

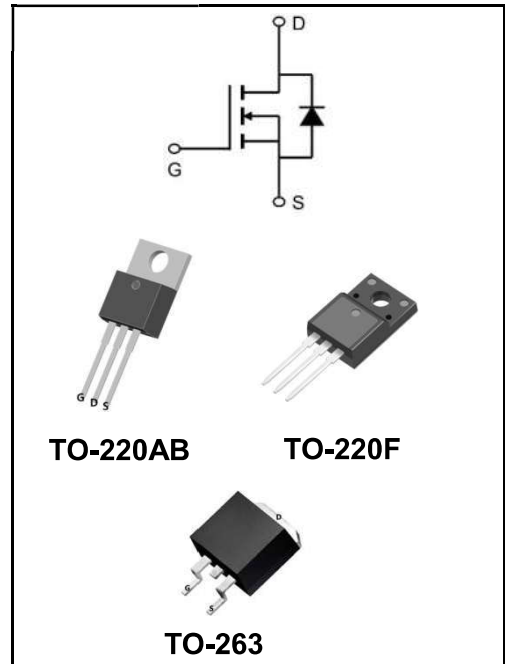
**250V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	60A
<b>V<sub>DSS</sub></b>	250V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 33mΩ ( <b>Type:28 mΩ</b> )

**Application**

- ◆UPS
- ◆BLDC



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW60N25AT	TO-220AB	YFW 60N25AT XXXXX	1000PCS/Box
YFW60N25AF	TO-220F	YFW 60N25AF XXXXX	1000PCS/Box
YFW60N25AS	TO-263	YFW 60N25AS XXXXX	800PCS/Reel

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

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	250	<b>V</b>
Continuous Drain Current V <sub>GS</sub> @ 10V @T <sub>A</sub> =25°C	<b>I<sub>D</sub></b>	60	<b>A</b>
Continuous Drain Current V <sub>GS</sub> @ 10V @T <sub>A</sub> =100°C	<b>I<sub>D</sub></b>	40	<b>A</b>
Pulsed Drain Current (pulse width limited by TJM)	<b>IDM<sup>a1</sup></b>	230	<b>A</b>
Gate -to- Source Voltage	<b>V<sub>GS</sub></b>	±30	<b>V</b>
Single pulse avalanche energy	<b>E<sub>AS</sub></b>	300	<b>mJ</b>
Avalanche Energy, Repetitive	<b>E<sub>Ara1</sub></b>	75	<b>mJ</b>
Avalanche Current	<b>I<sub>AR a1</sub></b>	45	<b>A</b>
Peak Diode Recovery dv/dt	<b>dv/dt<sup>a2</sup></b>	5.0	<b>V/ns</b>
Power Dissipation	<b>P<sub>D</sub></b>	360	<b>W</b>
Operating Junction and Storage Temperature Range	<b>T<sub>J</sub> , T<sub>STG</sub></b>	-55 to 150	<b>°C</b>
Maximum Temperature for Soldering	<b>T<sub>L</sub></b>	300	<b>°C</b>
Thermal Resistance, Junction-to-case	<b>R<sub>θJC</sub></b>	0.45	<b>°C/W</b>
Thermal Resistance, Junction -to-ambient	<b>R<sub>θJA</sub></b>	60	<b>°C/W</b>

