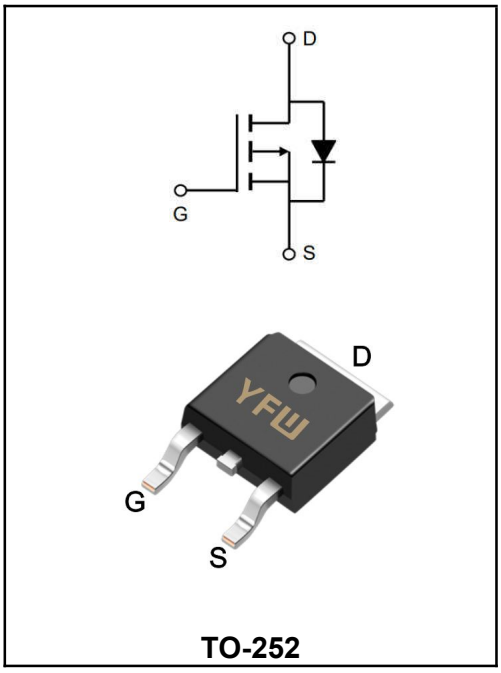
-200V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-9A
V_{DSS}	-200V
R_{DSON}-typ(@V_{GS}=-10V)	< 0.75Ω(Type:0.625 Ω)



TO-252

Application

- Power amplifier
- motor drive

Maximum Ratings at Tc=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℃	I_D	-8.7	A
Continuous Drain Current T_C=100℃		-3.6	A
Pulsed Drain Current [a]	I_{DM}	-22.8	A
Single Pulse Avalanche Energy [b]	E_{AS}	570	mJ
Repetitive Avalanche Current [a]	I_{AR}	-8.7	A
Repetitive Avalanche Energy [a]	E_{AR}	5.5	mJ
Maximum Power Dissipation T_C = 25 °C	P_D	55	W
Maximum Power Dissipation (PCB Mount)[e] T_A = 25 °C		2.5	W
Peak Diode Recovery dV/dt [c]	dV/dt	-5.5	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C
Maximum Junction-to-Ambient	$R_{\theta JA}$	110	°C/W
Maximum Junction-to-Ambient (PCB Mount)[a]	$R_{\theta JA}$	50	°C/W
Maximum Junction-to-Case (Drain)	$R_{\theta JC}$	2.2	°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=-250uA	V_{DS}	-200	-	-	V
V_{DS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\Delta V_{DS/TJ}$	-	-0.1	-	V/°C
Gate-Source Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-2.0	-3.5	-4.0	V
Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-4 A [b]	$R_{DS(ON)}$	-	0.625	0.75	Ω
Gate –Source Leakage	V_{GS}=±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℃		-	-	-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}	-	590	770	pF
Output Capacitance		C_{oss}	-	140	180	
Reverse Transfer Capacitance		C_{rss}	-	25	35	
Total Gate Charge	I_D=-7.3A 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= -7.3A R_G=18Ω R_D=25Ω	$t_{d(on)}$	-	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 °C, I_S = - 5.7 A, V_{GS} = 0 V [b]	V_{SD}	-	-	-6.3	V
Body Diode Reverse Recovery Time	T_J = 25 °C, IF = - 7.3 A, dI/dt = 100 A/μs [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
2.L=26.3mH,IAs =-5.7A, VDD = -50V,Rc= 25 2, Starting Tj= 25°℃
3. IsD ≤ -7.3A, dildt ≤ 300A/us, VDD ≤ BVDss, Starting Tj= 25°℃
4.Pulse Test : Pulse width ≤300us,Duty cycle ≤ 2%
5. Essentially independent of operating temperature

