

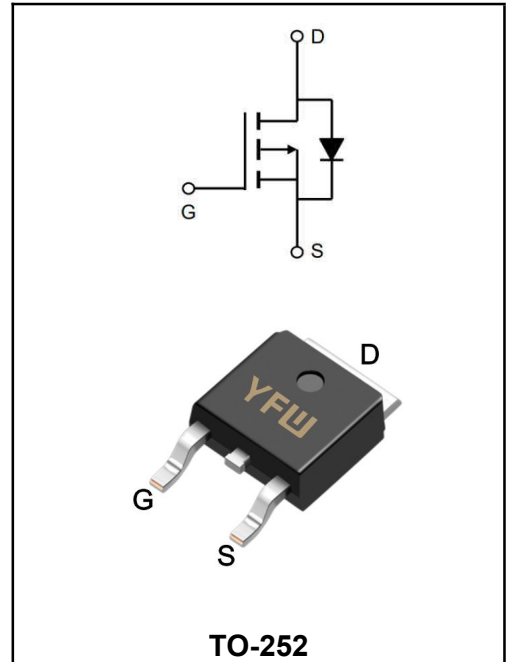
-200V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-4A
V_{DSS}	-200V
R_{DS(on)-typ}(@V_{GS}=-10V)	< 1.7Ω (Type:1.4 Ω)

Application

- ◆ Power amplifier
- ◆ motor drive



Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-200	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current T _C =25°C	I_D	-4	A
Continuous Drain Current T _C =100°C		-2.3	A
Pulsed Drain Current ^a	I_{DM}	-14	A
Single Pulse Avalanche Energy ^b	E_{AS}	310	mJ
Repetitive Avalanche Current ^a	I_{AR}	-3.6	A
Repetitive Avalanche Energy ^a	E_{AR}	4.2	mJ
Maximum Power Dissipation T _C = 25 °C	P_D	42	W
Maximum Power Dissipation (PCB Mount) ^e T _A = 25 °C		2.5	W
Peak Diode Recovery dV/dt ^c	dV/dt	-5.0	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C
Maximum Junction-to-Ambient	R_{θJA}	110	°C/W
Maximum Junction-to-Ambient (PCB Mount) ^a	R_{θJA}	50	°C/W
Maximum Junction-to-Case (Drain)	R_{θJC}	3.0	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	V_{DS}	-200	-	-	V
V_{DS} Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta V_{DS}/T_J$	-	-0.22	-	V/°C
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-2.0	-3.5	-4.0	V
Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-2A^b$	$R_{DS(on)}$	-	1.4	1.7	Ω
	$V_{GS}=-5.5V, I_D=-1A^b$		-	1.8	2.5	
Gate-Source Leakage	$V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=-200V, V_{GS}=0V$	I_{DSS}	-	-	-100	μA
	$V_{DS}=-160V, V_{GS}=0V, T_J=125^\circ C$		-	-	-500	
Forward Transconductance	$V_{DS}=-50V, I_D=-2.2A$	g_{fs}	1.1	-	-	S
Input Capacitance	$V_{GS}=0V$ $V_{DS}=-25V$ $f=1MHz$	C_{iss}	-	340	-	μF
Output Capacitance		C_{oss}	-	110	-	
Reverse Transfer Capacitance		C_{rss}	-	33	-	
Total Gate Charge	$I_D=-3.9A$ $V_{DS}=-160V$ $V_{GS}=-10V$	Q_g	-	-	20	nC
Gate-Source Charge		Q_{gs}	-	-	3.3	
Gate-Drain Charge		Q_{gd}	-	-	11	
Turn-on delay time	$V_{DD}=-100V$ $I_D=-3.9A$ $R_G=18\Omega$ $R_D=24\Omega$ see fig. 10 ^b	$t_{d(on)}$	-	8.8	-	ns
Rise Time		T_r	-	27	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	7.3	-	
Fall Time		t_f	-	19	-	
Continuous Source-Drain Diode Current	MOSFET symbol showing the integral reversep - n junction diode	I_S	-	-	-3.6	A
Pulsed Diode Forward Current ^a		I_{SM}	-	-	-14	A
Body Diode Voltage	$T_J = 25^\circ C, I_S = -3.6A,$ $V_{GS} = 0V^b$	V_{SD}	-	-	-6.3	V
Body Diode Reverse Recovery Time	$T_J = 25^\circ C, I_F = -3.9A,$ $di/dt = 100A/\mu s^b$	t_{rr}	-	150	300	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	0.97	2.0	μC
Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS and LD)	t_{on}	-	-	-	-

