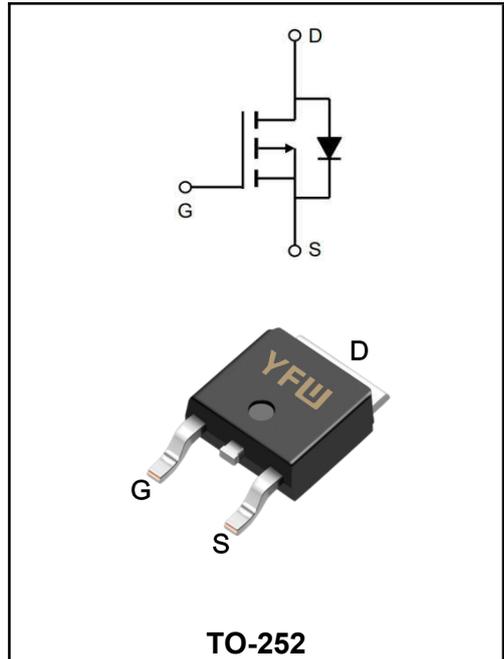


-200V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-7.0A
V_{DSS}	-200V
R_{DS(on)-typ(@V_{GS}=-10V)}	<765mΩ(Typ:645mΩ)



DESCRIPTION

The YFW7P20AD is the high performance complementary N-ch and P-ch MOSFETs with high cell density, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications. The YFW7P20AD meet the RoHS and Green Product requirement 100%EAS guaranteed with full function reliability approved.

APPLICATION

- ♣ Super Low Gate Charge
- ♣ 100%EAS Guaranteed
- ♣ Green Device Available
- ♣ Excellent CdV/dt effect decline
- ♣ Advanced high cell density Trench technology

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ -10V ¹ @T _A =25°C	I_D	-7.0	A
Continuous Drain Current, V _{GS} @ -10V ¹ @T _A =100°C	I_D	-4.4	A
Pulsed Drain Current ²	I_{DM}	-28	A
Single Pulse Avalanche Energy ³	E_{AS}	81	mJ
Total Power Dissipation ⁴ @T _C =25°C	P_D	37.8	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹	R_{θJA}	-	°C/W
Thermal Resistance Junction to Case ¹	R_{θJC}	3.3	°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}	-200	-	-	V
Static Drain-Source On-Resistance ²	$V_{GS}=-10V, I_D=-3A$	$R_{DS(ON)}$	-	645	765	mΩ
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	-2.0	-3.0	-4.0	V
Drain-Source Leakage Current	$V_{DS}=-200V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	-1	μA
	$V_{DS}=-200V, V_{GS}=0V, T_J=85^\circ C$		-	-	-100	μA
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	g_G	-	5.4	-	Ω
Total Gate Charge	$V_{DS}=-50V$ $V_{GS}=-10V$ $I_D=-5A$	Q_g	-	80	-	nC
Gate-Source Charge		Q_{gs}	-	15	-	
Gate-Drain Charge		Q_{gd}	-	28	-	
Turn-On Delay Time	$V_{DD}=-50V$ $V_{GS}=-10V$ $R_G=3.0\Omega$ $R_L=16\Omega$	$t_{d(on)}$	-	17.3	-	ns
Rise Time		T_r	-	4.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	49.6	-	
Fall Time		t_f	-	28	-	
Input Capacitance	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2145	-	pF
Output Capacitance		C_{oss}	-	49.3	-	
Reverse Transfer Capacitance		C_{rss}	-	40.4	-	
Continuous Source Current ^{1,4}	$V_G=V_D=0V, \text{Force Current}$	I_S	-	-	-7.0	A
Diode Forward Voltage ²	$V_{GS}=0V, I_S=-5A, T_J=25^\circ C$	V_{SD}	-	-	-1.2	V
Reverse Recovery Time	$I_F=-5A, di/dt=-100A/\mu s, T_J=25^\circ C$	t_r	-	63.6	-	nS
Reverse Recovery Charge		Q_{rr}	-	194	-	nC

Note :

- 1、The data tested by surface mounted on a 1 inch FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width $\cong 300\mu s$, duty cycle $\cong 2\%$
- 3、The EAS data shows Max.rating.The test condition is $V_{DD}=-50V, V_{GS}=-10V, L=1mH$,
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I_o and I_{om} ,in real applications,should be limited by total power dissipation.

