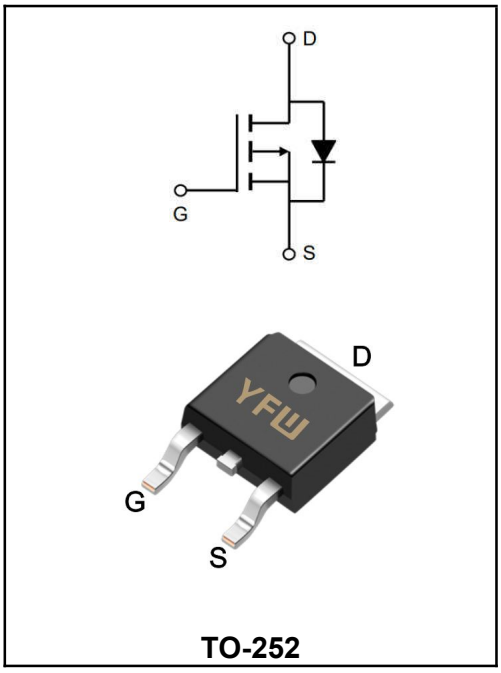
-200V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-13A
V_{DSS}	-200V
R_{DSON}-typ(@V_{GS}=-10V)	< 0.42Ω(Type:0.34 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	-13	A
Continuous Drain Current T_C=100℃		-7.2	A
Pulsed Drain Current [a]	I_{DM}	-52	A
Single Pulse Avalanche Energy [b]	E_{AS}	750	mJ
Repetitive Avalanche Current [a]	I_{AR}	-11	A
Repetitive Avalanche Energy [a]	E_{AR}	13	mJ
Maximum Power Dissipation T_C= 25 °C	P_D	125	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	RthJA	62	°C/W
Case-to-Sink, Flat, Greased Surface	RthCS	0.50	°C/W
Maximum Junction-to-Case (Drain)	RthJC	1.0	°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=-250uA	V_{DS}	-200	-	-	V
V_{DS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	$\Delta V_{DS/TJ}$	-	-0.2	-	V/°C
Gate-Source Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	$V_{GS(th)}$	-2.0	-	-4.0	V
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	
Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-5.5 A [b]	$R_{DS(ON)}$	-	0.34	0.42	Ω
Forward Transconductance	V_{DS}=-50V , I_D=-6.6A [b]	g_{fs}	4.1	-	-	S
Input Capacitance	V_{GS}=0V V_{DS}=-25V f=1.0 MHz, see fig. 5	C_{iss}	-	1200	-	pF
Output Capacitance		C_{oss}	-	370	-	
Reverse Transfer Capacitance		C_{rss}	-	81	-	
Total Gate Charge	V_{GS}=-10V I_D = -11 A, V_{DS} = - 160 V, see fig. 6 and 13 [b]	Q_g	-	-	44	nC
Gate-Source Charge		Q_{gs}	-	-	7.1	
Gate-Drain Charge		Q_{gd}	-	-	27	
Turn-on delay time	V_{DD} =-100V I_D= -11A R_G=9.1Ω R_D=8.6Ω see fig. 10 [b]	$t_{d(on)}$	-	14	-	ns
Rise Time		T_r	-	43	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	39	-	
Fall Time		t_f	-	38	-	
Gate Input Resistance	f = 1 MHz, open drain	R_g	0.3	-	1.7	Ω
Continuous Source-Drain Diode Current	Between lead, 6 mm (0.25") from package and center of die contact 	I_S	-	-	-11	A
Pulsed Diode Forward Current [a]		I_{SM}	-	-	-44	A
Body Diode Voltage	T_J = 25 °C, I_S = - 11 A, V_{GS} = 0 V [b]	V_{SD}	-	-	-5	V
Body Diode Reverse Recovery Time	T_J = 25 °C, I_F = - 11 A, dI/dt = 100 A/μs [b]	t_{rr}	-	250	300	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	2.9	3.6	μC
Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS and LD)	t_{on}	-	-	-	-

Notes
a. Repetitive rating; pulse width limited by maximum junction temperature (see fig. 11).
b. Pulse width ≤ 300 μs; duty cycle ≤ 2%

