

**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

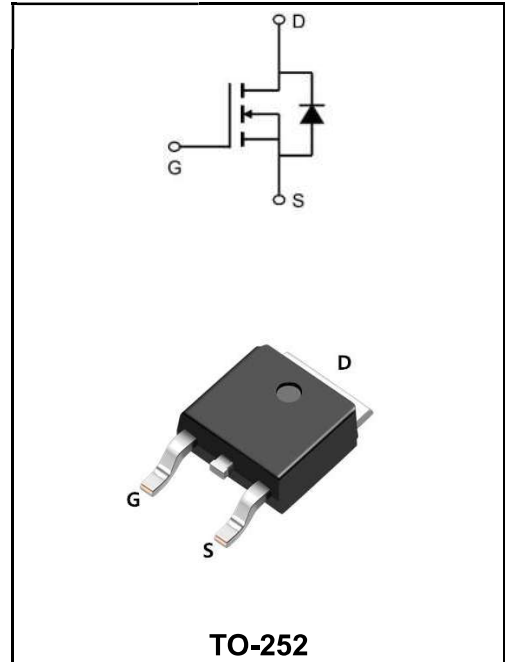
<b>I<sub>D</sub></b>	150A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 4.5mΩ ( <b>Type:3.7 mΩ</b> )

**Features**

◆ YFW-SGT technology

**Application**

- ◆ Isolated DC
- ◆ Motor control
- ◆ Synchronous-rectification



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFWG150N10AD	TO-252	YFWG 150N10AD XXXXX	2500PCS/Tape

**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>	100	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous Drain Current <sup>1</sup> @T <sub>A</sub> =25°C	<b>I<sub>D</sub></b>	150	<b>A</b>
Continuous Drain Current <sup>1</sup> @T <sub>A</sub> =70°C	<b>I<sub>D</sub></b>	110	<b>A</b>
Pulsed drain current <sup>2</sup>	<b>I<sub>DM</sub></b>	580	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	320	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	40	<b>A</b>
Total Power dissipation <sup>4</sup> @T <sub>A</sub> =25°C	<b>P<sub>D</sub></b>	208	<b>W</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150	<b>°C</b>
Operating Junction Temperature Range	<b>T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance Junction-Ambient <sup>1</sup>	<b>R<sub>θJA</sub></b>	62.5	<b>°C/W</b>
Thermal Resistance, Junction-case <sup>1</sup>	<b>R<sub>θJC</sub></b>	0.6	<b>°C/W</b>

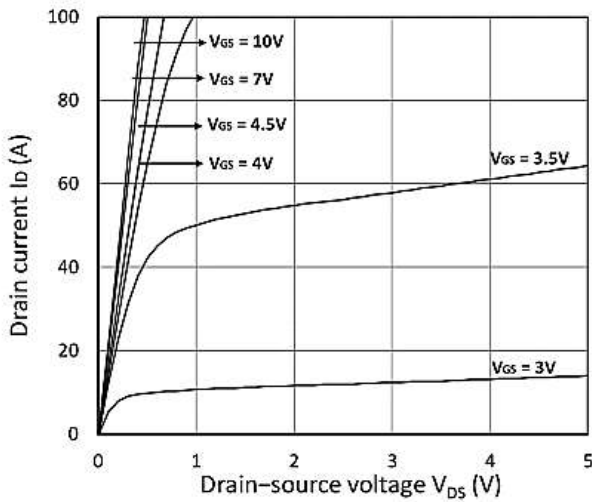
**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	<b>V(BR)DSS</b>	100	107	-	<b>V</b>
Gate-body Leakage current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	$\pm 100$	<b>nA</b>
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	<b>I<sub>BSS</sub></b>	-	-	1	<b><math>\mu</math>A</b>
	$V_{DS}=100V, V_{GS}=0V, T_J=100^\circ C$		-	-	100	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	<b>V<sub>GS(th)</sub></b>	1.2	1.8	2.5	<b>V</b>
Drain-Source On-Resistance <sup>4</sup>	$V_{GS}=10V, I_D=20A$	<b>R<sub>DS(ON)</sub></b>	-	3.7	4.5	<b>m<math>\Omega</math></b>
	$V_{GS}=4.5V, I_D=15A$		-	5.1	6.7	
Forward Transconductance <sup>4</sup>	$V_{DS}=5V, I_D=20A$	<b>g<sub>FS</sub></b>	-	70	-	<b>S</b>
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	<b>C<sub>iss</sub></b>	-	6095	-	<b><math>\mu</math>F</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	722	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	22	-	
Gate Resistance	$f=1MHz$	<b>R<sub>g</sub></b>	-	1.3	-	<b><math>\Omega</math></b>
Total Gate Charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=20A$	<b>Q<sub>g</sub></b>	-	111.2	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	17.5	-	
Gate-Drain Charge		<b>Q<sub>gd</sub></b>	-	30.2	-	
Turn-on delay time	$V_{DD}=50V$ $V_{GS}=10V$ $R_G=3\Omega$ $I_D=20A$	<b>t<sub>d(on)</sub></b>	-	22.2	-	<b>ns</b>
Rise Time		<b>T<sub>r</sub></b>	-	37.8	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	95.2	-	
Fall Time		<b>t<sub>f</sub></b>	-	35.6	-	
Body Diode Reverse Recovery Time	$I_F=20A, di/dt=100A/\mu s$	<b>t<sub>rr</sub></b>	-	59.4	-	<b>ns</b>
Body Diode Reverse Recovery Charge		<b>Q<sub>rr</sub></b>	-	91.8	-	<b>nC</b>
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=20A$	<b>V<sub>SD</sub></b>	-	-	1.2	<b>V</b>
Continuous Source Current T <sub>C</sub> =25°C		<b>I<sub>S</sub></b>	-	-	120	<b>A</b>