Typical Characteristics

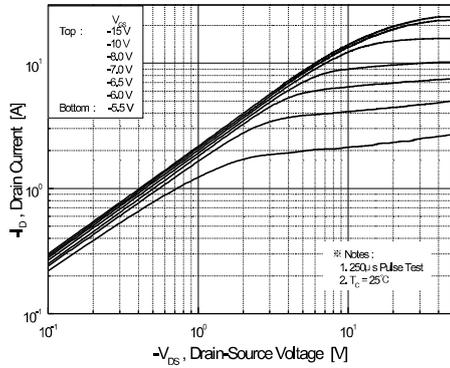


Figure 1. On-Region Characteristics

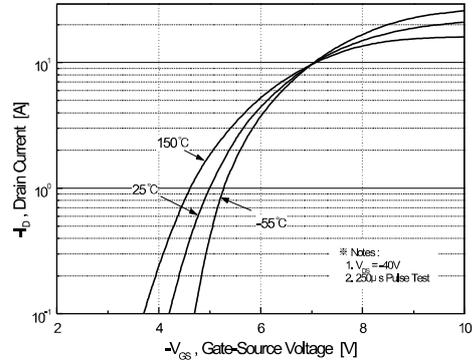


Figure 2. Transfer Characteristics

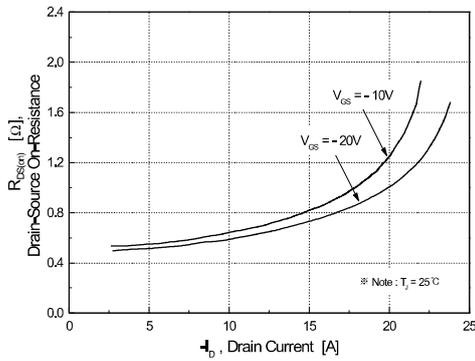


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

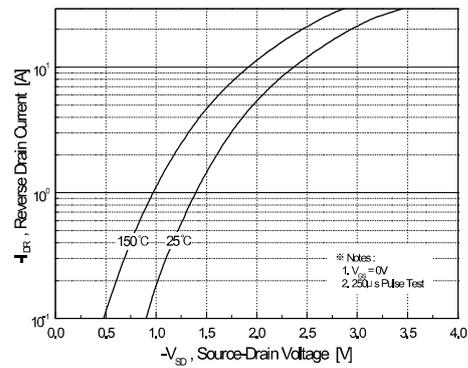


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

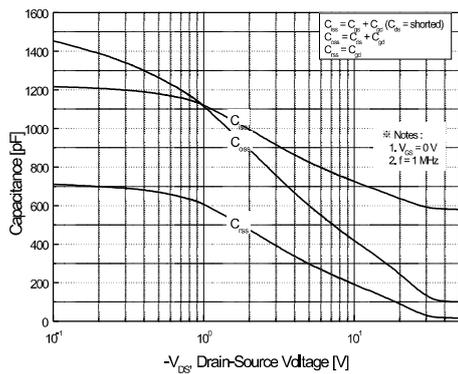


Figure 5. Capacitance Characteristics

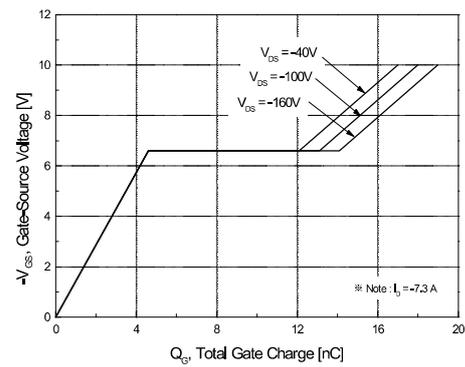


Figure 6. Gate Charge Characteristics

Typical Characteristics

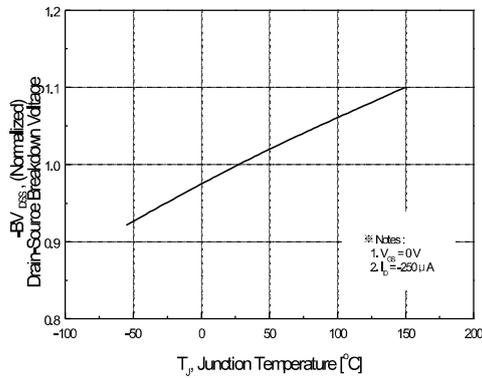


