.8	W
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}C$
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.3	$^{\circ}C/W$
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	$^{\circ}C/W$

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-100	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=-80V, V_{GS}=0V$	I_{DSS}	-	-	-1	μA
Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	-1.8	-2.5	V
Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-5A$	$R_{DS(on)}$	-	180	231	m Ω
	$V_{GS}=-4.5V, I_D=-5.0A$		-	210	262	m Ω
Forward Transconductance	$V_{DS}=10V, I_D=-5A$	g_{fs}	-	3.6	-	S
Input Capacitance	$V_{DS}=-30V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	1110	-	pF
Output Capacitance		C_{oss}	-	102	-	
Reverse Transfer Capacitance		C_{rss}	-	58	-	
Total Gate Charge	$V_{DS}=-30V, I_D=-5A, V_{GS}=-10V$	Q_g	-	15.8	-	nC
Gate-Source Charge	$V_{DS}=-30V, I_D=-5A,$ $V_{GS}=-10V$	Q_{gs}	-	3.2	-	
Gate-Drain Charge		Q_{gd}	-	4.1	-	
Turn-on delay time	$V_{DD}=-30V$ $I_D=-5A$ $V_{GS}=-10V$ $R_{GEN}=6\Omega$	$t_{d(on)}$	-	12	-	ns
Rise Time		T_r	-	32	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	52	-	
Fall Time		t_f	-	10	-	
Diode Forward Voltage	$V_{GS}=0V, I_S=-2A$	V_{SD}	-	-0.77	-1.3	V

Notes

1. Pulse Test Width < 300us, Duty Cycle < 2%.
2. Drain current limited by maximum junction temperature.
3. Starting $T_j=25^\circ C$, $L=0.5mH$, $V_{DD}=-30V$. (See Figure11)
4. Guaranteed by design, not subject to production testing.

