

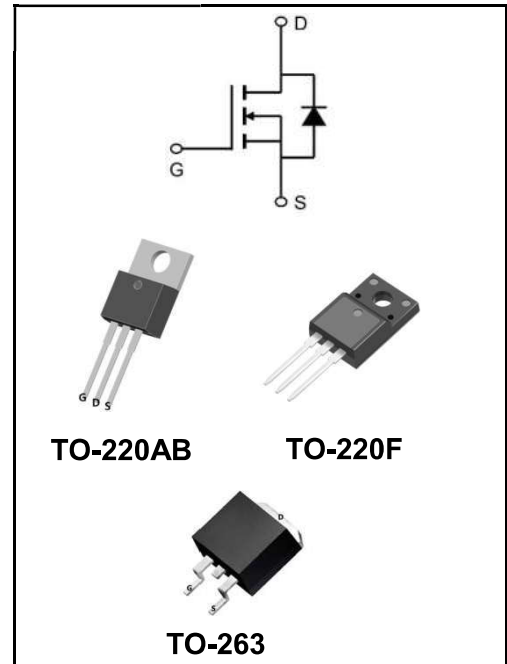
**120V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	70A
<b>V<sub>DSS</sub></b>	120V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 13mΩ( <b>Type:10 mΩ</b> )

**Application**

- ◆ Mobile phone fast charging
- ◆ Brushless motor
- ◆ Home appliance control board



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW70N12AT	TO-220AB	YFW 70N12AT XXXXX	1000PCS/Box
YFW70N12AF	TO-220F	YFW 70N12AF XXXXX	1000PCS/Box
YFW70N12AS	TO-263	YFW 70N12AS XXXXX	800PCS/Reel

**Maximum Ratings at T<sub>c</sub>=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	120	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous drain current <sup>1)</sup> , T <sub>c</sub> =25 °C	<b>I<sub>D</sub></b>	70	<b>A</b>
Pulsed drain current <sup>2)</sup> , T <sub>c</sub> =25 °C	<b>I<sub>D, pulse</sub></b>	150	<b>A</b>
Power dissipation <sup>3)</sup> , T <sub>C</sub> =25 °C	<b>P<sub>D</sub></b>	140	<b>W</b>
Single Pulse Avalanche Energy <sup>4)</sup>	<b>E<sub>AS</sub></b>	53.8	<b>mJ</b>
Operation and storage temperature	<b>T<sub>STG</sub>, T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance, Junction-case	<b>R<sub>θJC</sub></b>	0.89	<b>°C/W</b>
Thermal Resistance, Junction-ambient <sup>5)</sup>	<b>R<sub>θJA</sub></b>	62	<b>°C/W</b>

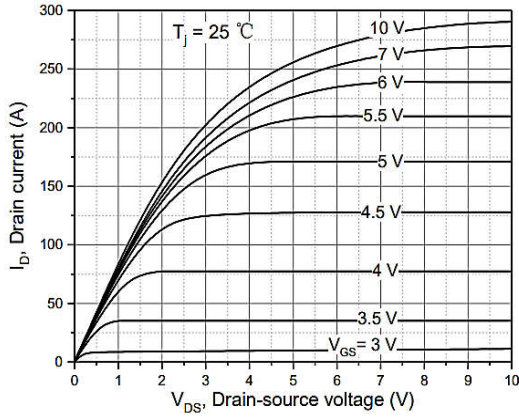
**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	120	-	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.8	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=30A$	$R_{DS(on)}$	-	10.0	13.0	mΩ
	$V_{GS}=4.5V, I_D=20A$		-	15.0	18.0	
Gate-Source Leakage Current	$V_{GS}=\pm 20V$	$I_{GSS}$	-	-	$\pm 100$	nA
Drain-Source Leakage Current	$V_{DS}=120V, V_{GS}=0V$	$I_{DSS}$	-	-	1	μA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=100KHz$	$C_{iss}$	-	2640.1	-	pF
Output Capacitance		$C_{oss}$	-	330.1	-	
Reverse Transfer Capacitance		$C_{rss}$	-	11.2	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2\Omega$ $I_D=25A$	$t_{d(on)}$	-	22.3	-	ns
Rise Time		$T_r$	-	9.7	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	85	-	
Fall Time		$t_f$	-	112.3	-	
Total Gate Charge	$I_D=25A$ $V_{DS}=50V$ $V_{GS}=10V$	$Q_g$	-	33.1	-	nC
Gate-Source Charge		$Q_{gs}$	-	5.6	-	
Gate-Drain Charge		$Q_{gd}$	-	7.2	-	
Gate plateau voltage		$V_{plateau}$	-	3.1	-	
Diode forward current	$V_{GS}<V_{th}$	$I_S$	-	-	50	A
Pulsed Source Current		$I_{SP}$	-	-	150	A
Diode Forward Voltage	$I_S=12A, V_{GS}=0V$	$V_{SD}$	-	-	1.3	V
Reverse Recovery Time	$I_S=25A, dI/dt=100A/\mu s$	$t_{rr}$	-	62.3	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	135.3	-	nC
Peak reverse recovery current		$I_{rrm}$	-	3.5	-	A

