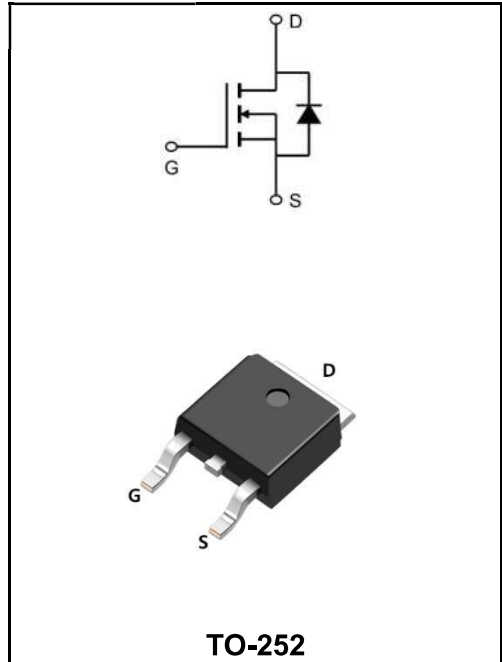


**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	100A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=10V)</b>	< 8.0mΩ ( <b>Type:6.0 mΩ</b> )



**Features**

- ◆ YFW-SGT technology

**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFWG100N10AD	TO-252	YFW 100N10AD XXXXX	2500PCS/Tape

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

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate - Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>1</sup> @T <sub>A</sub> =25°C	I <sub>D</sub>	100	A
Continuous Drain Current <sup>1</sup> @T <sub>A</sub> =70°C	I <sub>D</sub>	68	A
Pulsed drain current <sup>2</sup>	I <sub>DM</sub>	210	A
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	100	mJ
Avalanche Current	I <sub>AS</sub>	40	A
Total Power dissipation <sup>4</sup> @T <sub>A</sub> =25°C	P <sub>D</sub>	100	W
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Thermal Resistance Junction-Ambient <sup>1</sup>	R <sub>θJA</sub>	62	°C/W
Thermal Resistance, Junction-case <sup>1</sup>	R <sub>θJC</sub>	1.25	°C/W

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

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	100	108	-	<b>V</b>
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=13.5A$	$R_{DS(ON)}$	-	6.0	8.0	<b>mΩ</b>
	$V_{GS}=4.5V, I_D=11.5A$		-	8.7	10.5	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.8	2.3	<b>V</b>
Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	<b>μA</b>
	$V_{DS}=80V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V,$	$I_{GSS}$	-	-	±100	<b>nA</b>
Forward Transconductance	$V_{DS}=5V, I_D=13.5A$	$g_{FS}$	-	75	-	<b>S</b>
Total Gate Charge(10V)	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=13.5A$	$Q_g$	-	45	-	<b>nC</b>
Total Gate Charge(4.5V)		$Q_g$	-	19.3	-	
Gate-Source Charge		$Q_{GS}$	-	9.5	-	
Gate-Drain Charge		$Q_{gd}$	-	4.8	-	
Turn-on delay time	$V_{DD}=50V$ $V_{GS}=10V$ $R_G=3\Omega$ $I_D=13.5A$	$t_{d(on)}$	-	10	-	<b>ns</b>
Rise Time		$T_r$	-	6.5	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	45	-	
Fall Time		$t_f$	-	7.5	-	
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	3320	-	<b>pF</b>
Output Capacitance		$C_{oss}$	-	605	-	
Reverse Transfer Capacitance		$C_{rss}$	-	20	-	
Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V, \text{ Force Current}$	$I_S$	-	-	5	<b>A</b>
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	$V_{SD}$	-	-	1.1	<b>V</b>
Reverse Recovery Time	$I_F=13.5A, di/dt=100A/\mu s,$ $T_J=25^\circ C$	$t_{rr}$	-	33	-	<b>ns</b>
Reverse Recovery Charge		$Q_{rr}$	-	150	-	<b>nC</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 D and I DM , in real applications , should be limited by total power dissipation