Figure 1. Output Characteristics

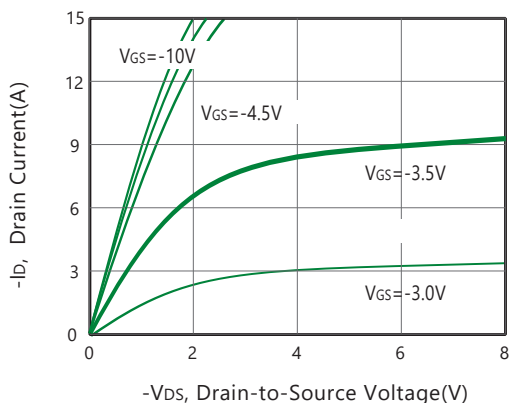


Figure 2. Body Diode Forward Voltage Variation with Source Current

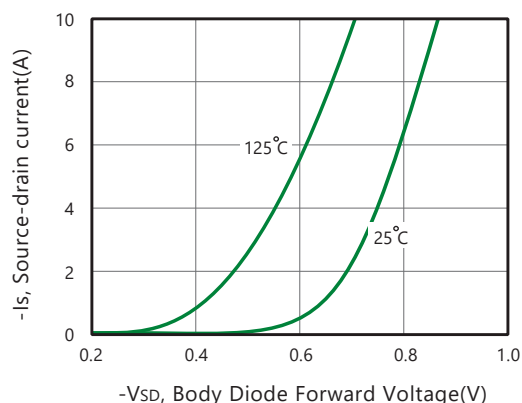


Figure 3. On-Resistance vs. Gate-Source Voltage

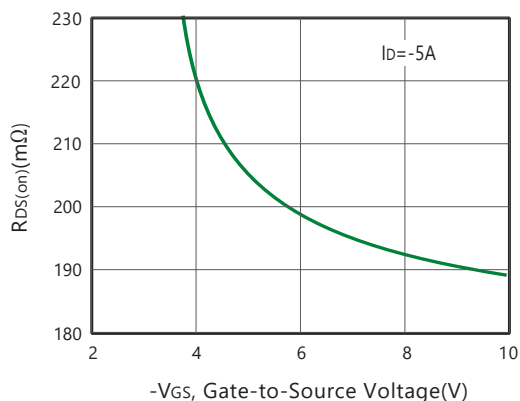


Figure 4. On-Resistance Variation with Drain Current and Temperature

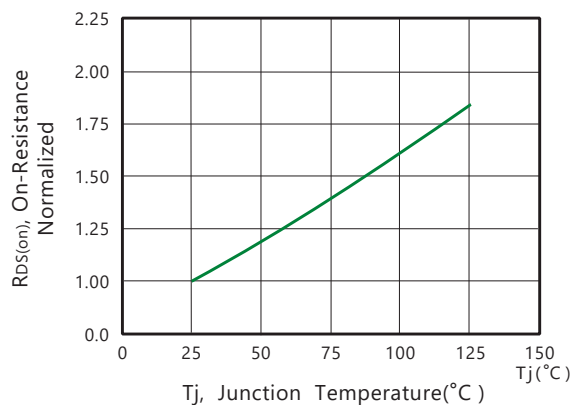


Figure 5. Gate Threshold Variation with Temperature

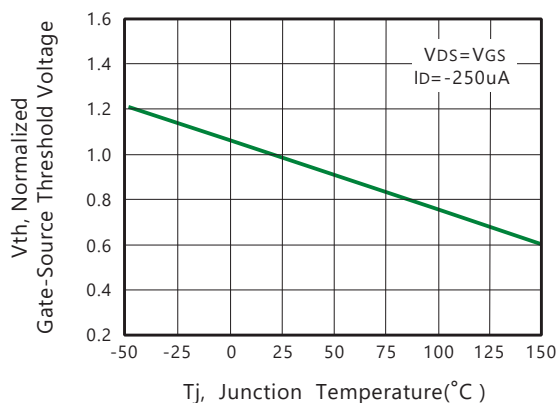


Figure 6. Gate Charge

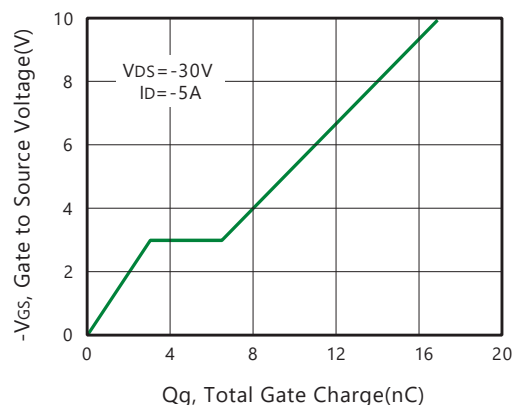


Figure 7. Capacitance

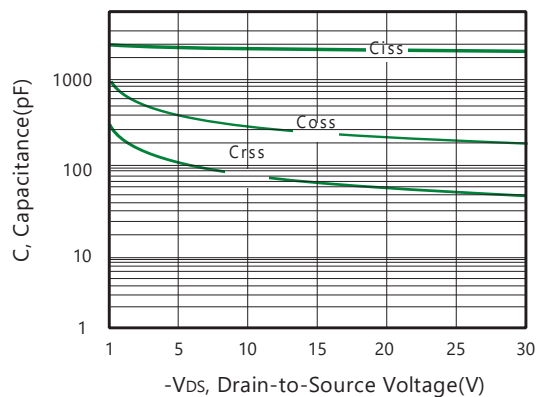


Figure 8. Maximum Safe Operating Area

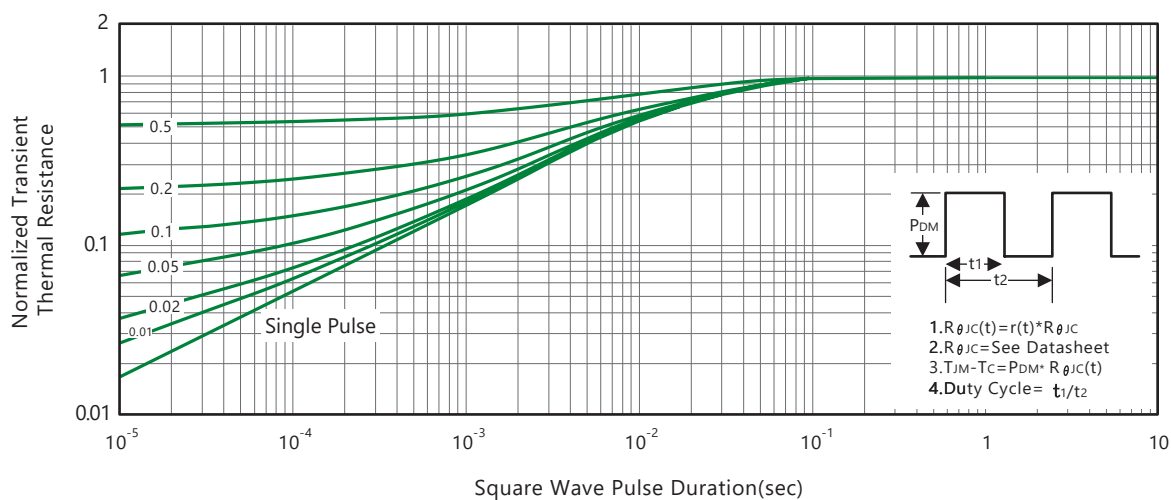
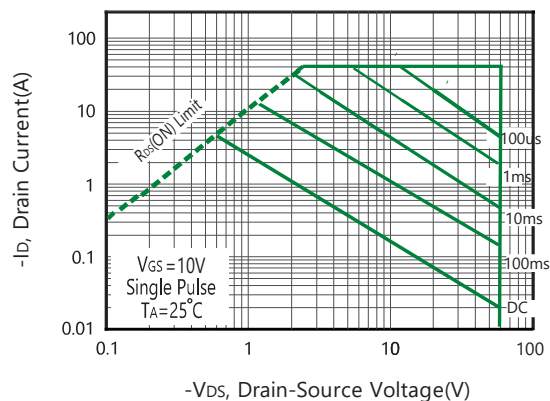