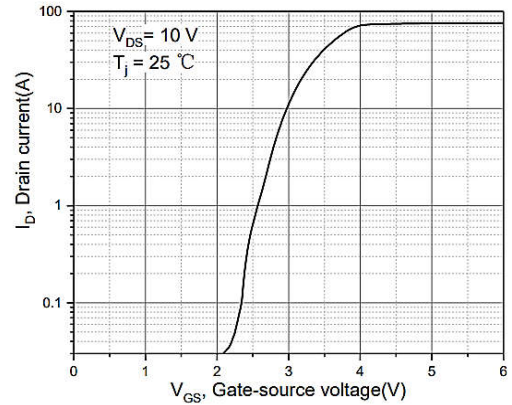
- Note:
- 1、 Calculated continuous current based on maximum allowable junction temperature.
  - 2、 Repetitive rating; pulse width limited by max. junction temperature.
  - 3、 Pd is based on max. junction temperature, using junction-case thermal resistance.
  - 4、 VDD=50 V, RG=25 Ω, L=0.3 mH, starting Tj=25 °C.
  - 5、 The value of RθJA is measured with the device mounted on 1 in 2FR-4 board with 2oz. Copper, in a still air environment with Ta=25 °C.

**Ratings and Characteristic Curves**

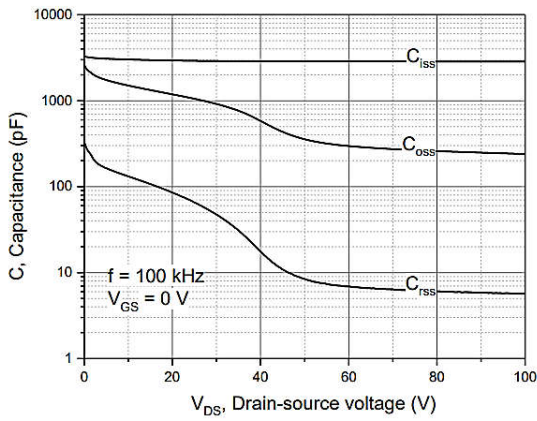
**Typical Characteristics**



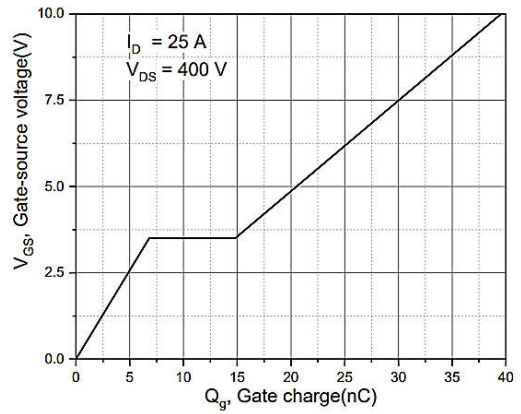
**Figure 1. Typ. output characteristics**