Ratings and Characteristic Curves

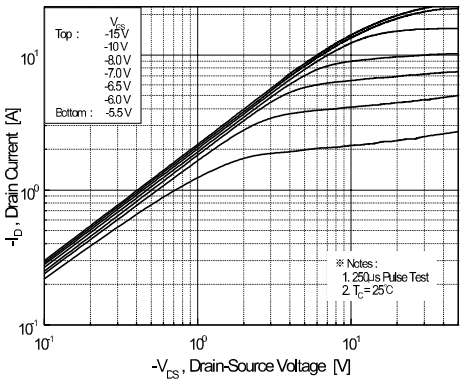


Figure 1. On-Region Characteristics

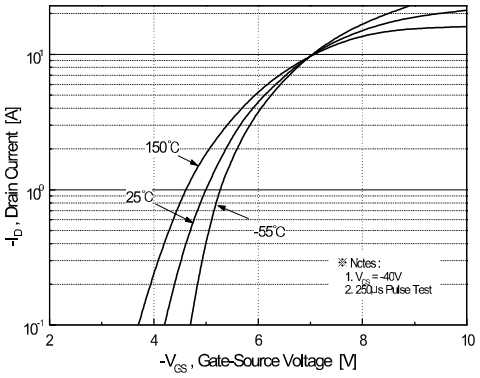


Figure 2. Transfer Characteristics

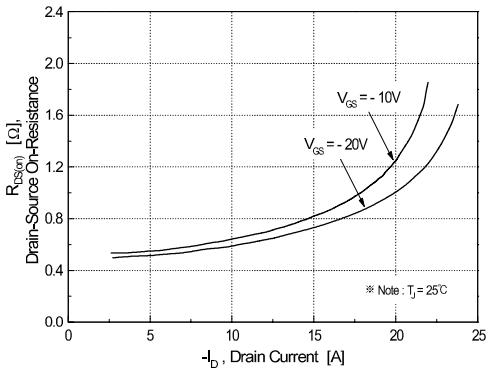


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

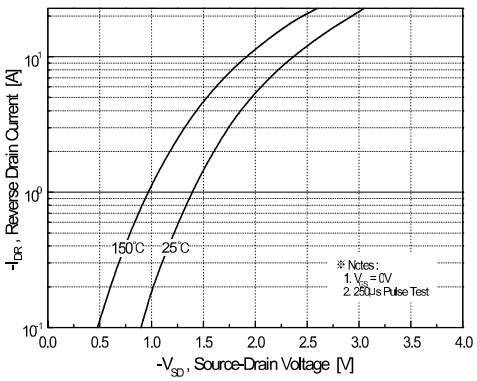


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

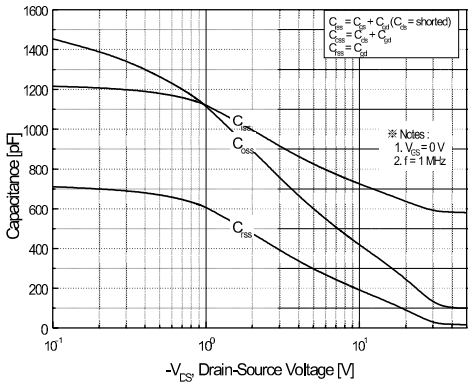


Figure 5. Capacitance Characteristics

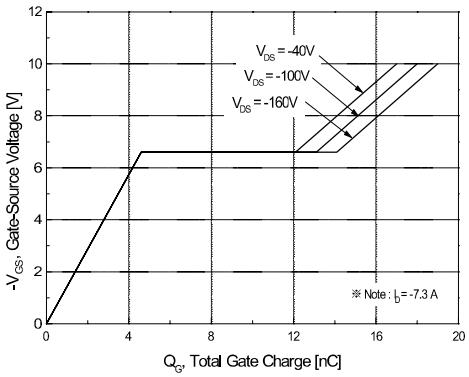


Figure 6. Gate Charge Characteristics

Ratings and Characteristic Curves

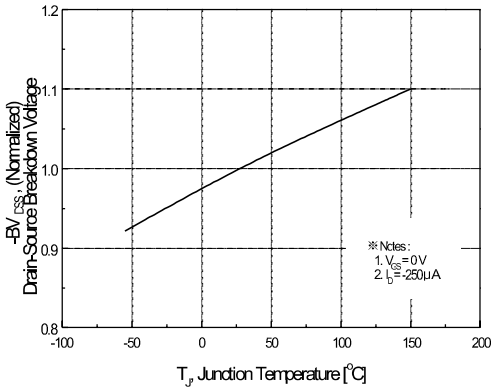


