

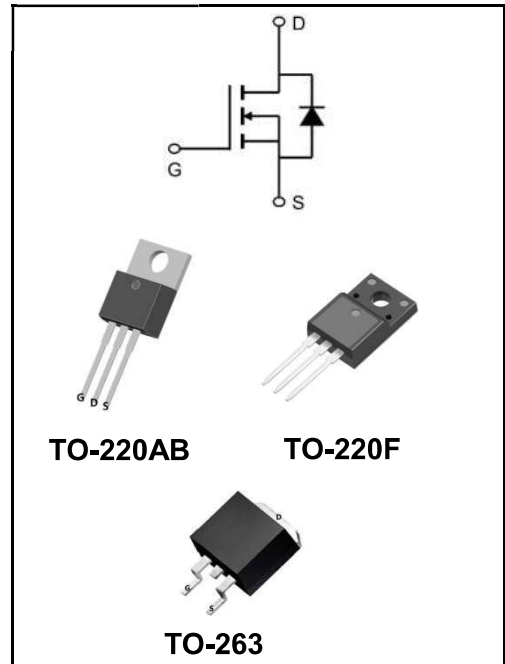
120V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	120A
V_{DSS}	120V
R_{DS(on)-typ(@V_{GS}=10V)}	< 8.5mΩ (Type:6.8 mΩ)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW120N12AT	TO-220AB	YFW 120N12AT XXXXX	1000PCS/box
YFW120N12AF	TO-220F	YFW 120N12AF XXXXX	1000PCS/box
YFW120N12AS	TO-263	YFW 120N12AS XXXXX	800PCS/Reel

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	120	V
Continuous Drain Current ¹ @T _A =25°C	I_D	120	A
Continuous Drain Current ¹ @T _A =70°C	I_D	70	A
Pulsed Drain Current	IDM^{a1}	320	A
Single pulse avalanche energy	EASa2	240	mJ
Single pulse avalanche current	I_{AR}	40	A
Gate -to- Source Voltage	V_{GS}	±20	V
Power Dissipation	P_D	125	W
Operating Junction and Storage Temperature Range	T_J , T_{STG}	-55 to 150	°C
Maximum Temperature for Soldering	T_L	300	°C
Thermal Resistance, Junction-to-case	R_{θJC}	0.89	°C/W
Thermal Resistance, Junction -to-ambient	R_{θJA}	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	VDSS	120	-	-	V
Drain to Source Leakage Current	$V_{DS}=120V, V_{GS}=0V$	IDSS	-	-	1	μA
Gate to Source Forward Leakage	$V_{GS}=+20V$	IGSS(F)	-	-	100	nA
Gate to Source Reverse Leakage	$V_{GS}=-20V$	IGSS(R)	-	-	-100	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	VGS(th)	2.5	3.0	3.5	V
Drain-to-source on- resistance	$V_{GS}=10V, I_D=20A$	RDS(ON)1	-	6.8	8.5	mΩ
Forward Transconductance	$V_{DS}=5V, I_D=50A$	gfs	-	130	-	S
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=1.0MHz$	Ciss	-	4282	-	pF
Output Capacitance		Coss	-	429	-	
Reverse Transfer Capacitance		Crss	-	17	-	
Gate resistance		Rg	-	2.5	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=5\Omega$ $I_D=20A$	td(on)	-	20	-	ns
Rise Time		Tr	-	11	-	
Turn-Off Delay Time		td(OFF)	-	55	-	
Fall Time		tf	-	28	-	
Total Gate Charge	$I_D=20A$ $V_{DS}=50V$ $V_{GS}=0\sim 10V$	Qg	-	61.4	-	nC
Gate-Source Charge		Qgs	-	17.4	-	
Gate-Drain Charge		Qgd	-	14.1	-	
Diode forward current	$T_C=25^\circ C$	IS	-	-	100	A
Diode Pulse Current		ISP	-	-	320	A
Diode Forward Voltage	$I_S=6A, V_{GS}=0V$	VSD	-	-	1.2	V
Reverse Recovery Time	$I_S=20A, V_{DD}=50V$ $dI/dt=100A/\mu s$	trr	-	100	-	ns
Reverse Recovery Charge		Qrr	-	250	-	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 VDD=50V, L=0.3mH, Rg=25Ω, Starting TJ=25 °C
- 4、 The power dissipation is limited by 150°C junction temperature

