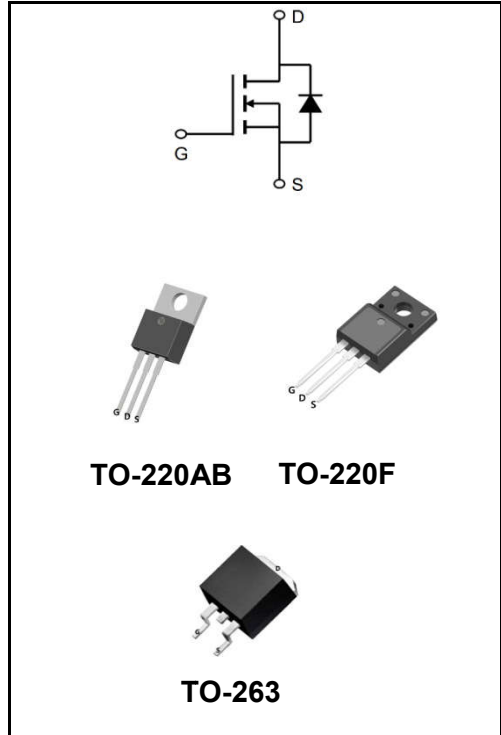


**30V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

$I_D$	100A
$V_{DSS}$	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 5.5mΩ (Type: 4.5 mΩ)



**Application**

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



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW100N03AT	TO-220AB	YFW 100N03AT XXXXX	1000PCS/Tape
YFW100N03AF	TO-220F	YFW 100N03AF XXXXX	1000PCS/Tape
YFW100N03AS-R	TO-263	YFW 100N03AS XXXXX	800PCS/Tube

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

Characteristics	Symbols	Value	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate - Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current, $V_{GS}$ @ 10V @T <sub>C</sub> =25°C	$I_D$	100	A
Continuous Drain Current, $V_{GS}$ @ 10V @T <sub>C</sub> =100°C	$I_D$	46	A
Pulsed Drain Current <sup>note1</sup>	$I_{DM}$	300	A
Single Pulsed Avalanche Energy <sup>note2</sup>	$E_{AS}$	56	mJ
Total Power Dissipation <sup>4</sup> @T <sub>C</sub> =25°C	$P_D$	68	W
Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Ambient 1 (t ≤ 10s)	$R_{\theta JA}$	25	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	°C/W
Operating Junction Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C

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

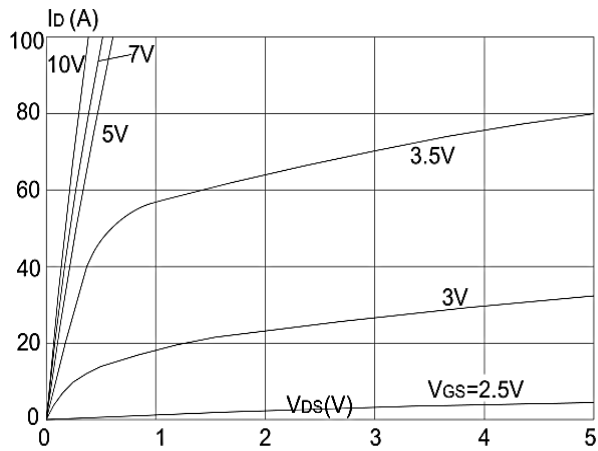
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	<b>V(BR)DSS</b>	30	32	-	<b>V</b>
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.028	-	<b>V/°C</b>
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	<b>V<sub>GS(th)</sub></b>	1.2	1.6	2.5	<b>V</b>
Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=30A$	<b>R<sub>DS(on)</sub></b>	-	4.5	5.5	<b>mΩ</b>
	$V_{GS}=4.5V, I_D=20A$		-	8.0	9.5	
Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	<b>I<sub>DSS</sub></b>	-	-	1.0	<b>μA</b>
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	<b>C<sub>iss</sub></b>	-	1614	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	245	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	215	-	
Total Gate Charge	$V_{DS}=15V$ $I_D=30A$ $V_{GS}=10V$	<b>Q<sub>g</sub></b>	-	33.7	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	8.5	-	
Gate-Drain("Miller") Charge		<b>Q<sub>gd</sub></b>	-	7.5	-	
Turn-on delay time	$V_{DS}=15V$ $I_D=30A$ $R_{GEN}=3\Omega$ $V_{GS}=10V$	<b>t<sub>d(on)</sub></b>	-	7.5	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	14.5	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	35.2	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	9.6	-	
Maximum Continuous Drain to Source Diode Forward Current		<b>I<sub>S</sub></b>	-	-	70	<b>A</b>
Maximum Pulsed Drain to Source Diode Forward Current		<b>I<sub>SM</sub></b>	-	-	280	<b>A</b>
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	<b>V<sub>SD</sub></b>	-	-	1.2	<b>V</b>

