

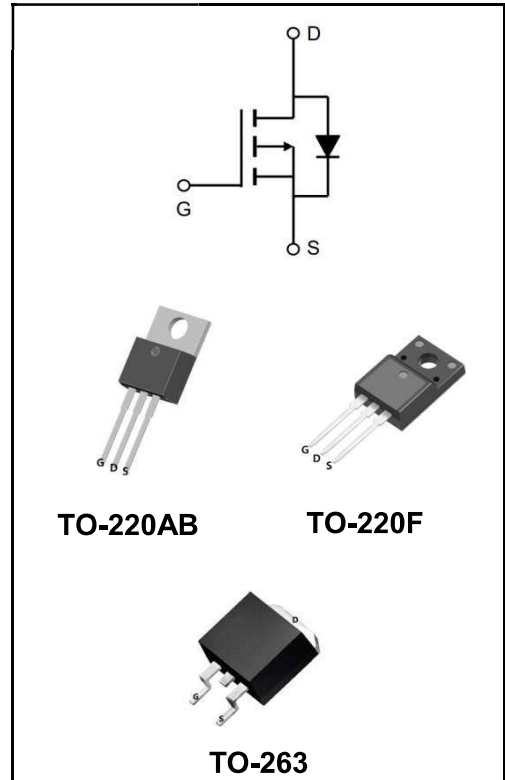
-100V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-50A
V_{DSS}	-100V
R_{DS(on)-typ(@V_{GS}=-10V)}	< 52mΩ(Type:40 mΩ)

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW50P10AT	TO-220AB	YFW 50P10AT XXXXX	1000PCS/Box
YFW50P10AF	TO-220F	YFW 50P10AF XXXXX	1000PCS/Box
YFW50P10AS	TO-263	YFW 50P10AS XXXXX	800PCS/Reel

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	-100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ -10V ¹ @T _c =25°C	I_D	-50	A
Continuous Drain Current, V _{GS} @ -10V ¹ @T _c =100°C	I_D	-28	A
Pulsed Drain Current ²	I_{DM}	-150	A
Single Pulse Avalanche Energy ³	E_{AS}	87	mJ
Avalanche Current	I_{AS}	-35	A
Total Power Dissipation ⁴ @T _c =25°C	P_D	140	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}	62	°C/W
Thermal Resistance Junction-Case ¹	R_{θJC}	1.1	°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(BR)DSS	-100	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=-100V, V_{GS}=0V$	I_{DSS}	-	-	-1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	V_{GS(th)}	-1.0	-1.6	-2.5	V
Static Drain-Source on-Resistance	$V_{GS}=-10V, I_D=-20A$	R_{DS(on)}	-	40	52	mΩ
	$V_{GS}=-4.5V, I_D=-10A$		-	44	62	
Input Capacitance	$V_{DS}=-50V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	2120	-	pF
Output Capacitance		C_{oss}	-	194	-	
Reverse Transfer Capacitance		C_{rss}	-	13	-	
Total Gate Charge	$V_{DS}=-50V$ $V_{GS}=-10V$ $I_D=-5A$	Q_g	-	40	-	nC
Gate-Source Charge		Q_{gs}	-	7.8	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	8.6	-	
Turn-on delay time	$V_{DD}=-50V$ $V_{GS}=-10V$ $I_D=-5A$ $R_G=6\Omega$	t_{d(on)}	-	13	-	ns
Turn-on Rise Time		T_r	-	39	-	
Turn-Off Delay Time		t_{d(OFF)}	-	100.1	-	
Turn-Off Fall Time		t_f	-	105.3	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	-35	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	-140	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-30A$	V_{SD}	-	-	-1.2	V
Body Diode Reverse Recovery Time	$I_F=-5A, dI/dt=100A/\mu s, T_J=25^\circ C$	t_{rr}	-	104	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	280	-	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-24A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