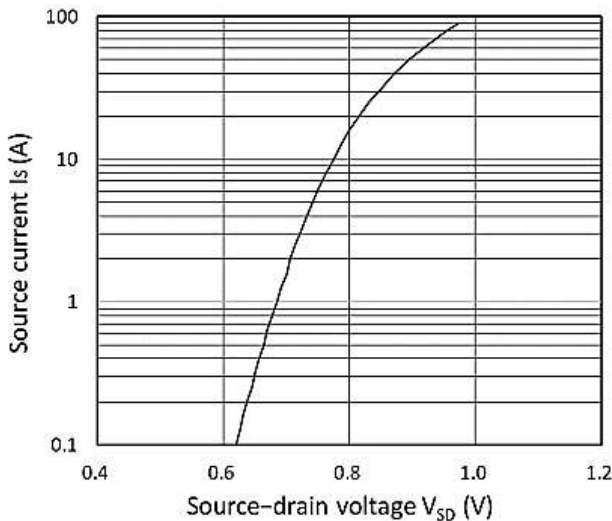
Note :

- 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  $V_{DD}=72V, V_{GS}=10V, L=0.1mH, I_{AS}=40A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation

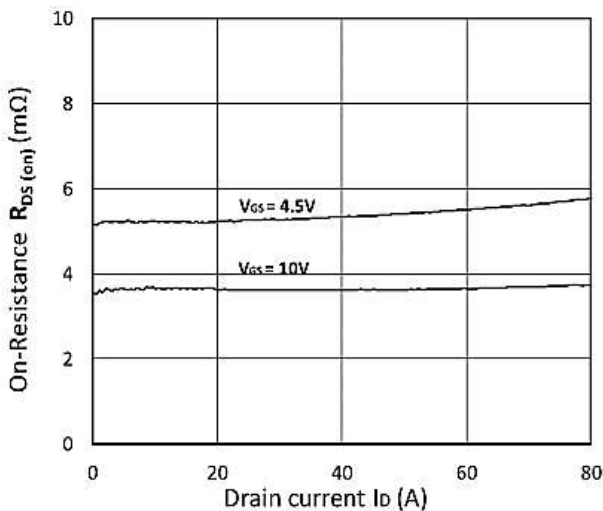
**Typical Characteristics**



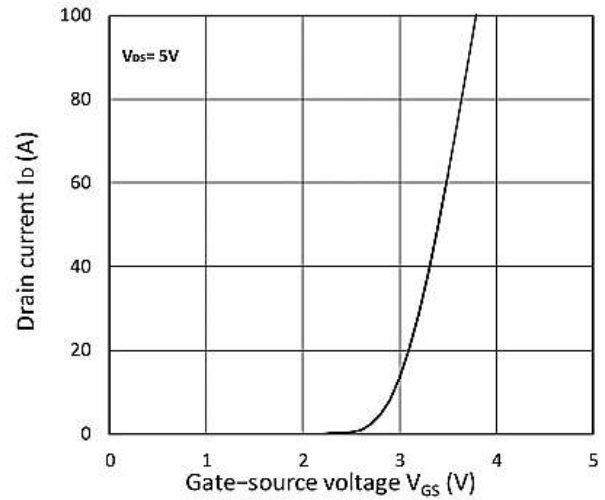
**Figure 1. Output Characteristics**



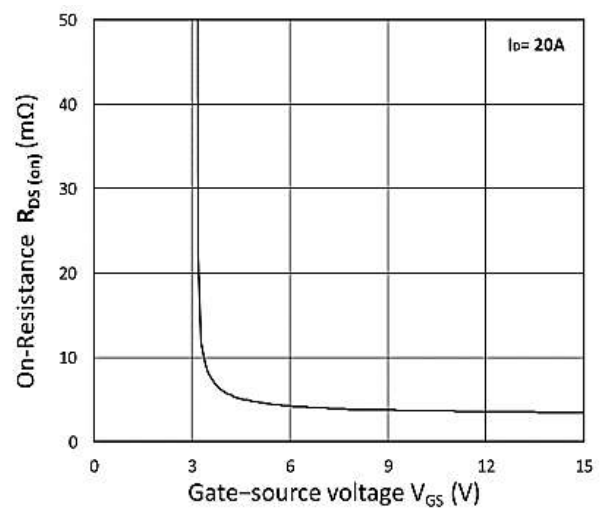
**Figure 3. Forward Characteristics of Reverse**