Figure 7. Breakdown Voltage Variation vs. Temperature

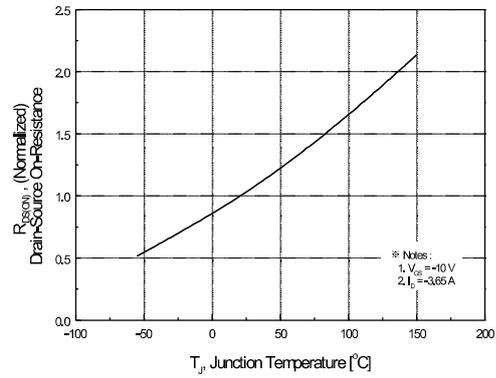


Figure 8. On-Resistance Variation vs. Temperature

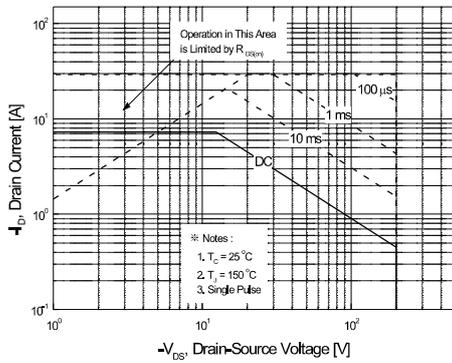


Figure 9. Maximum Safe Operating Area

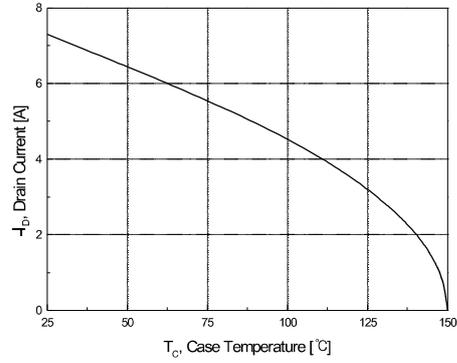


Figure 10. Maximum Drain Current vs. Case Temperature

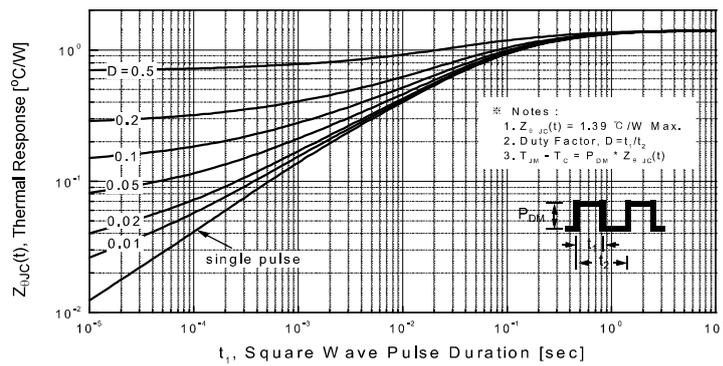
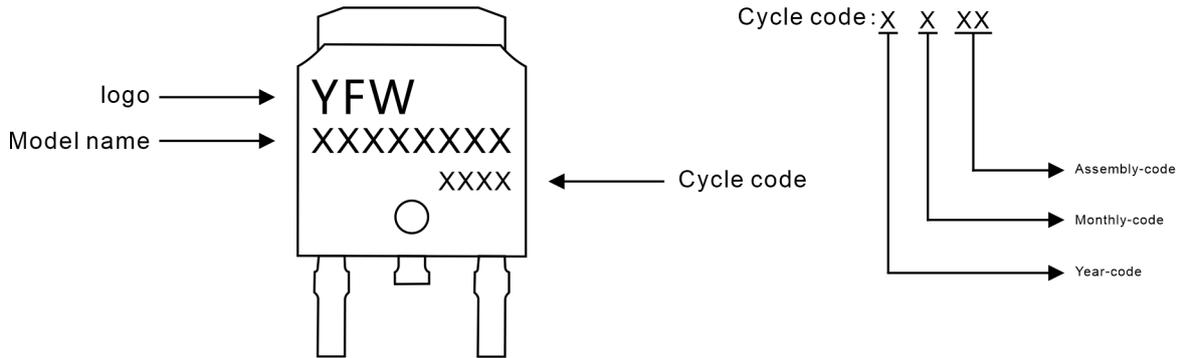


Figure 11. Transient Thermal Response Curve

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW7P20AD	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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