Ratings and Characteristic Curves

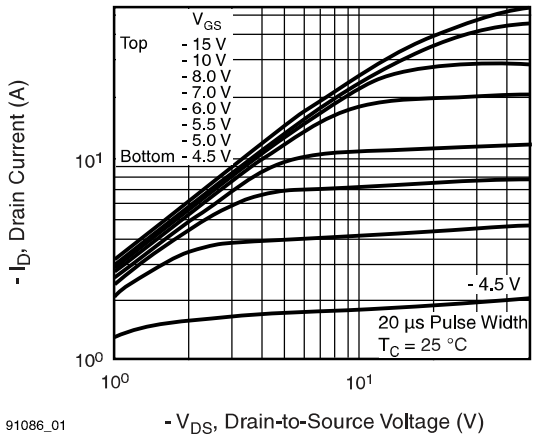


Fig. 1 - Typical Output Characteristics, T_C = 25 °C

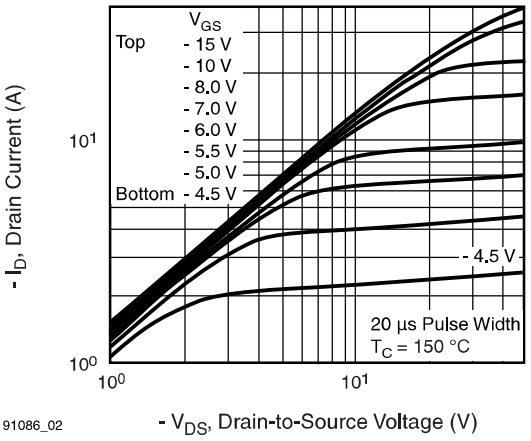


Fig. 2 - Typical Output Characteristics, T_C = 150 °C

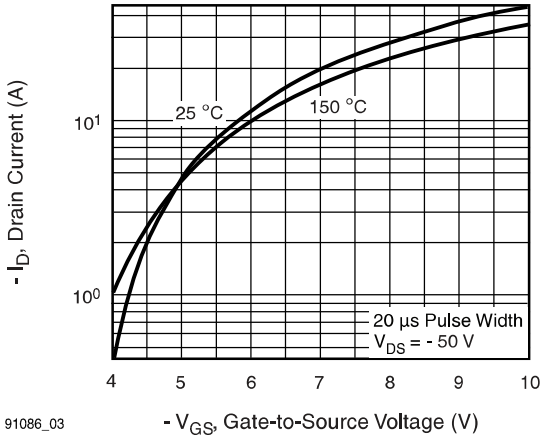


Fig. 3 - Typical Transfer Characteristics

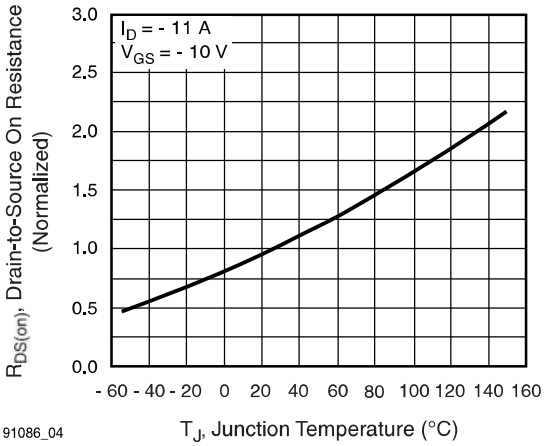


Fig. 4 - Normalized On-Resistance vs. Temperature

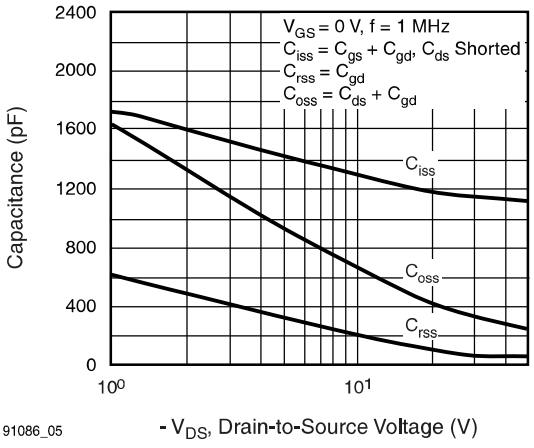


