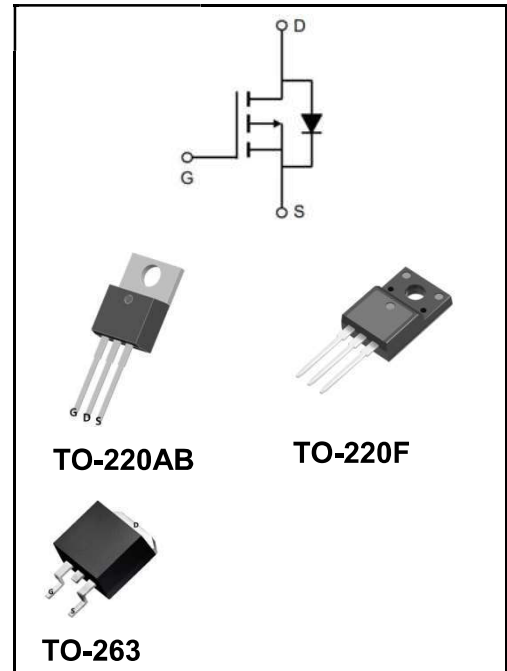


-200V P-CHANNEL ENHANCEMENT MODE MOSFET
MAIN CHARACTERISTICS

I_D	-4A
V_{DSS}	-200V
R_{DS(on)-typ}(@V_{GS}=-10V)	< 1.5Ω

Application

- ◆Power amplifier
- ◆motor drive


Product Specification Classification

Part Number	Package	Marking	Pack
YFW4P20AT	TO-220AB	YFW 4P20AT XXXXX	1000PCS/Box
YFW4P20AF	TO-220F	YFW 4P20AF XXXXX	1000PCS/Box
YFW4P20AS	TO-263	YFW 4P20AS XXXXX	800PCS/Reel

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	-	-4.0	V
Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-2.2A^b$	$R_{DS(ON)}$	-	-	1.5	Ω
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	-	pF
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 reverse p-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