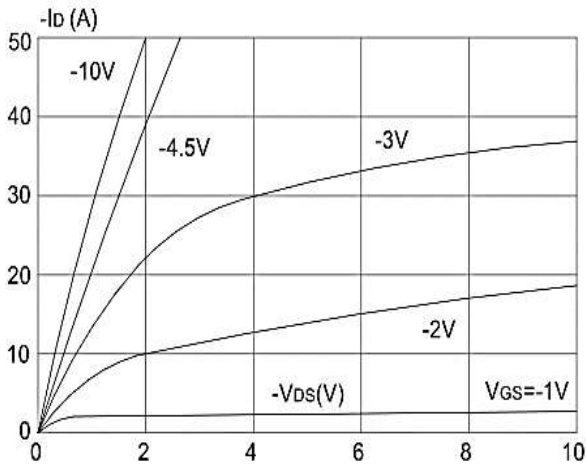


Figure 1: Output Characteristics

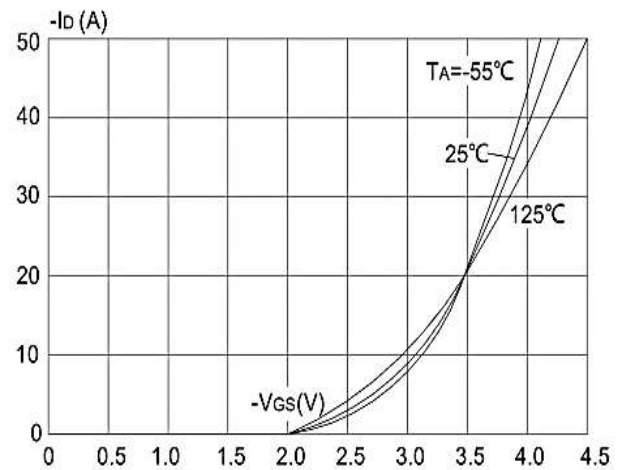


Figure 2: Typical Transfer Characteristics

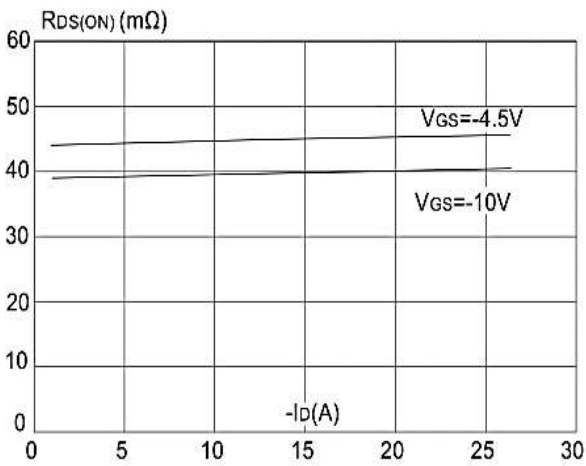


Figure 3: On-resistance vs. Drain Current

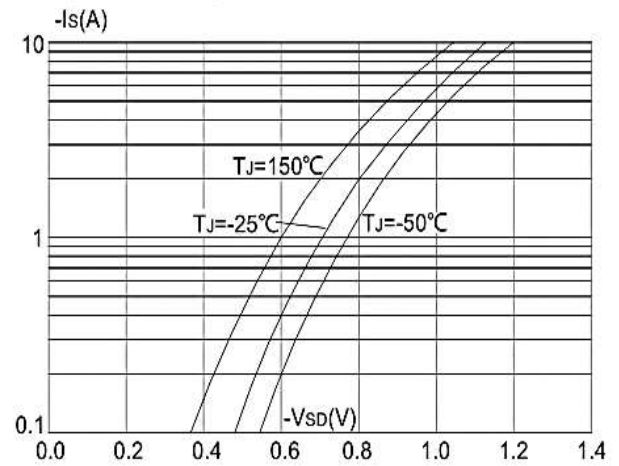


Figure 4: Body Diode Characteristics