Notes

- 1、Repetitive rating; pulse width limited by maximum junction temperature (see fig. 11).
- 2、Pulse width $\leq 300 \mu s$; duty cycle ≤ 2

Ratings and Characteristic Curves

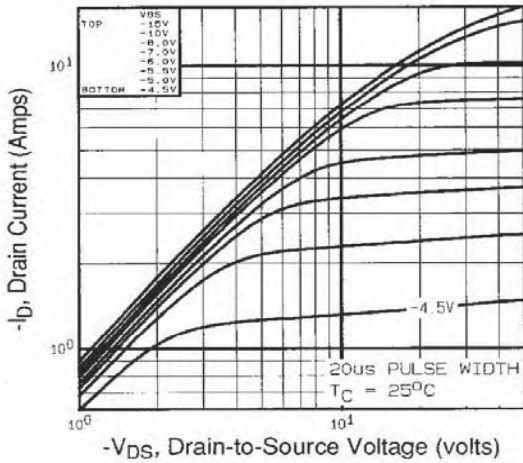


Fig. 1 - Typical Output Characteristics, $T_C = 25\text{ }^\circ\text{C}$

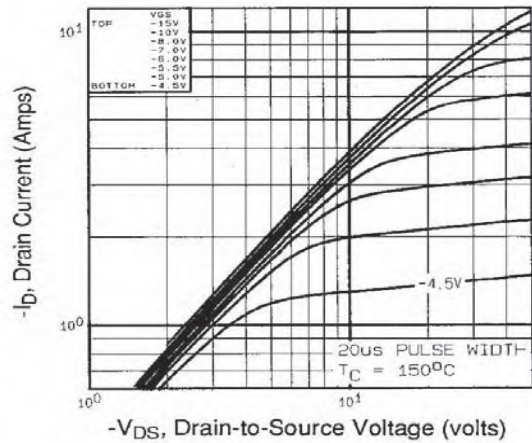


Fig. 2 - Typical Output Characteristics, $T_C = 150\text{ }^\circ\text{C}$

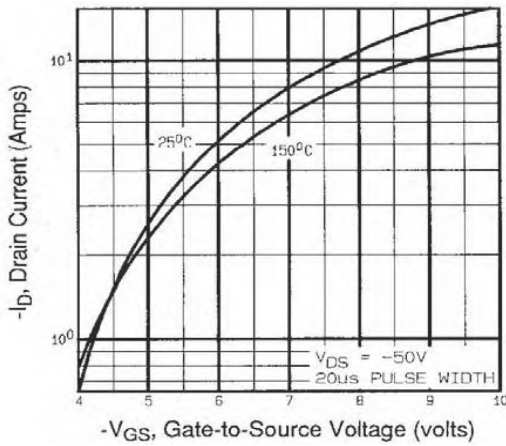


Fig. 3 - Typical Transfer Characteristics