- 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

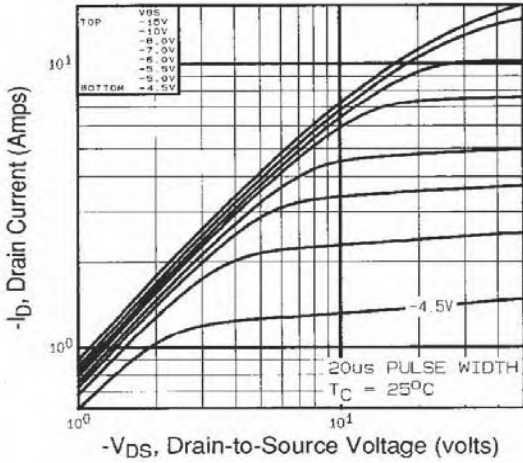


Fig. 1 - Typical Output Characteristics, $T_C = 25^\circ\text{C}$

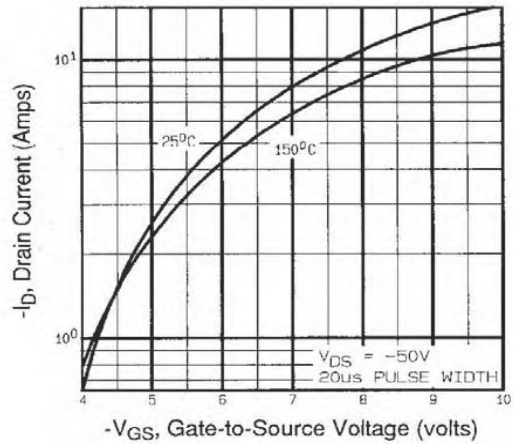


Fig. 3 - Typical Transfer Characteristics

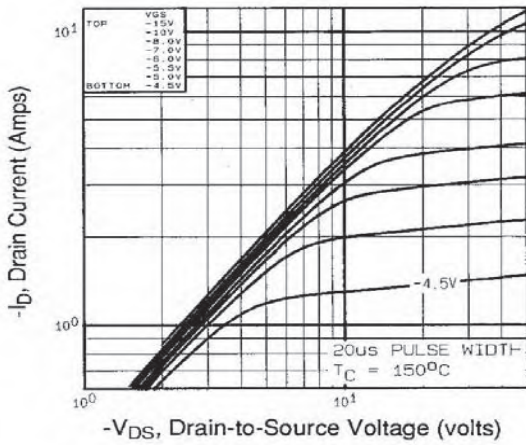


Fig. 2 - Typical Output Characteristics, $T_C = 150^\circ\text{C}$

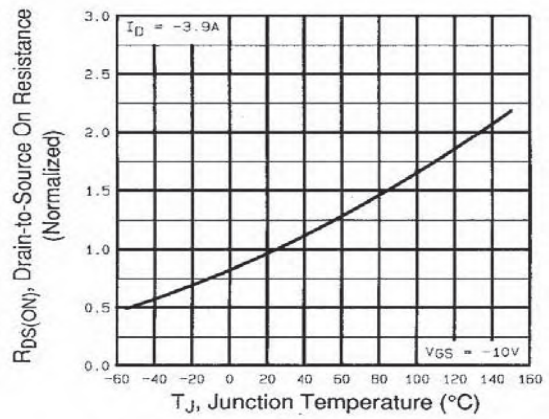


Fig. 4 - Normalized On-Resistance vs. Temperature

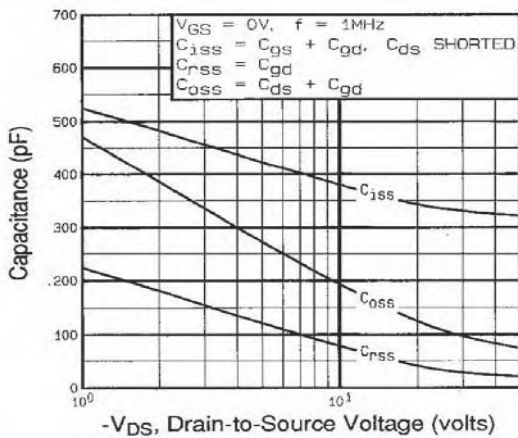


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

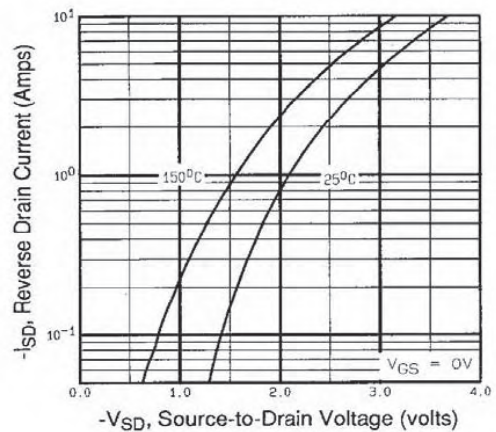


Fig. 7 - Typical Source-Drain Diode Forward Voltage

Ratings and Characteristic Curves

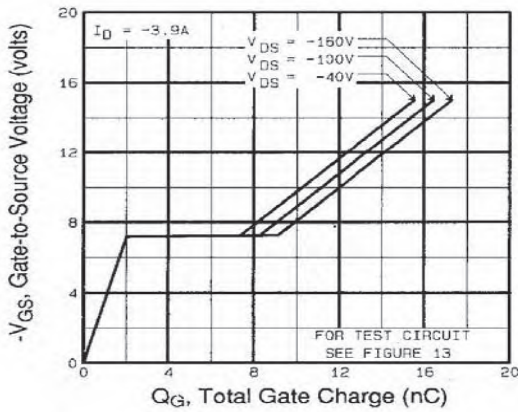


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

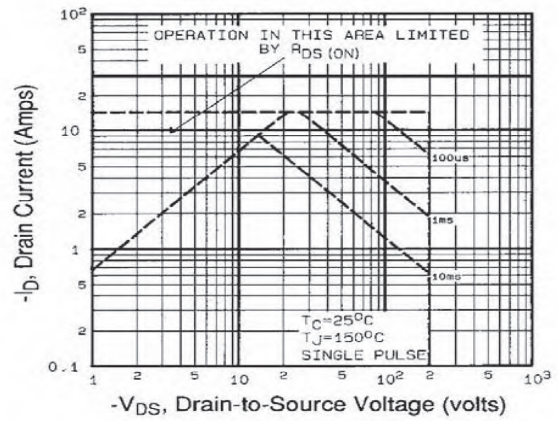


Fig. 8 - Maximum Safe Operating Area

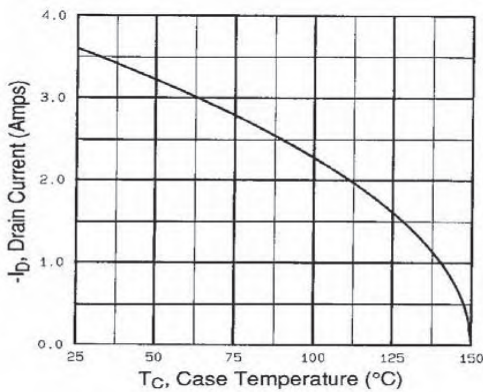


Fig. 9. Maximum Drain Current Vs. Case Temperature

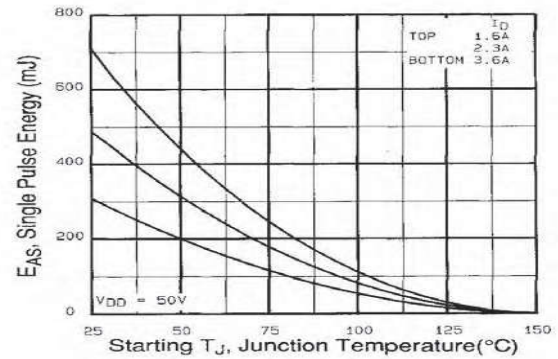


