

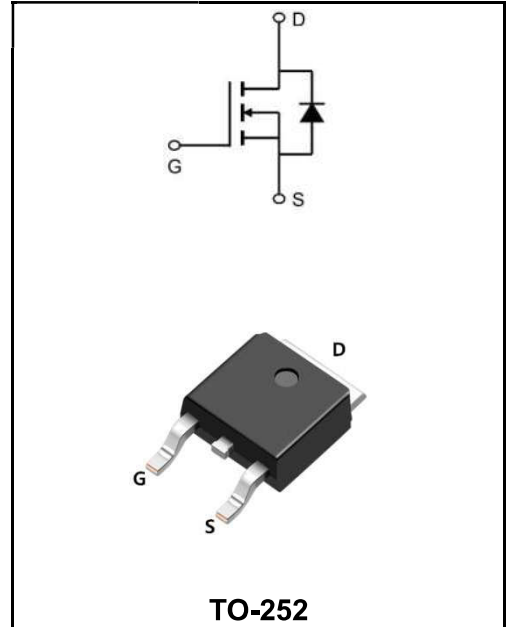
**150V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	30A
<b>V<sub>DSS</sub></b>	150V
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=10V)</b>	< 52mΩ ( <b>Type:43 mΩ</b> )

**Application**

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



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW30N15AD	TO-252	YFW 30N15AD 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>	150	<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>	30	<b>A</b>
Continuous Drain Current <sup>1</sup> @T <sub>C</sub> =100°C	<b>I<sub>D</sub></b>	16	<b>A</b>
Continuous Drain Current <sup>1</sup> @T <sub>A</sub> =25°C	<b>I<sub>D</sub></b>	4.5	<b>A</b>
Continuous Drain Current <sup>1</sup> @T <sub>A</sub> =70°C	<b>I<sub>D</sub></b>	3.8	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	60	<b>A</b>
Total Power Dissipation <sup>3</sup> @T <sub>C</sub> =25°C	<b>P<sub>D</sub></b>	72.6	<b>W</b>
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	<b>P<sub>D</sub></b>	2.7	<b>W</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +175	<b>°C</b>
Operating Junction Temperature Range	<b>T<sub>J</sub></b>	-55 to +175	<b>°C</b>
Thermal Resistance, Junction-ambient <sup>1</sup>	<b>R<sub>θJA</sub></b>	55	<b>°C/W</b>
Thermal Resistance, Junction-case <sup>1</sup>	<b>R<sub>θJC</sub></b>	2.0	<b>°C/W</b>

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

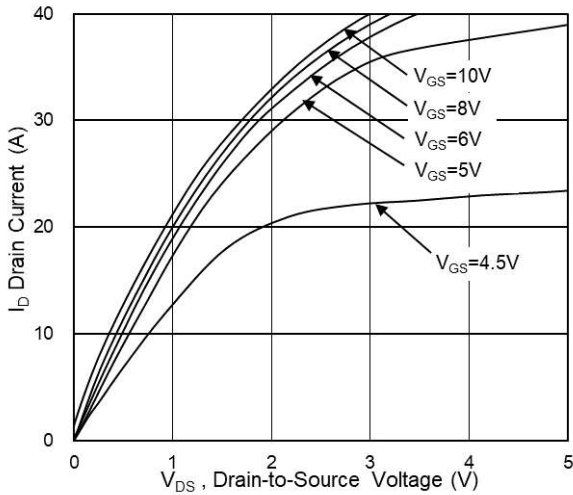
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	<b>BVDSS</b>	150	165	-	<b>V</b>
Static Drain-Source on-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=20A$	<b>R<sub>DS(ON)</sub></b>	-	43	52	<b>mΩ</b>
	$V_{GS}=4.5V, I_D=10A$		-	45	70	
Gate Threshold 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 Leakage Current	$V_{DS}=120V, V_{GS}=0V, T_J=25^\circ C$	<b>I<sub>DSS</sub></b>	-	-	1	<b>μA</b>
	$V_{DS}=120V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Forward Transconductance	$V_{DS}=5V, I_D=10A$	<b>g<sub>FS</sub></b>	-	25	-	<b>S</b>
Total Gate Charge	$V_{DS}=75V$ $V_{GS}=10V$ $I_D=10A$	<b>Q<sub>g</sub></b>	-	23	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	5.8	-	
Gate-Drain Charge		<b>Q<sub>gd</sub></b>	-	4.2	-	
Turn-on delay time	$V_{DD}=75V$ $I_D=10A$ $R_G=3.3\Omega$ $V_{GS}=10V$	<b>t<sub>d(on)</sub></b>	-	16.2	-	<b>ns</b>
Rise Time		<b>T<sub>r</sub></b>	-	18.6	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	28.5	-	
Fall Time		<b>t<sub>f</sub></b>	-	6.5	-	
Input Capacitance	$V_{DS}=75V$ $V_{GS}=0V$ $f=1MHz$	<b>C<sub>iss</sub></b>	-	1190	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	73	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	4	-	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V, \text{Force Current}$	<b>I<sub>S</sub></b>	-	-	20	<b>A</b>
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	<b>V<sub>SD</sub></b>	-	-	1.2	<b>V</b>
Reverse Recovery Time	$I_F=10A, di_{SD}/dt=100A/\mu s, T_J=25^\circ C$	<b>t<sub>rr</sub></b>	-	45	-	<b>ns</b>
Reverse Recovery Charge		<b>Q<sub>rr</sub></b>	-	138	-	<b>nC</b>