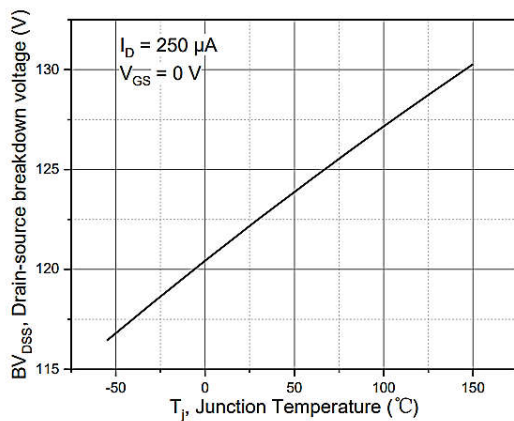
**Figure 2. Typ. transfer characteristics**



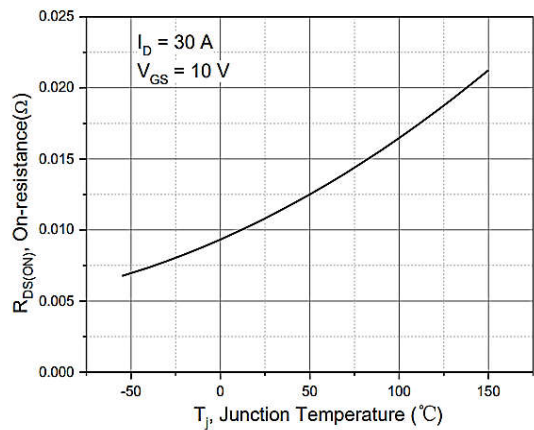
**Figure 3. Typ. capacitances**



**Figure 4. Typ. gate charge**

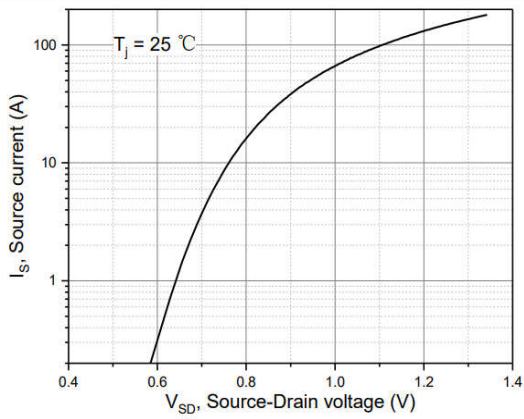


**Figure 5. Drain-source breakdown voltage**

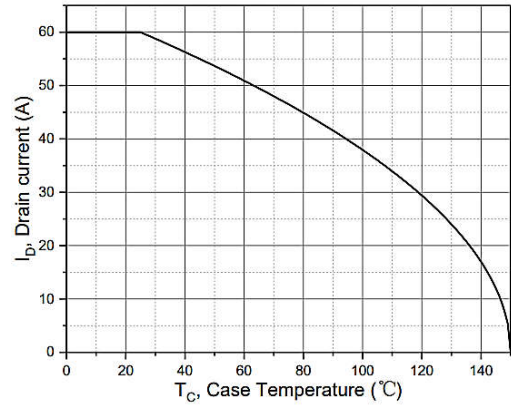


**Figure 6. Drain-source on-state resistance**

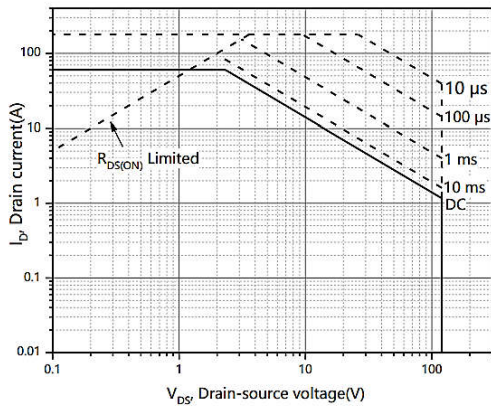
**Ratings and Characteristic Curves**



**Figure 7. Forward characteristic of body diode**



**Figure 8. Drain current**



**Figure 9. Safe operation area T<sub>c</sub>=25 °C**

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			