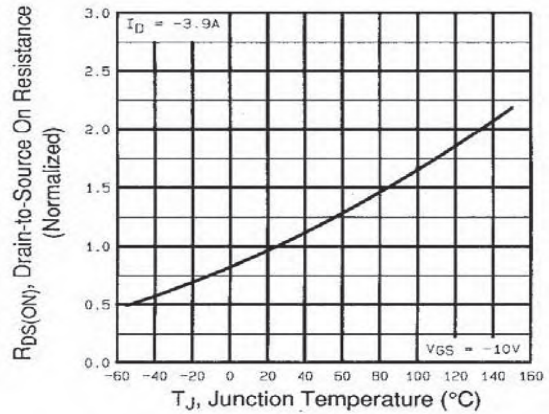


Fig. 4 - Normalized On-Resistance vs. Temperature

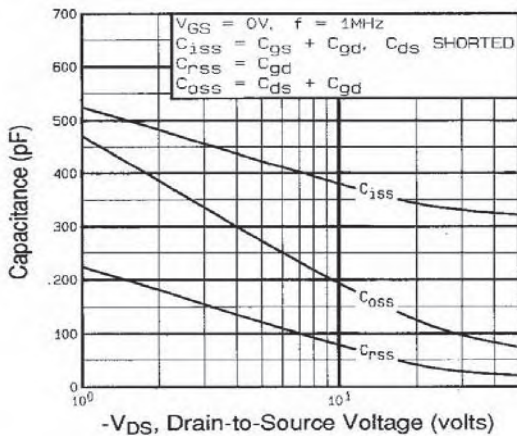


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

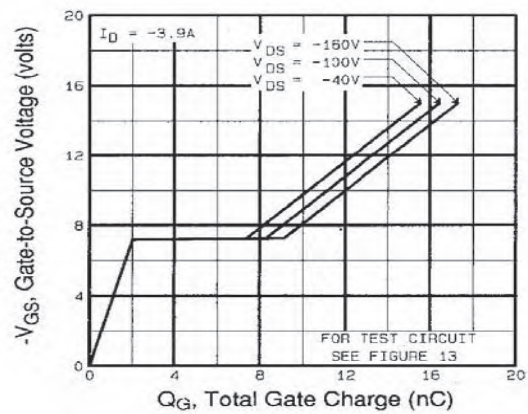


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

Ratings and Characteristic Curves

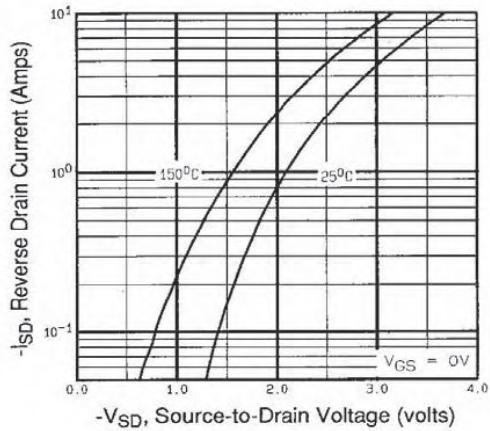


Fig. 7 - Typical Source-Drain Diode Forward Voltage

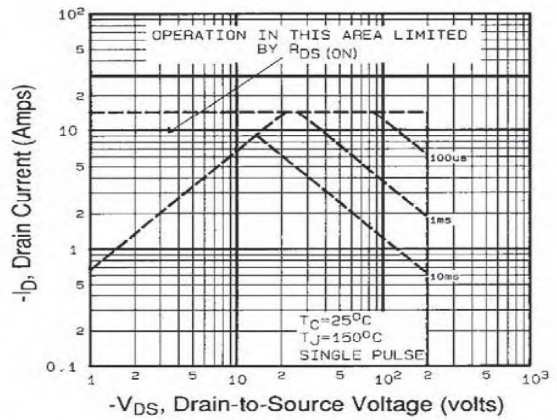


Fig. 8 - Maximum Safe Operating Area