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

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	<b>VDSS</b>	250	-	-	<b>V</b>
Drain to Source Leakage Current	$V_{DS}=250V, V_{GS}=0V, T_a=25^\circ C$	<b>IDSS</b>	-	-	1.0	<b>μA</b>
	$V_{DS}=250V, V_{GS}=0V, T_a=125^\circ C$		-	-	100	
Gate to Source Forward Leakage	$V_{GS}=+20V$	<b>IGSS(F)</b>	-	-	100	<b>nA</b>
Gate to Source Reverse Leakage	$V_{GS}=-20V$	<b>IGSS(R)</b>	-	-	-100	
Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=35A$	<b>RDS(ON)</b>	-	28	33	<b>mΩ</b>
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	<b>VGS(th)</b>	3.6	-	5.0	<b>V</b>
Forward Transconductance	$V_{DS}=10V, I_D=35A$	<b>gfs</b>	100	-	-	<b>S</b>
Gate Resistance	$V_{GS}=0V, V_{DS}$ open $f=1.0MHz$	<b>RG</b>	-	1.5	-	<b>Ω</b>
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$	<b>Ciss</b>	-	7000	-	<b>pF</b>
Output Capacitance		<b>Coss</b>	-	480	-	
Reverse Transfer Capacitance		<b>Crss</b>	-	210	-	
Turn-on delay time	$I_D=35A$ $V_{DS}=50V$ $V_{GS}=10V$ $R_G=2.5\Omega$	<b>td(on)</b>	-	45	-	<b>ns</b>
Rise Time		<b>Tr</b>	-	70	-	
Turn-Off Delay Time		<b>td(OFF)</b>	-	110	-	
Fall Time		<b>tf</b>	-	90	-	
Total Gate Charge	$I_D=35A$ $V_{DD}=100V$ $V_{GS}=10V$	<b>Qg</b>	-	200	-	<b>nC</b>
Gate to Source Charge		<b>Qgs</b>	-	28	-	
Gate to Drain ("Miller") Charge		<b>Qgd</b>	-	60	-	
Continuous Source Current (Body Diode)		<b>ISD</b>	-	-	58	<b>A</b>
Maximum Pulsed Current (Body Diode)		<b>ISM</b>	-	-	230	<b>A</b>
Diode Forward Voltage	$I_S=35A, V_{GS}=0V$	<b>VSD</b>	-	-	1.2	<b>V</b>
Reverse Recovery Time	$I_S=30A, V_{DD}=50V$ $V_{GS}=0V, di/dt=100A/\mu s,$ $T_J=25^\circ C$	<b>trr</b>	-	120	-	<b>ns</b>
Reverse Recovery Charge		<b>Qrr</b>	-	0.55	-	<b>nC</b>

Note :

- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The EAS data shows Max. rating . IAS = 35A, RG = 25Ω, VDD=50V, VGS=10V, Starting TJ = 25 °C
- 3、 The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 4、 The power dissipation is limited by 150°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