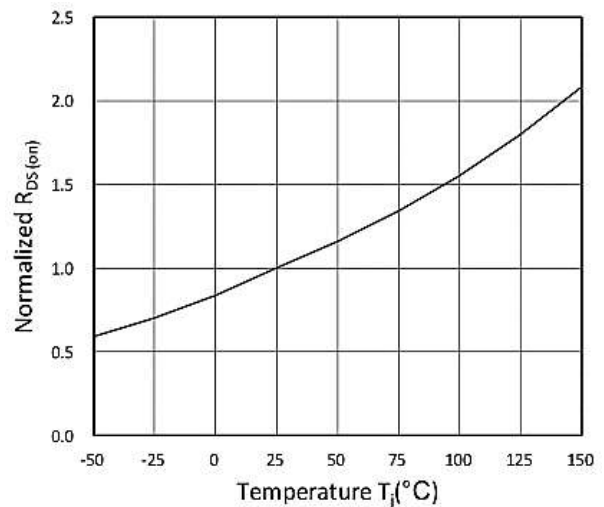
**Figure 5. RDS(ON) vs. ID**



**Figure 2. Transfer Characteristics**



**Figure 4. RDS(ON) vs. VGS**



**Figure 6. Normalized RDS(on) vs. Temperature**

Ratings and Characteristic Curves

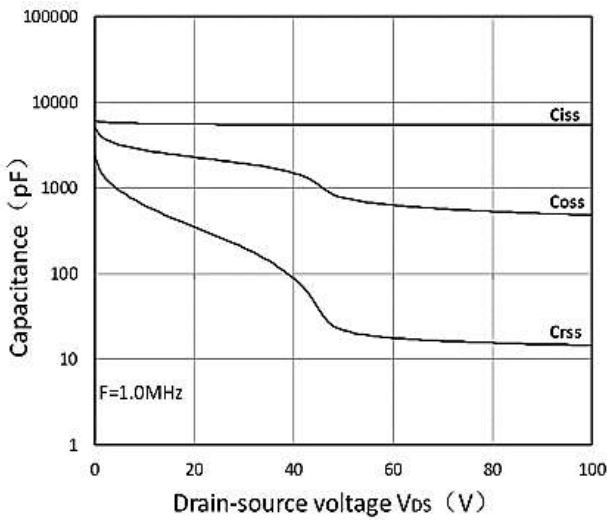


Figure 7. Capacitance Characteristics

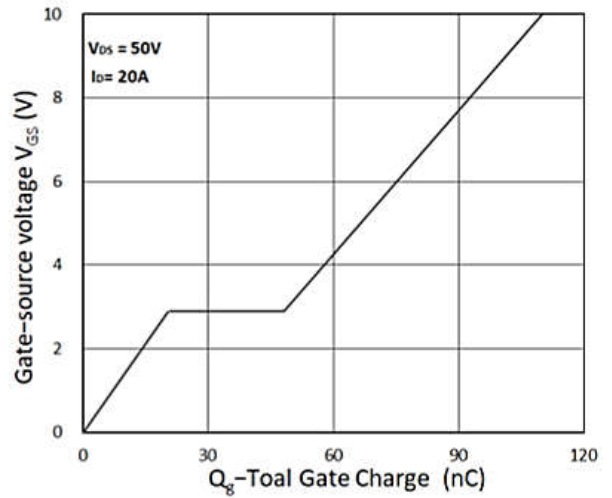


Figure 8. Gate Charge Characteristics

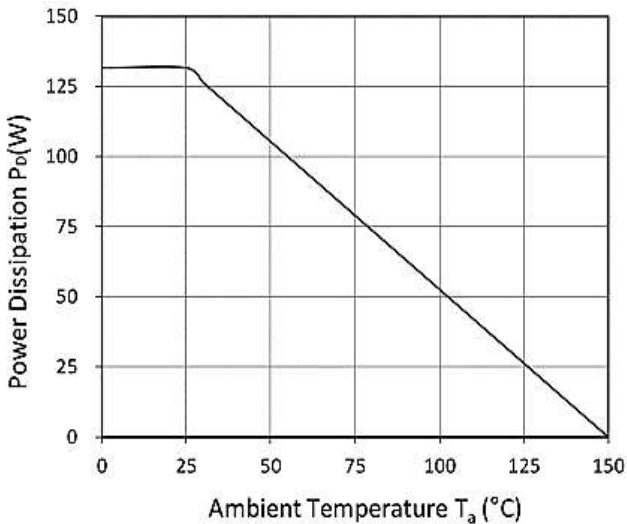


Figure 9. Power Dissipation