Note :

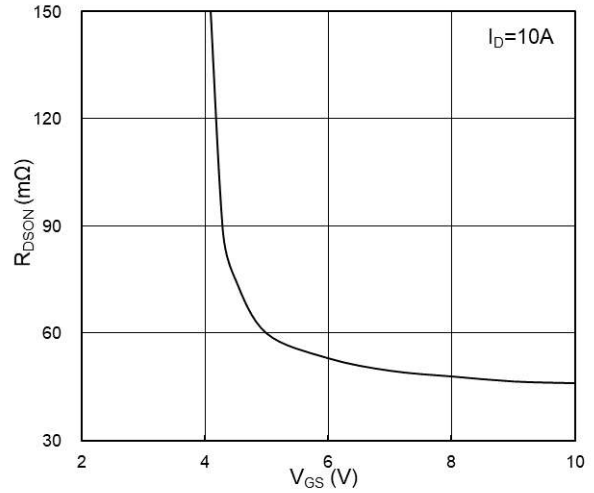
- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

**Ratings and Characteristic Curves**

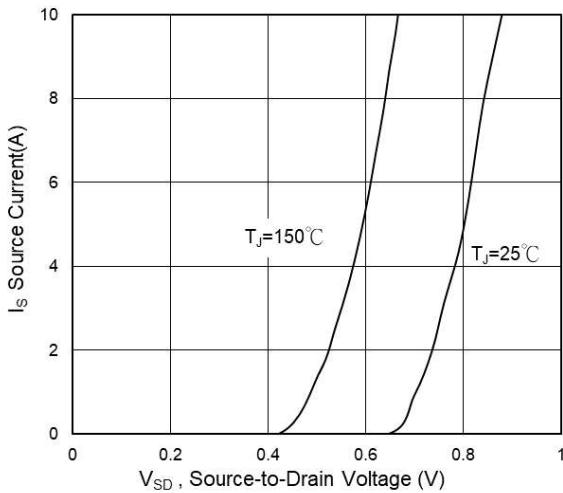
**Typical Characteristics**



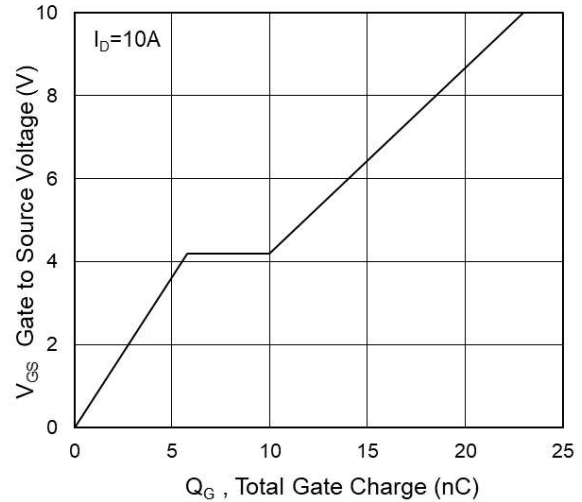
**Fig.1 Typical Output Characteristics**