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

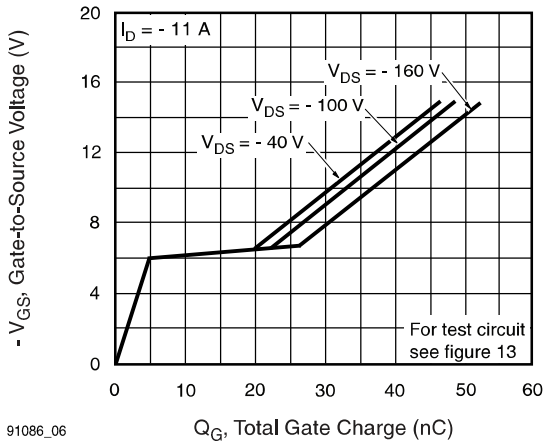


Fig. 6 - Typical Gate Charge vs. Drain-to-Source Voltage

Ratings and Characteristic Curves

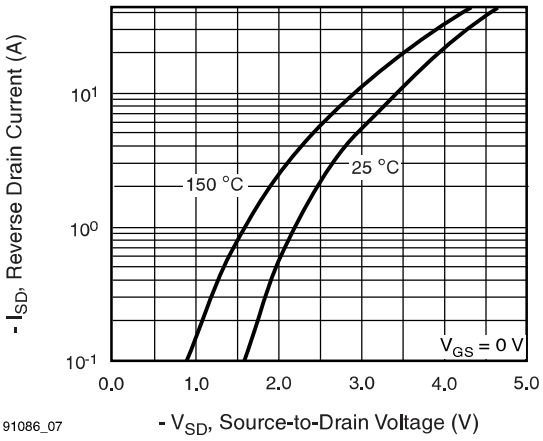


Fig. 7 - Typical Source-Drain Diode Forward Voltage

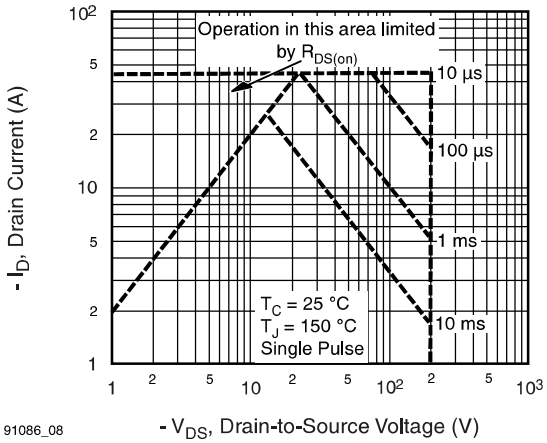


Fig. 8 - Maximum Safe Operating Area

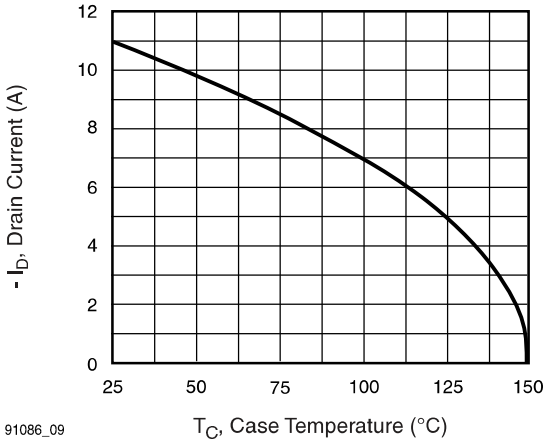


Fig. 9 - Maximum Drain Current vs. Case Temperature