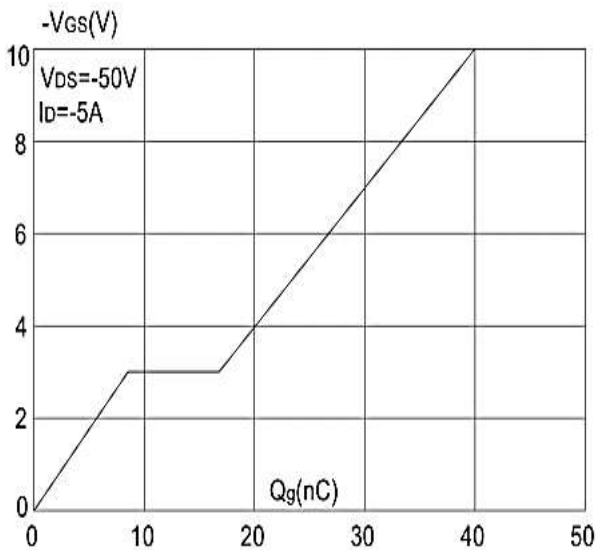


Figure 5: Gate Charge Characteristics

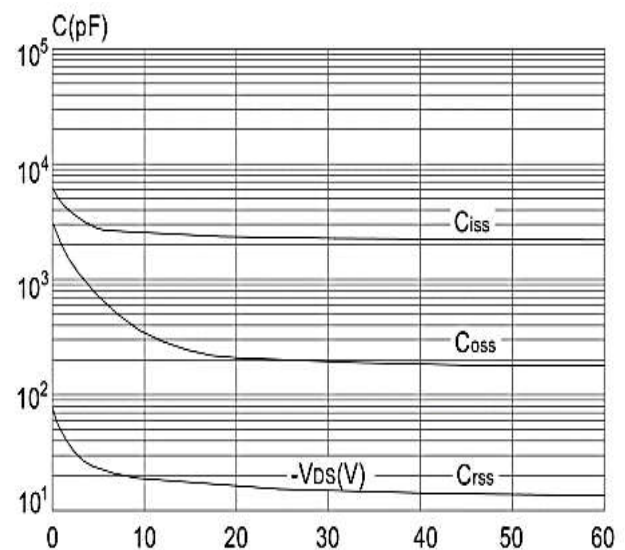


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

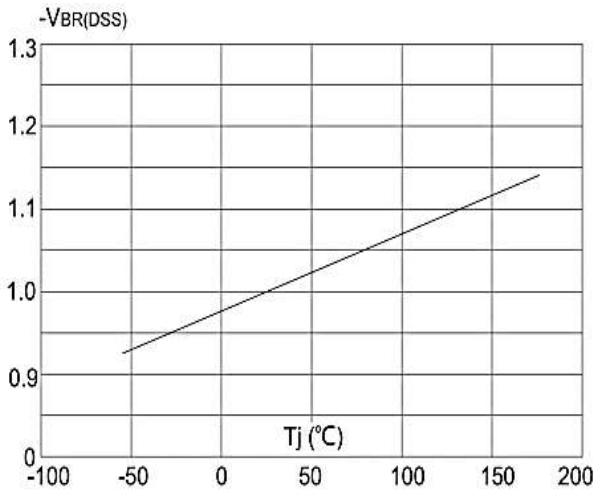


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

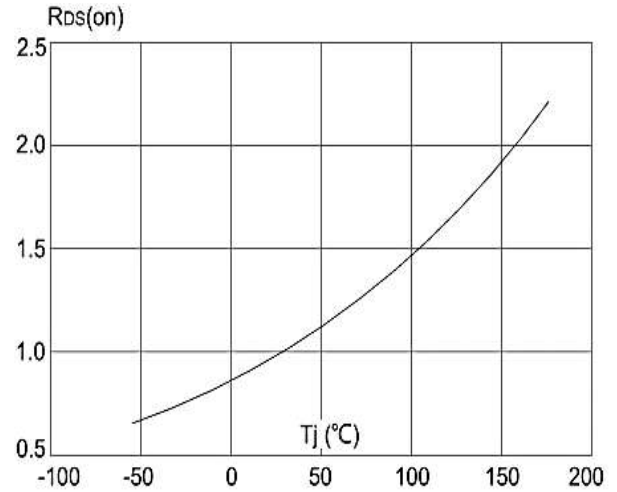


Figure 8: Normalized on Resistance vs. Junction Temperature