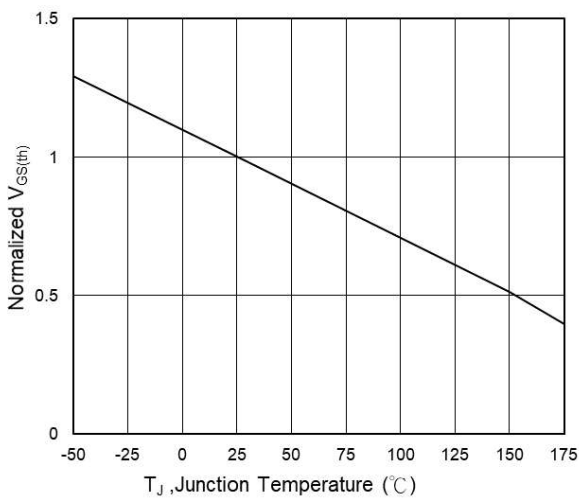
**Fig.2 On-Resistance vs G-S Voltage**



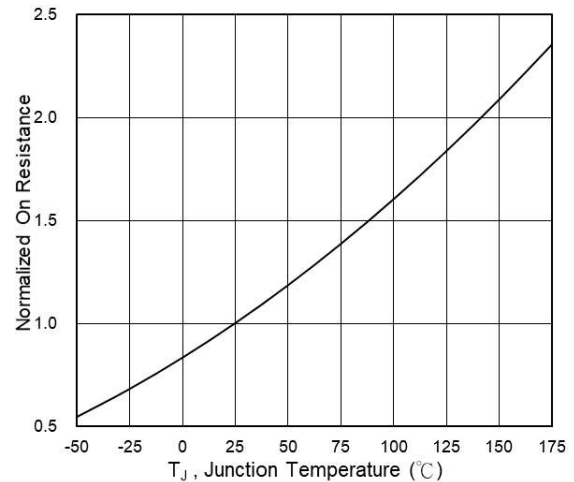
**Fig.3 Source Drain Forward Characteristics**