Figure 9. Normalized Thermal Transient Impedance Curve

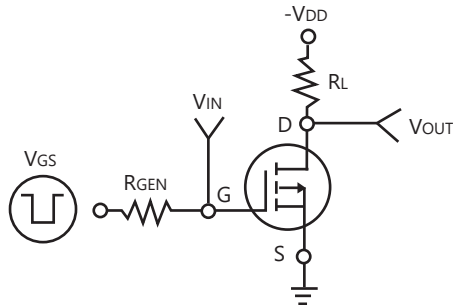


Figure 10a. Switching Test Circuit

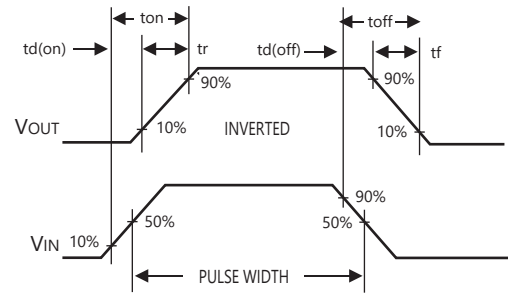
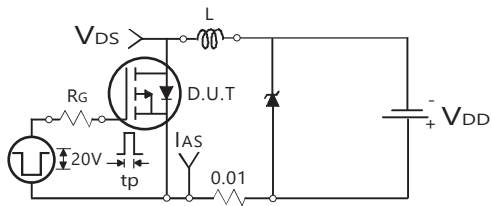
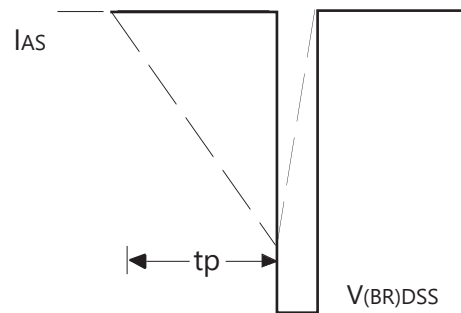


Figure 10b. Switching Waveforms



Unclamped Inductive Test Circuit

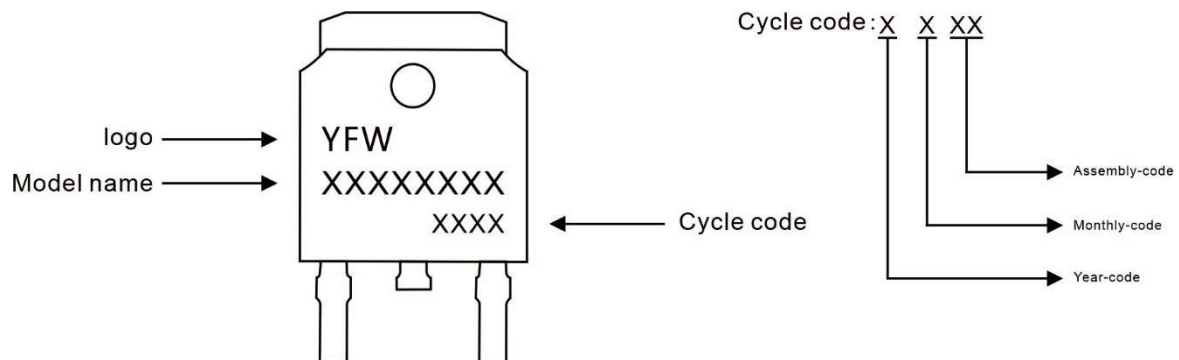
Figure 11a.



Unclamped Inductive Waveforms

Figure 11b.

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW13P10AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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