Ratings and Characteristic Curves

Typical Characteristics

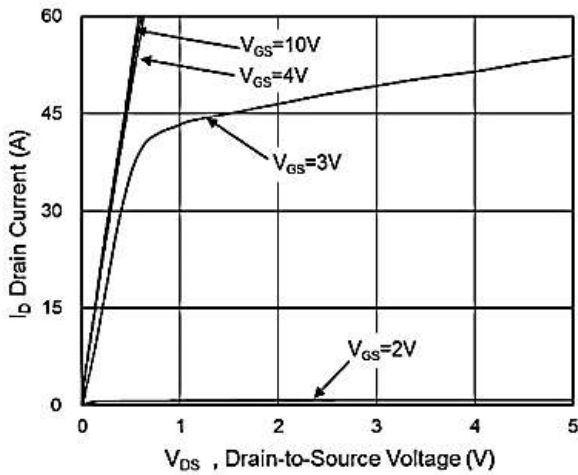


Fig.1 Typical Output Characteristics

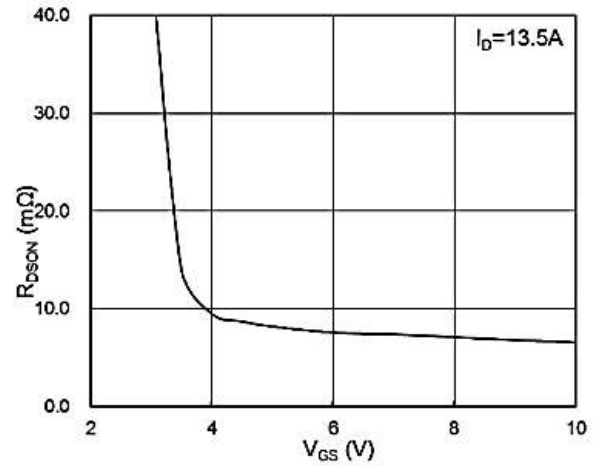


Fig.2 On-Resistance vs. G-S Voltage

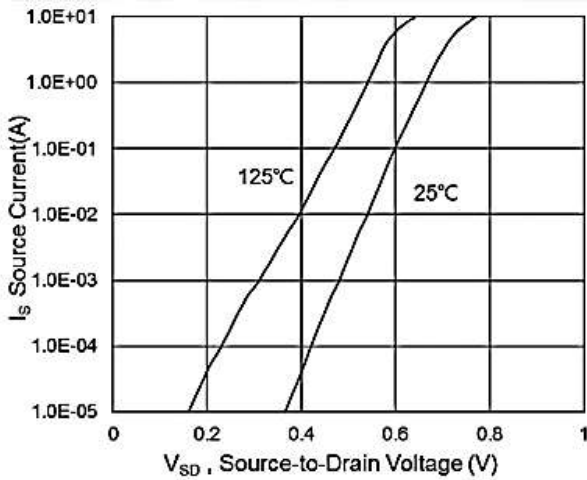


Fig.3 Source-Drain Forward Characteristics