**Fig.4 Gate-Charge Characteristics**

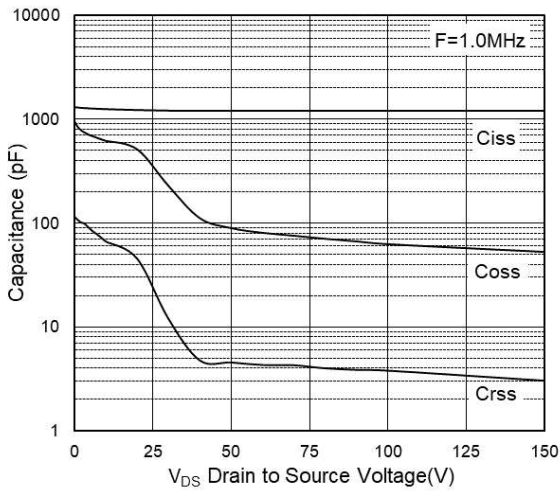


**Fig.5 Normalized  $V_{GS(th)}$  vs  $T_J$**

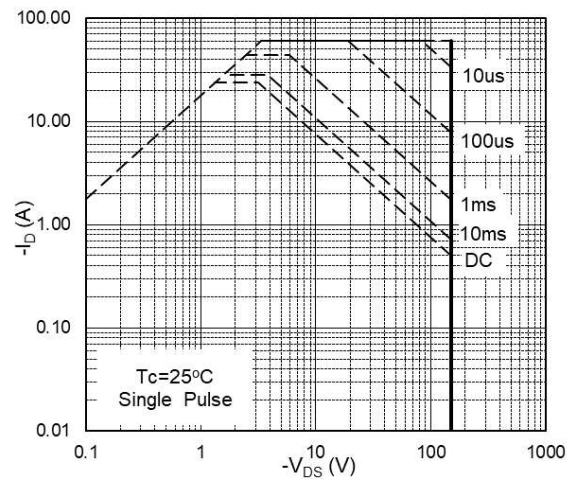


**Fig.6 Normalized  $R_{DS(on)}$  vs  $T_J$**

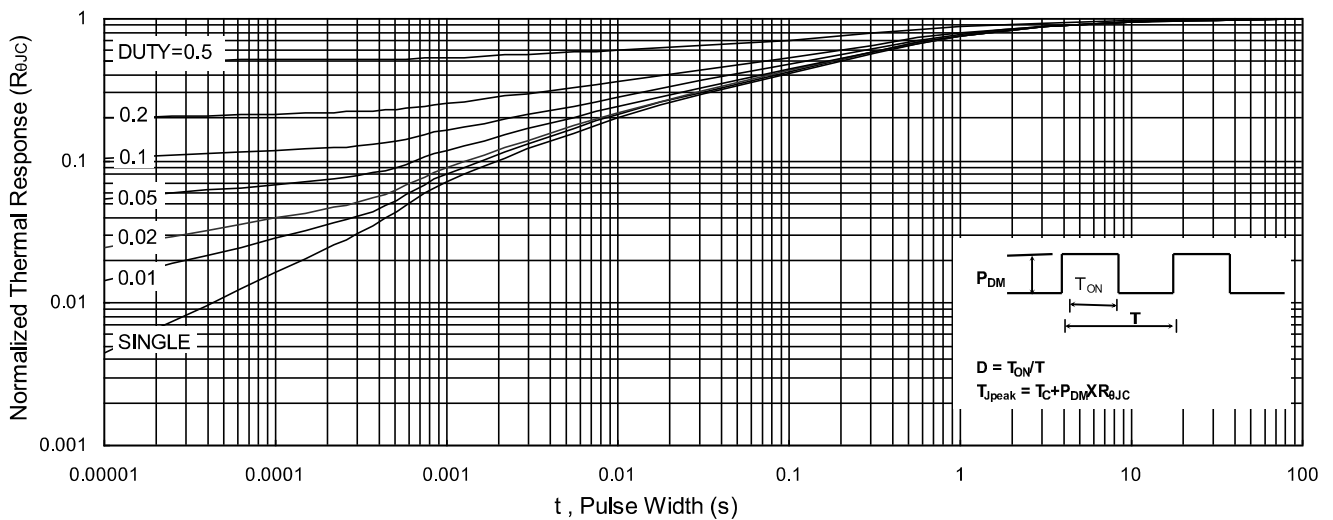
**Ratings and Characteristic Curves**



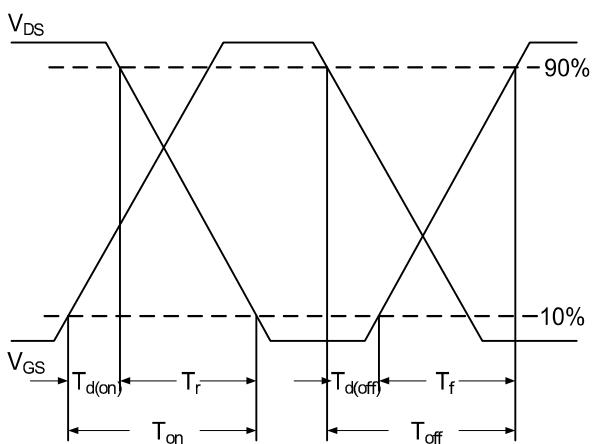
**Fig.7 Capacitance**



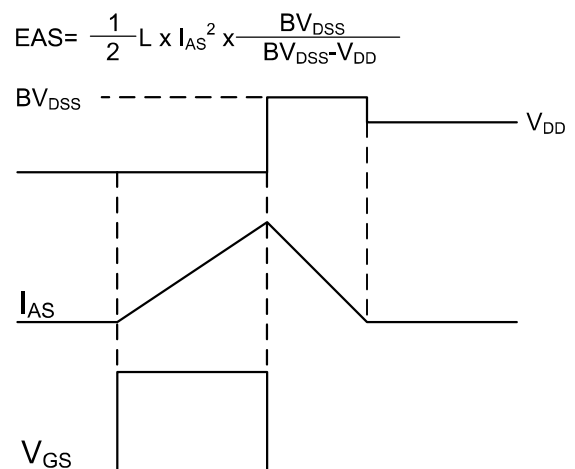
**Fig.8 Safe Operating Area**



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



**Fig.10 Switching Time Waveform**

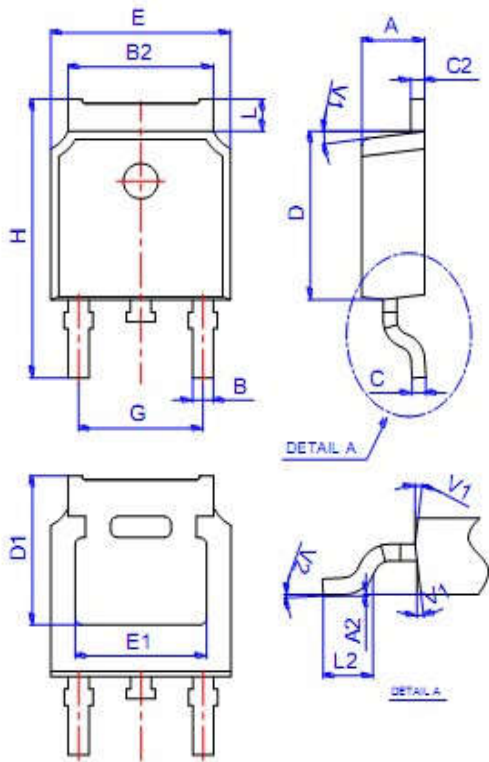


**Fig.11 Unclamped Inductive Switching Waveform**

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			



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