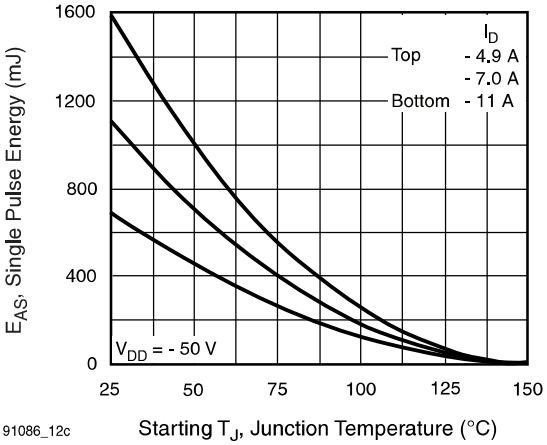


Fig. 10 - Maximum Avalanche Energy vs. Drain Current

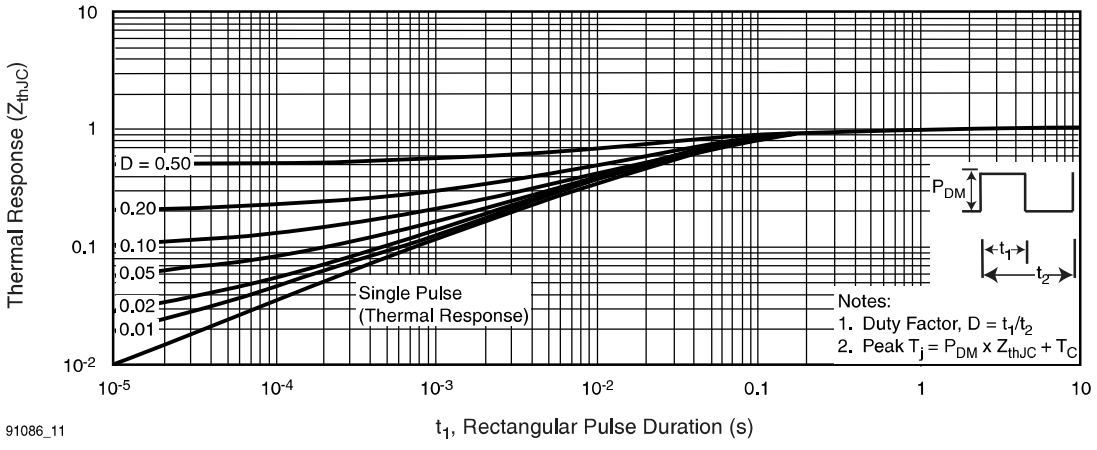
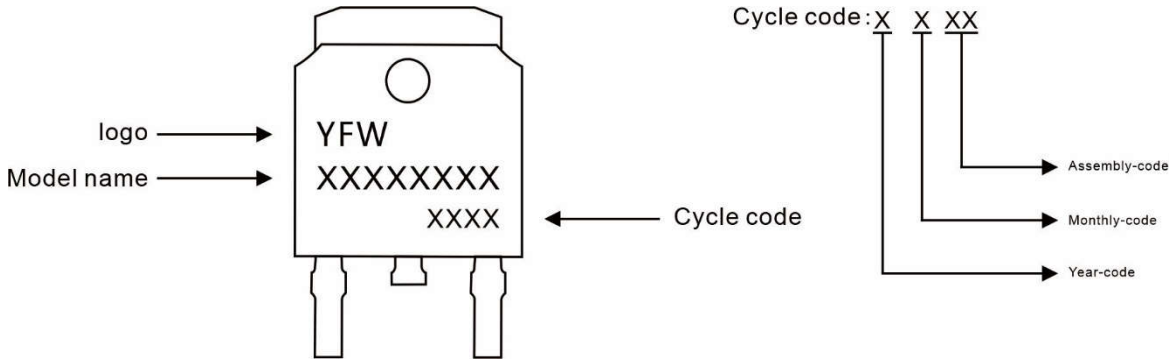


Fig. 11 - Maximum Effective Transient Thermal Impedance, Junction-to-Case

Marking Diagram

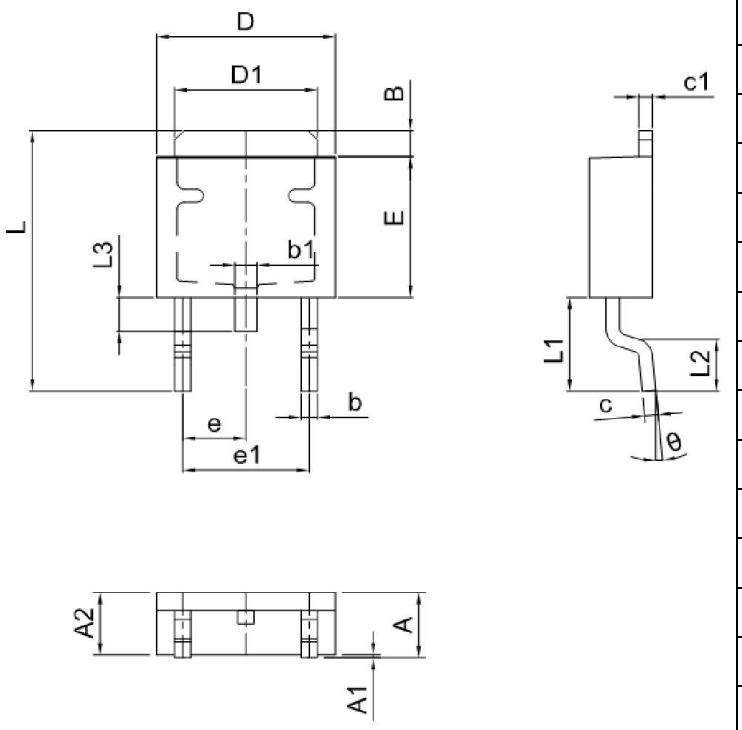


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW13P20AD	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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