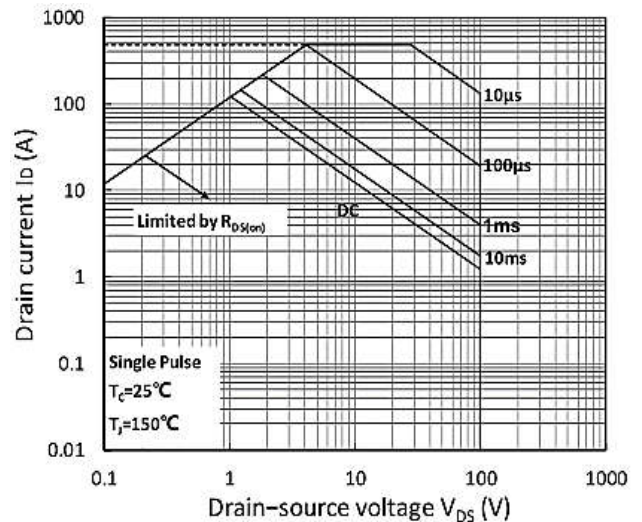


Figure 10. Safe Operating Area

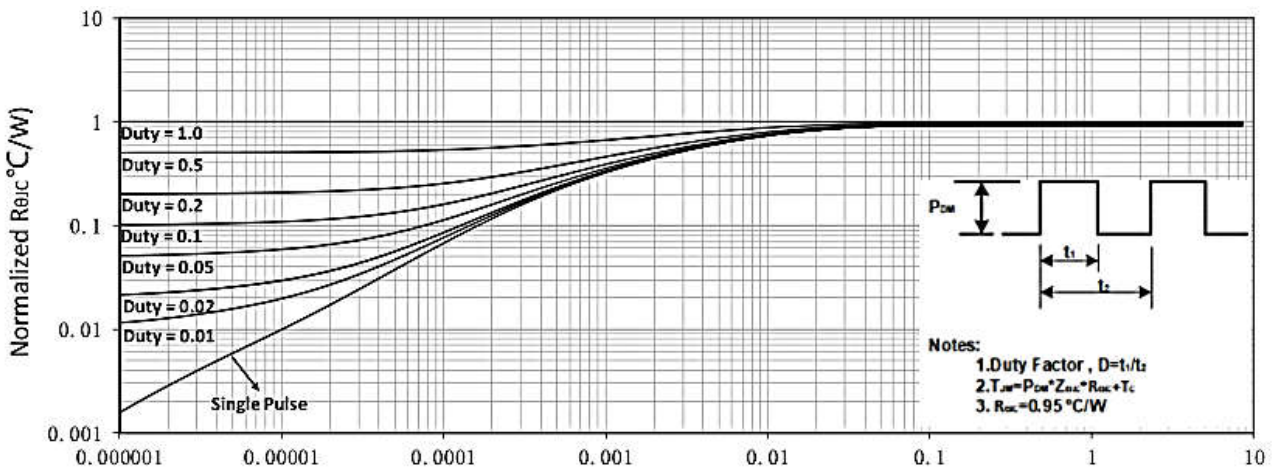


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions Millimeters

TO-252

Dim.	Min.	Typ.	Max.
A	2.10	-	2.50
A2	0	-	0.10
B	0.66	-	0.86
B2	5.18	-	5.48
C	0.40	-	0.60
C2	0.44	-	0.58
D	5.90	-	6.30
D1	5.30REF		
E	6.40	-	6.80
E1	4.63	-	-
G	4.47	-	4.67
H	9.50	-	10.70
L	1.09	-	1.21
L2	1.35	-	1.65
V1	-	7°	-
V2	0°	-	6°
All Dimensions in millimeter			