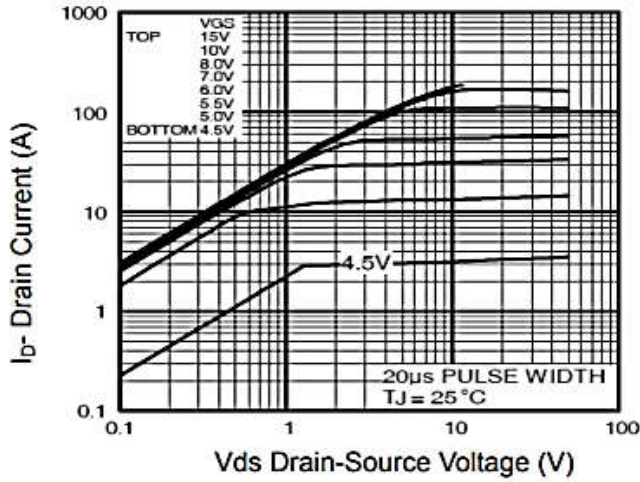


Figure 1 Output Characteristics

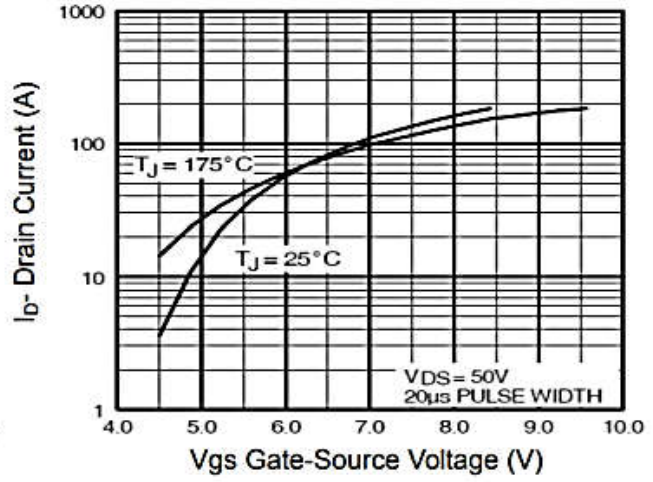


Figure 2 Transfer Characteristics

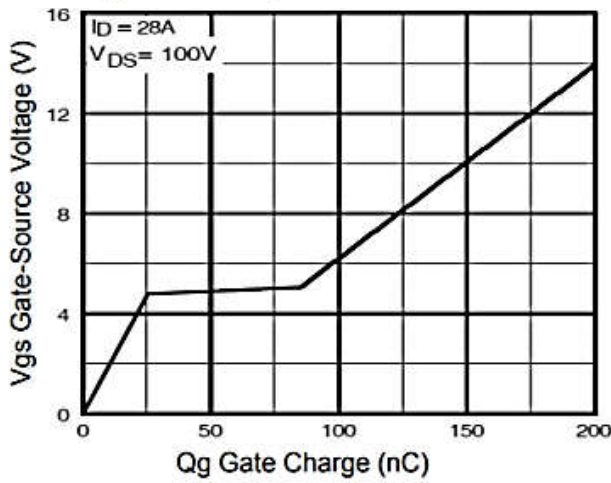


Figure 5 Gate Charge

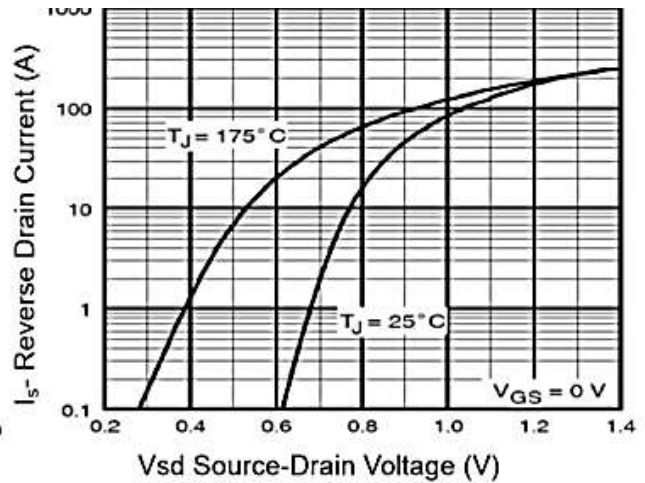


Figure 6 Source-Drain Diode Forward

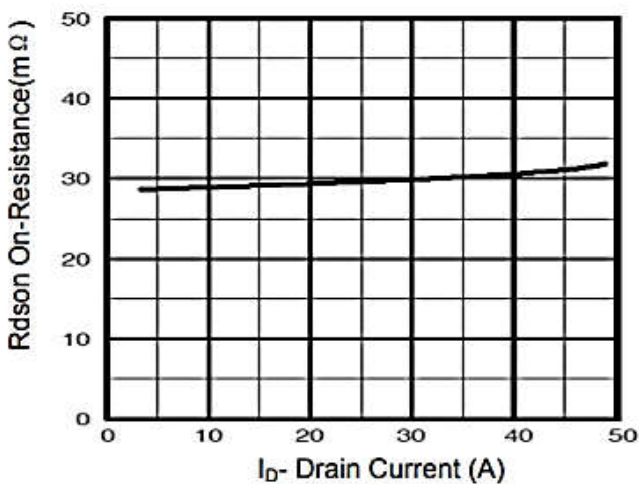