Ratings and Characteristic Curves

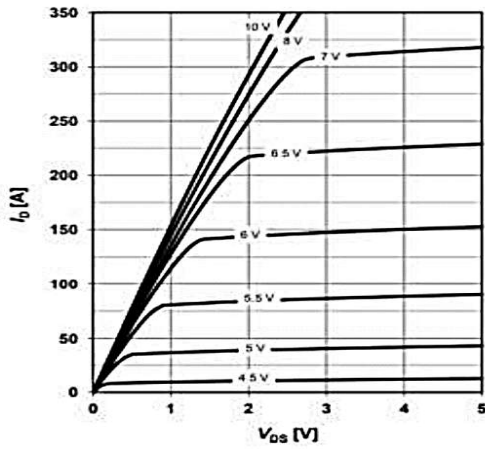


Figure1: output characteristics

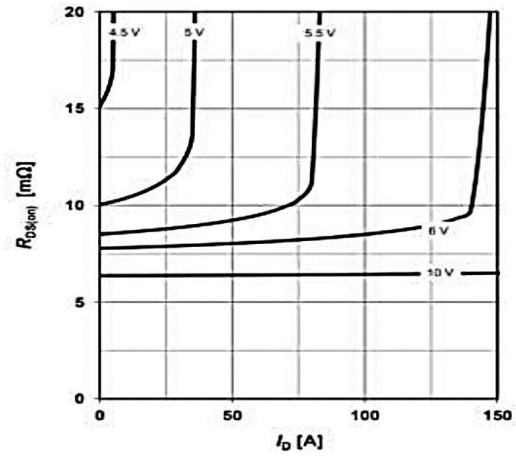


Figure2: Typical drain-source on resistance

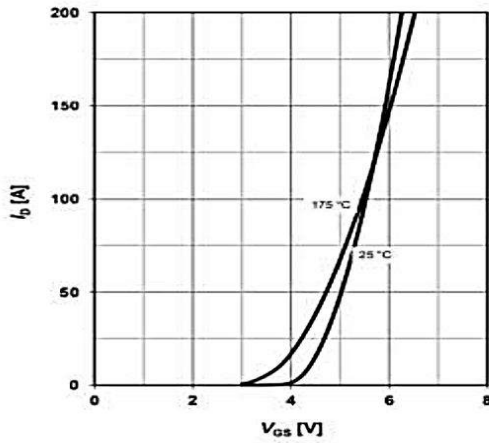


Figure3: transfer characteristics

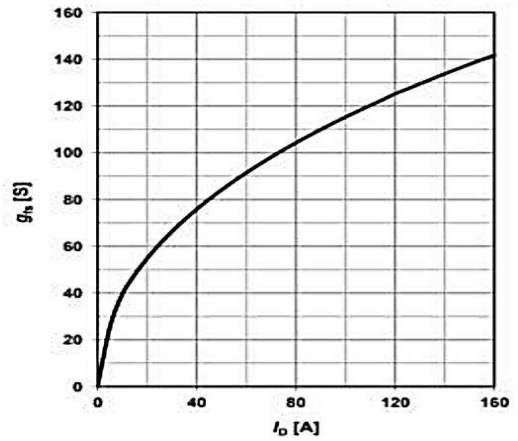


Figure4: forward transconductance

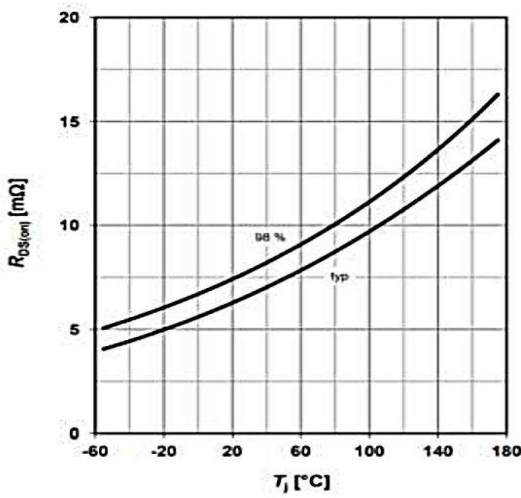


Figure5: Drain-source on-state resistance