Note :

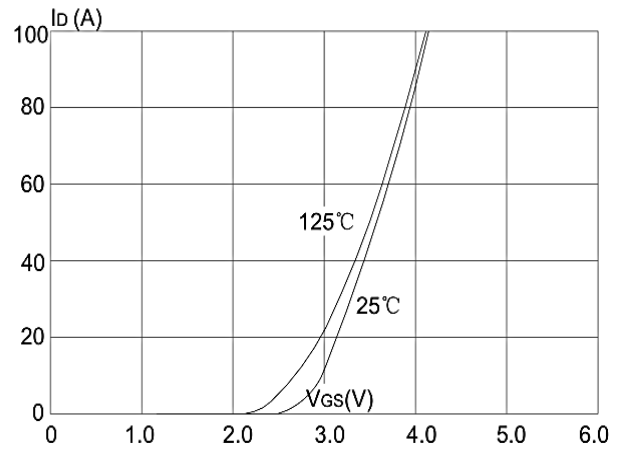
- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、 The test cond  $\cong 300\mu s$  duty cycle  $\cong 2\%$ , duty cycle ition is  $V_{DD}=24V, V_{GS}=10V, L=0.1mH, I_{AS}=15A$
- 4、 The power dissipation is limited by 175°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

**Ratings and Characteristic Curves**

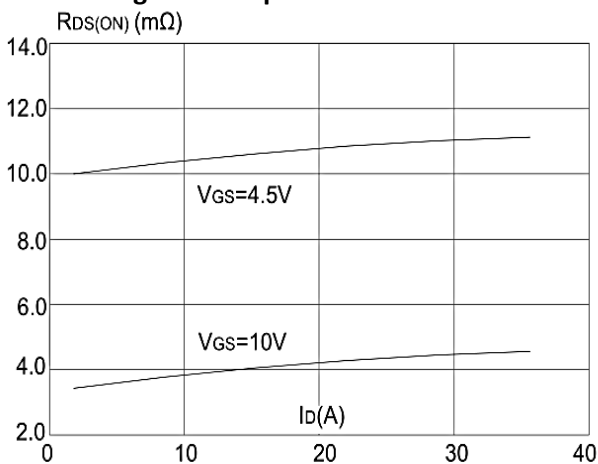
**Typical Characteristics**



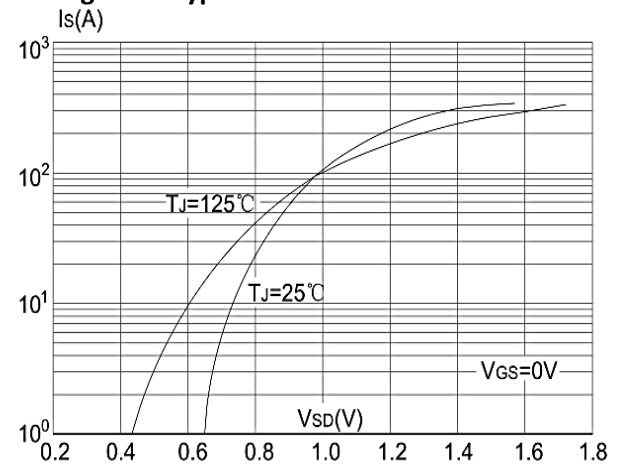
**Figure 1: Output Characteristics**



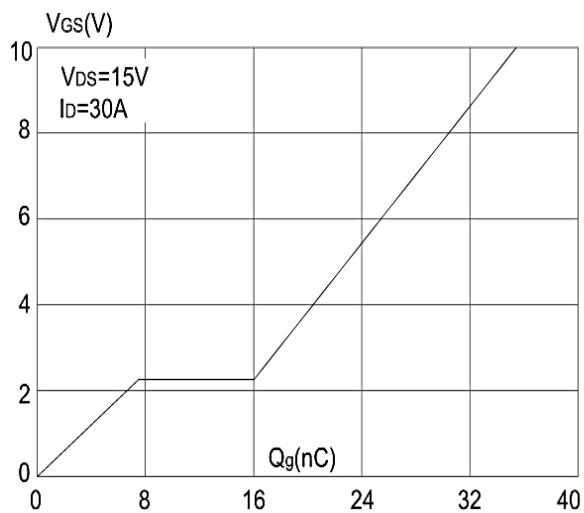
**Figure 2: Typical Transfer Characteristics**



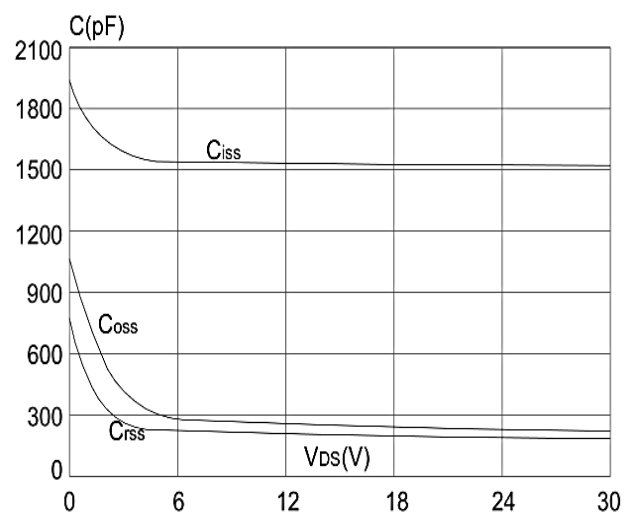
**Figure 3: On-resistance vs. Drain Current**