Figure 3 Rdson-Drain Current

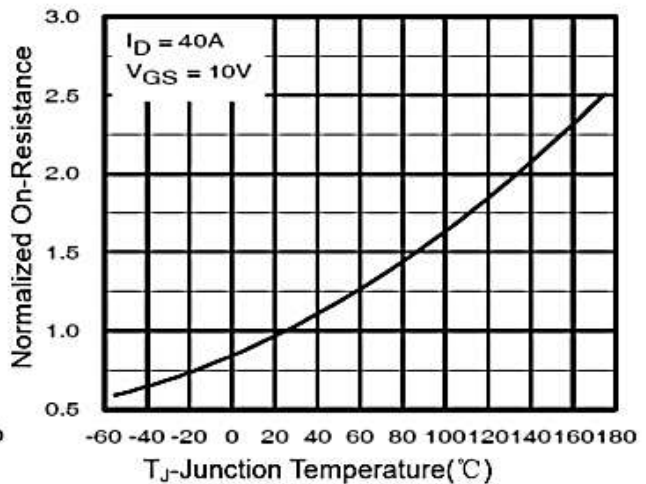


Figure 4 Rdson-Junction Temperature

Ratings and Characteristic Curves

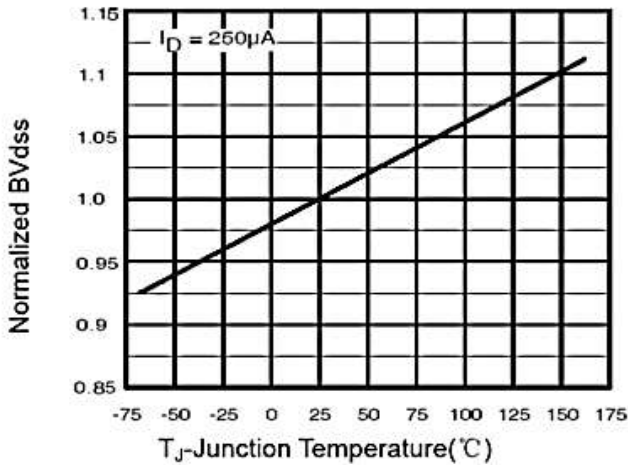


Figure 9  $BV_{DSS}$  vs Junction Temperature

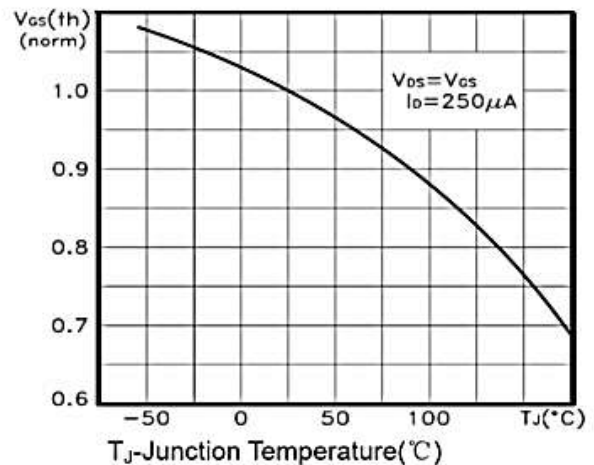


Figure 10  $V_{GS(th)}$  vs Junction Temperature