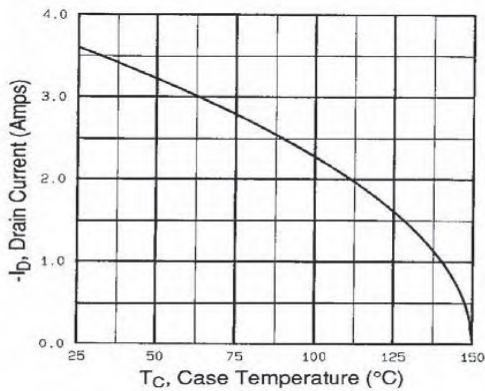


Fig. 9. Maximum Drain Current Vs. Case Temperature

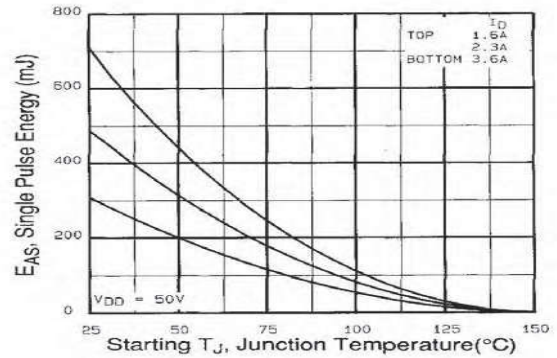


Fig. 10 - Maximum Avalanche Energy vs. Drain Current

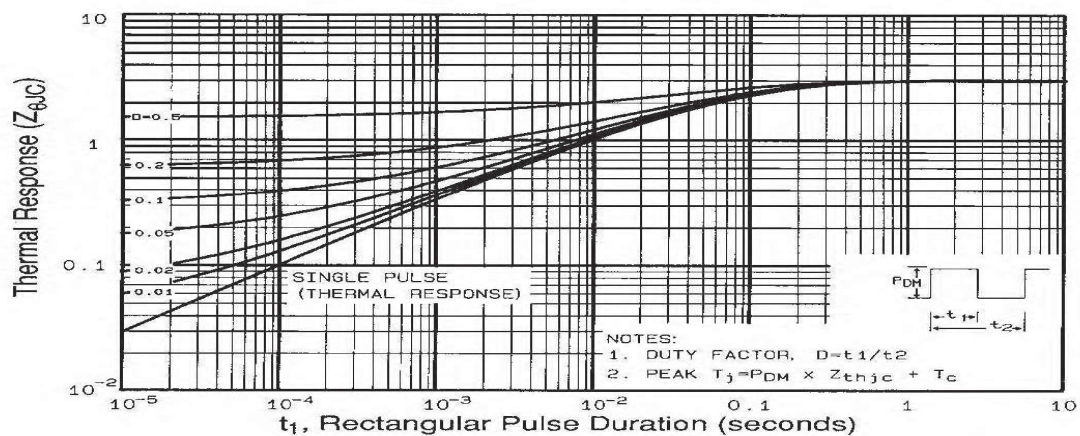
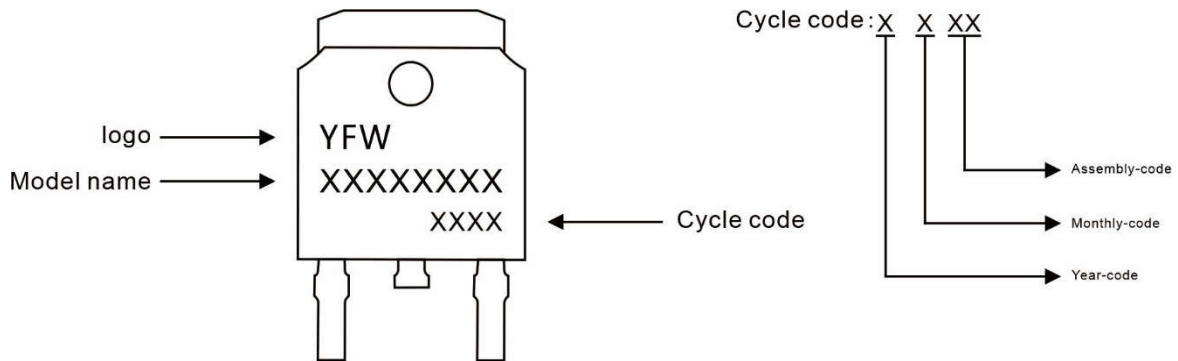


Fig. 11 - Maximum Effective Transient Thermal Impedance, Junction-to-Case

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW4P20AD	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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