**Figure 4: Body Diode Characteristics**

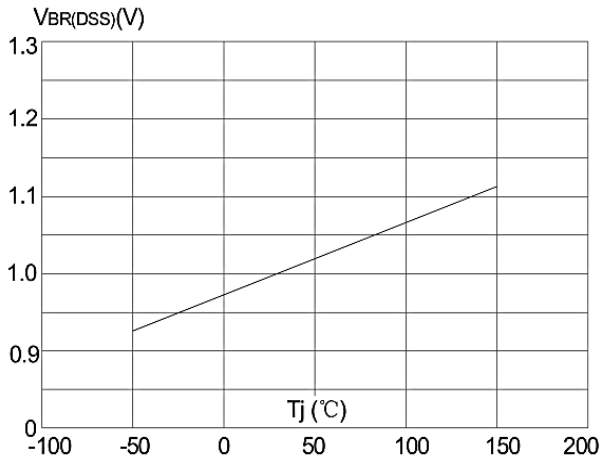


**Figure 5: Gate Charge Characteristics**

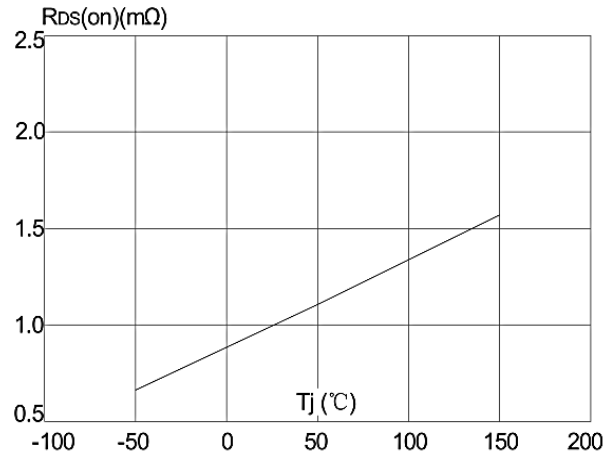


**Figure 6: Capacitance Characteristics**

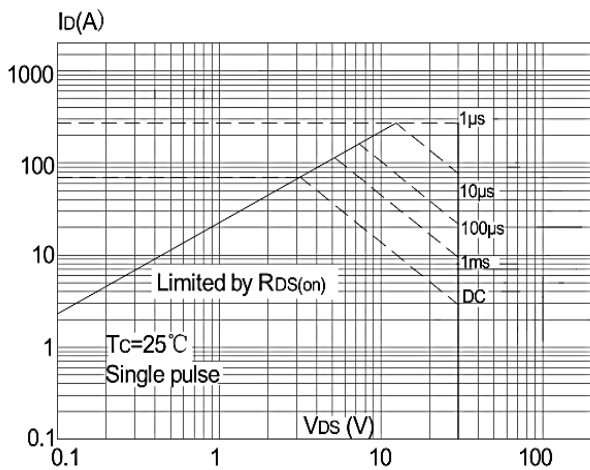
**Ratings and Characteristic Curves**



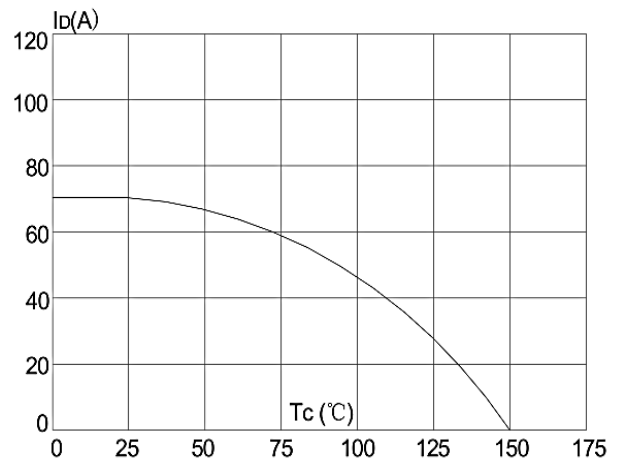
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



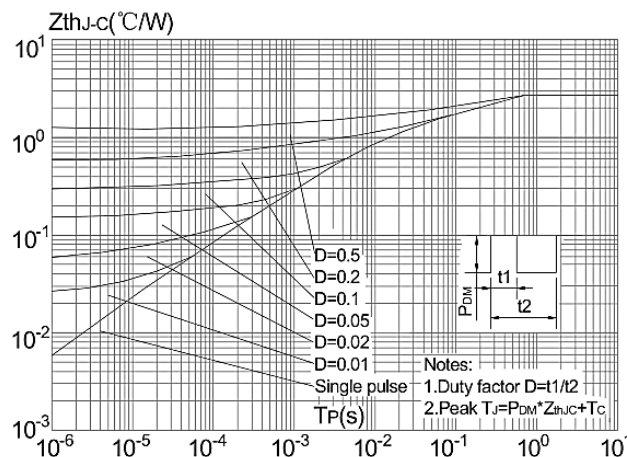
**Figure 8: Normalized on Resistance vs. Junction Temperature**



**Figure 9: Maximum Safe Operating Area vs. Case Temperature**



**Figure 10: Maximum Continuous Drain Current vs. Case Temperature**



**Figure.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	Typ 2.54	
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		