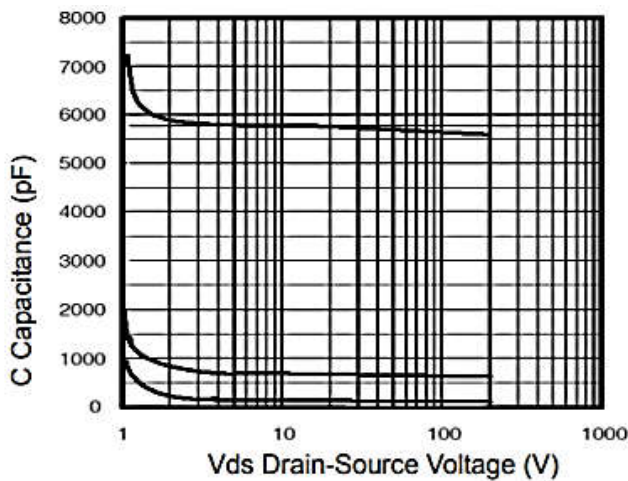


Figure 7 Capacitance vs  $V_{DS}$

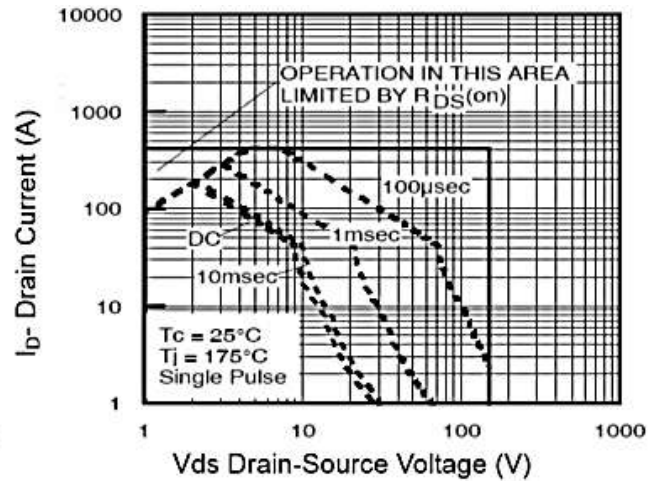


Figure 8 Safe Operation Area

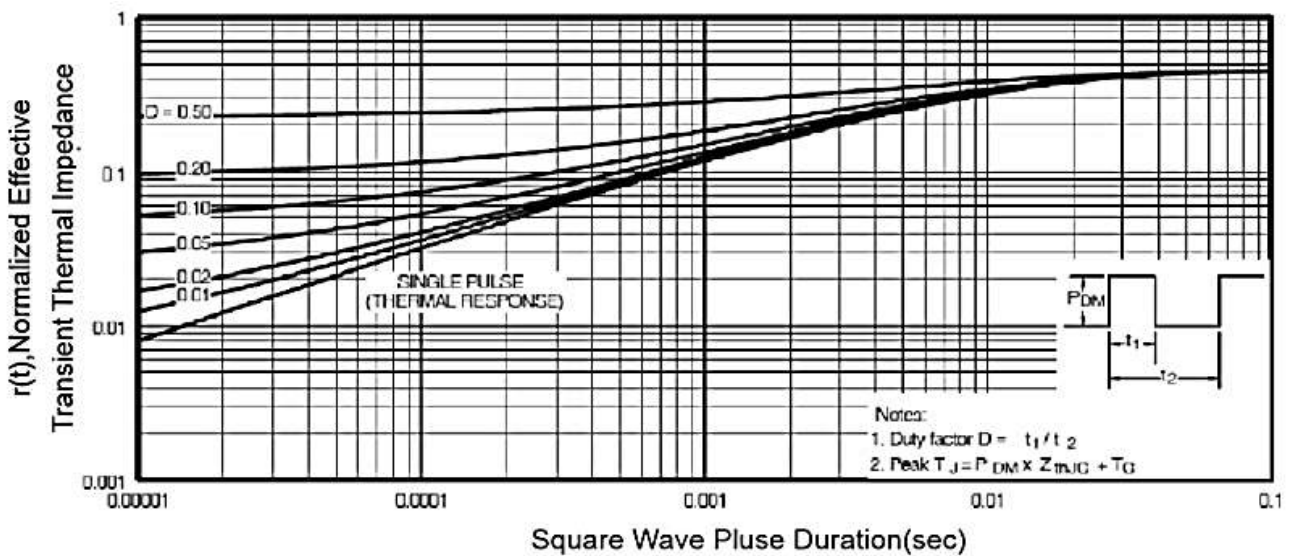


Figure 11 Normalized Maximum Transient Thermal Impedance

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		