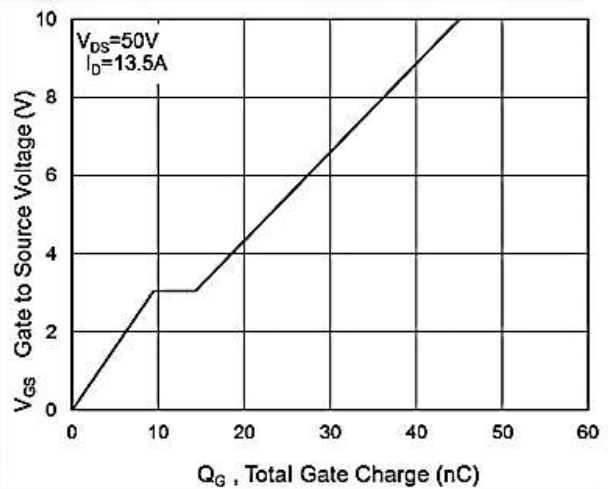


Fig.4 Gate-Charge Characteristics

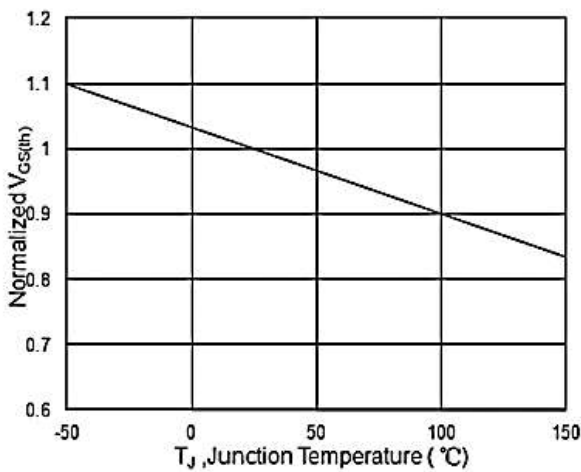


Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$

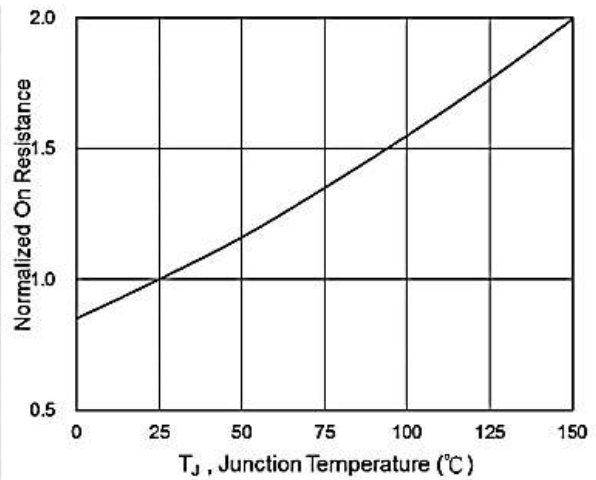
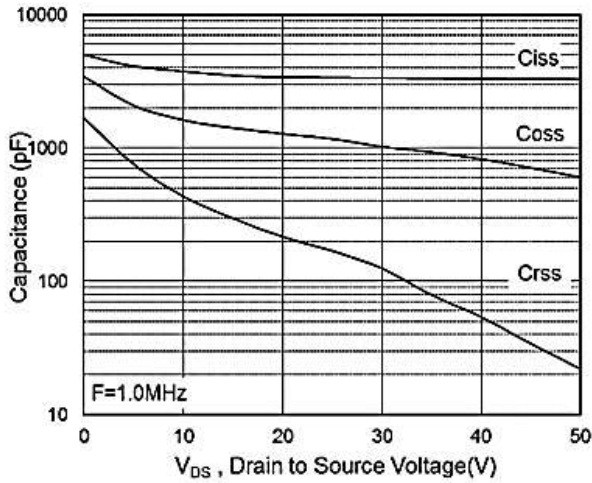
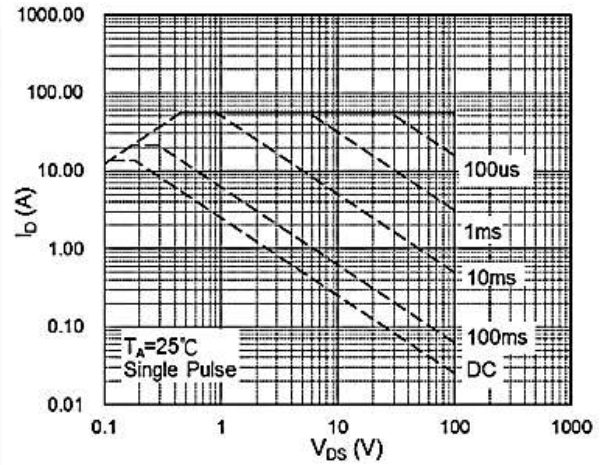


Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$

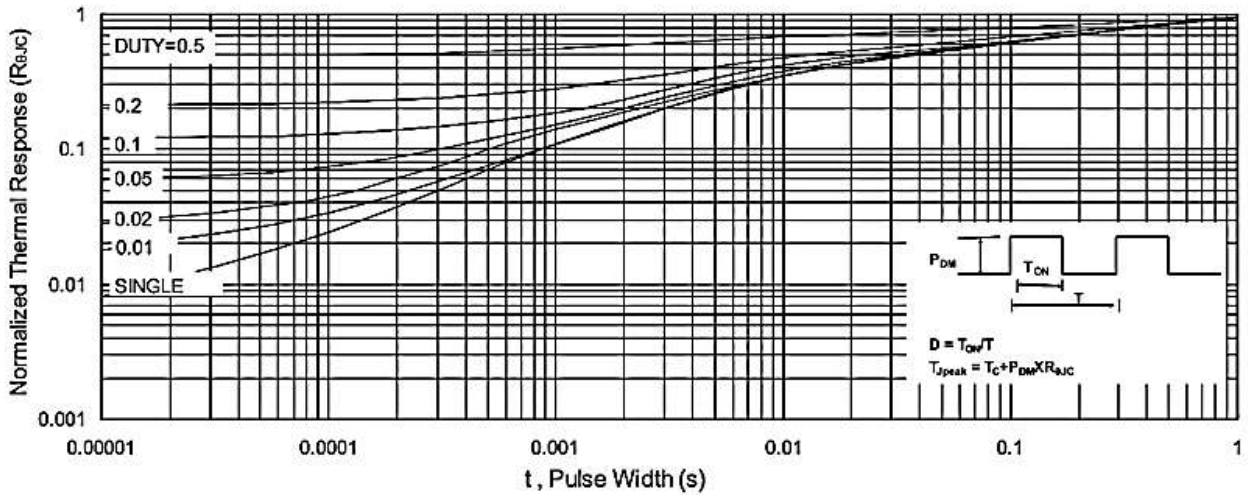
Ratings and Characteristic Curves



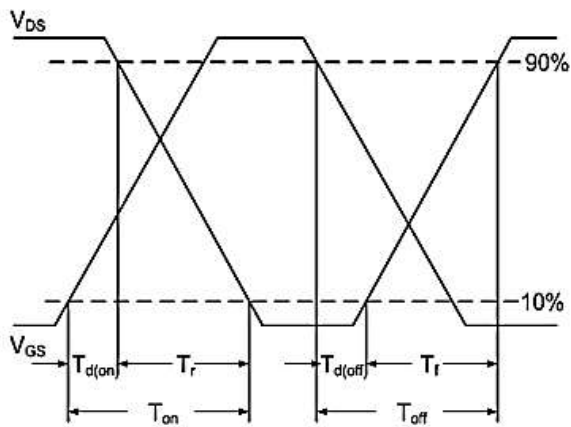
**Fig.7 Capacitance**



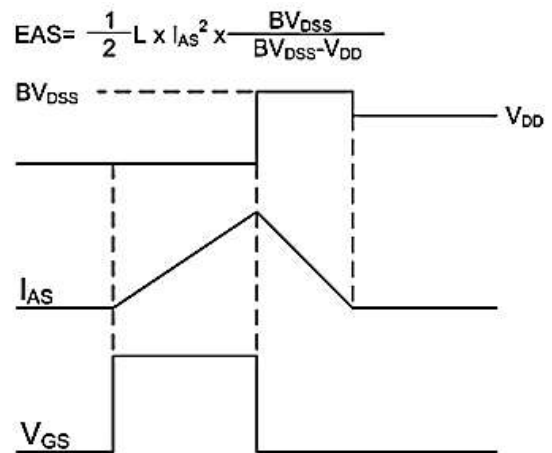
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



**Fig.10 Switching Time Waveform**



**Fig.11 Unclamped Inductive Switching Waveform**

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			