Fig. 10 - Maximum Avalanche Energy vs. Drain Current

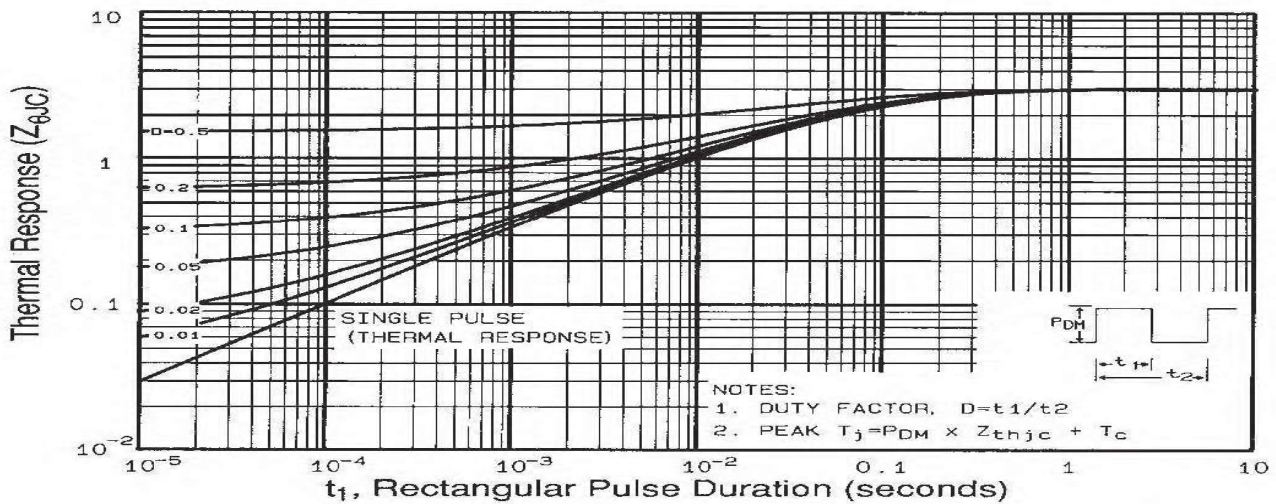


Fig. 11 - Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Outline Dimensions Millimeters

TO-220AB

Dim.	Min.	Max.
A	10.15	10.35
B	2.65	2.95
C	3.70	3.90
D	28.5	29.5
E	1.30	1.45
F	6.35	6.55
G	2.9	3.3
H	15.0	16.0
I	0.38	0.42
J	4.45	4.55
K	1.25	1.35
L	Typ 5.08	
M	Typ 2.54	
N	3.1	3.3
O	0.76	0.84
All Dimensions in millimeter		

TO-220F

Dim.	Min.	Max.
A	9.95	10.25
B	2.95	3.25
C	1.25	1.45
D	12.95	13.25
E	0.50	0.65
F	3.1	3.3
G	1.30	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.60	4.75
K	2.50	2.65
L	6.35	6.55
M	15.4	16.0
N	2.75	3.05
O	0.48	0.52
P	0.76	0.84
All Dimensions in millimeter		

Package Outline Dimensions Millimeters

TO-263

	Dim.	Min.	Max.
	A	10.1	10.2
	B	7.4	7.6
	C	1.3	1.5
	D	0.55	0.75
	E	5.0	6.0
	F	1.4	1.6
	G	0.78	0.86
	H	1.2	1.3
	I	Typ2.54	
	J	8.4	8.6
	K	4.45	4.55
	L	1.25	1.35
	M	0.02	0.1
N	2.4	2.8	
O	0.36	0.40	
All Dimensions in millimeter			