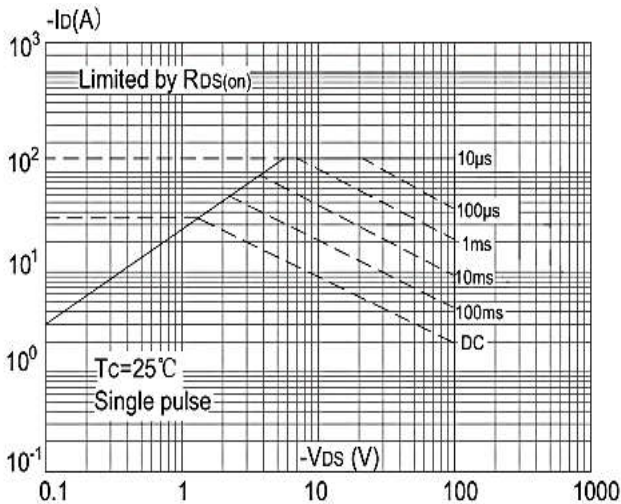


Figure 9: Maximum Safe Operating Area

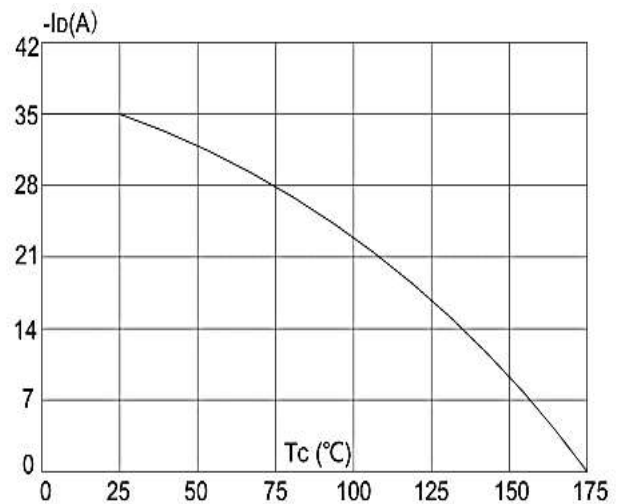


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

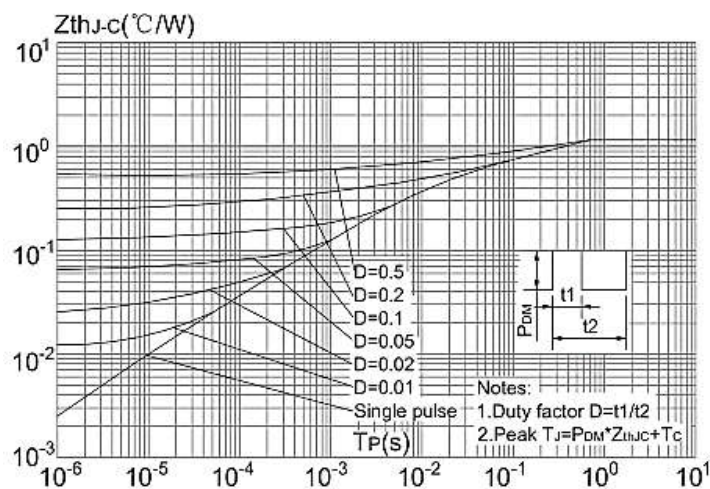


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

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			