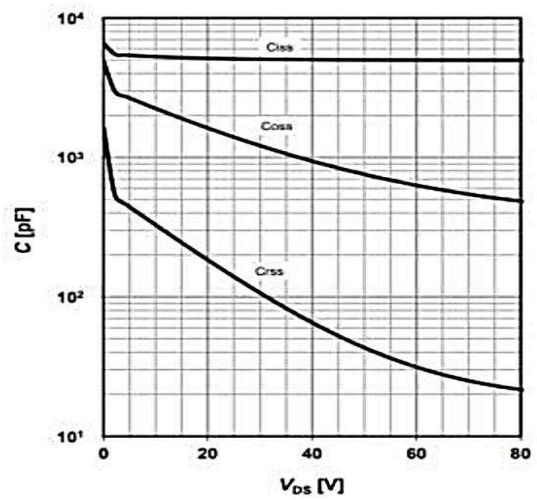


Figure6: Typ. capacitances

Ratings and Characteristic Curves

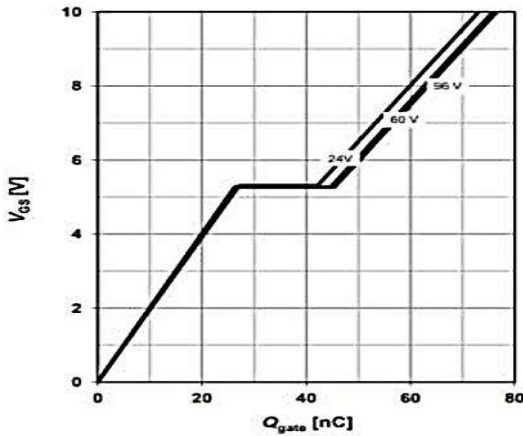


Figure7: Typ. gate charge

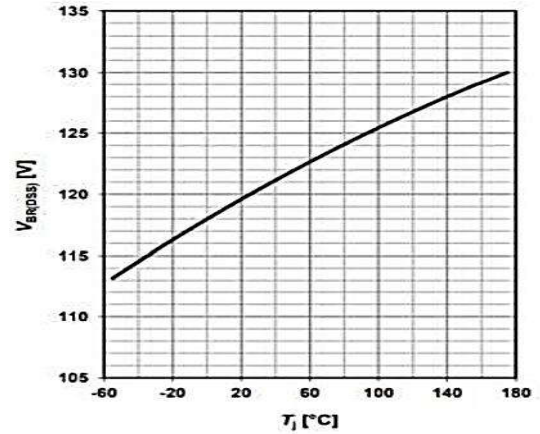


Figure8: Drain-source breakdown voltage

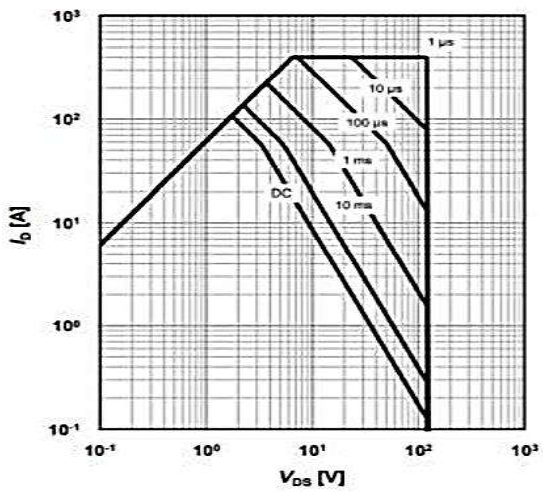


Figure9: Safe operating area

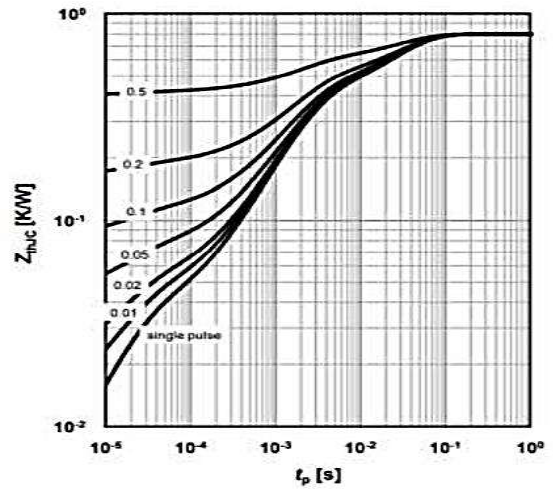


Figure10: Max. transient thermal impedance

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		