Figure 7. Breakdown Voltage Variation vs. Temperature

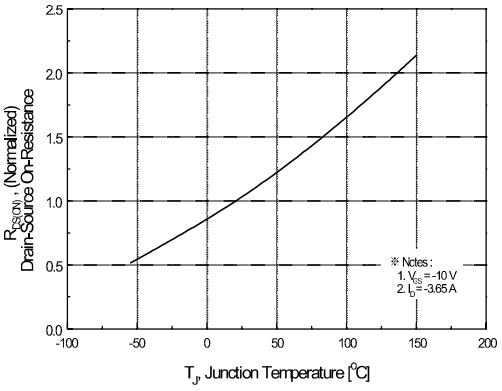


Figure 8. On-Resistance Variation vs. Temperature

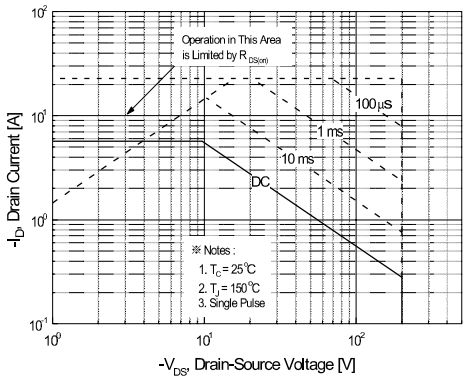


Figure 9. Maximum Safe Operating Area

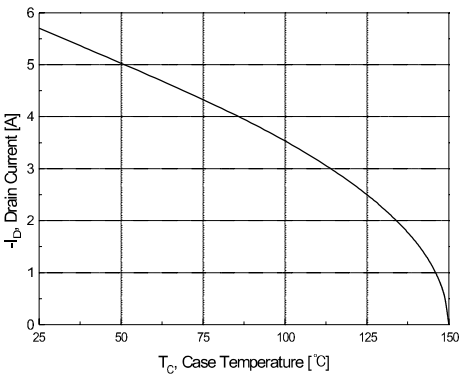


Figure 10. Maximum Drain Current vs. Case Temperature

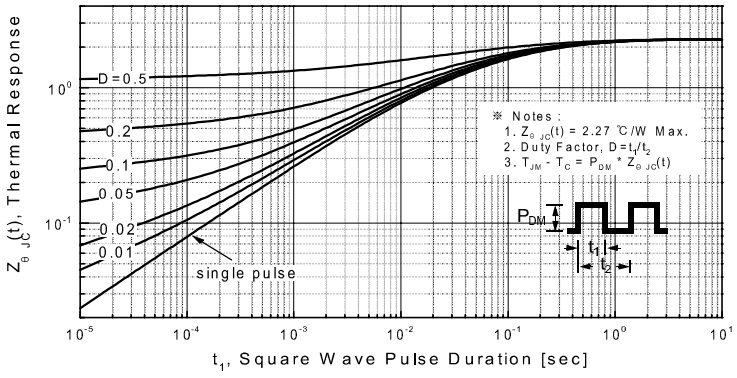
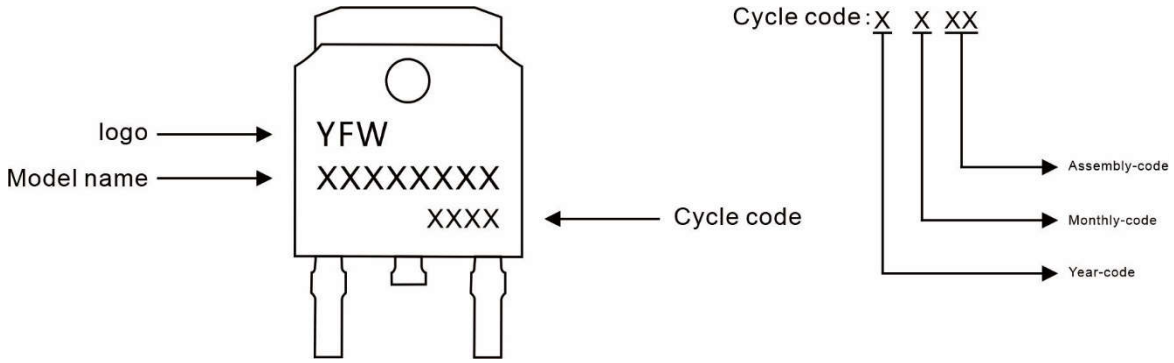


Figure 11. Transient Thermal Response Curve

Marking Diagram

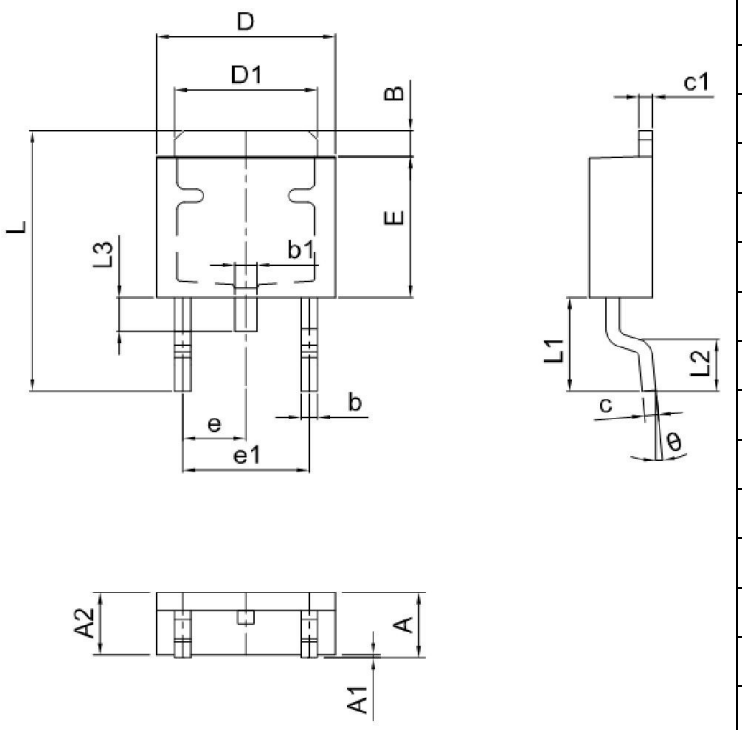


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW9P20AD	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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