

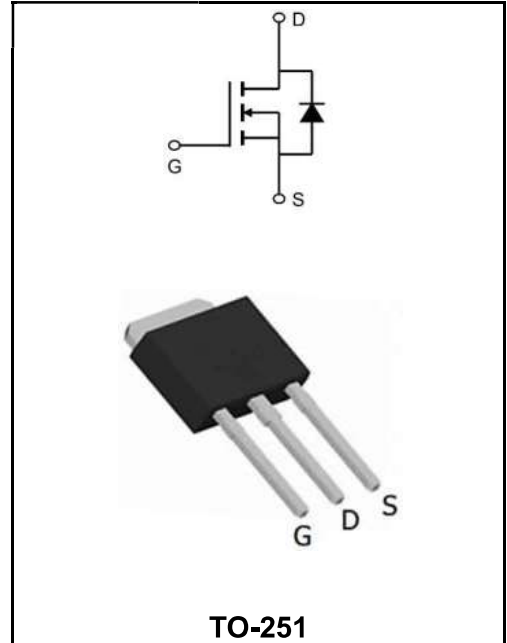
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

$I_D$	14.1A
$V_{DSS}$	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 105mΩ (Type:88 mΩ)

Application

- ◆ Load Switch
- ◆ PWM Application
- ◆ Power management



Product Specification Classification

Part Number	Package	Marking	Pack
YFW15N10AMJ	TO-251	YFW 15N10AMJ XXXXX	4000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	$V_{DS}$	100	V
Gate - Source Voltage	$V_{GS}$	±20	V
Drain Current, $V_{GS}$ @ 10V @T <sub>C</sub> =25°C	$I_D$	14.1	A
Drain Current, $V_{GS}$ @ 10V @T <sub>C</sub> =100°C	$I_D$	8.1	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	28	A
Total Power Dissipation @T <sub>C</sub> =25°C	$P_D$	20.8	W
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	$P_D$	2	W
Single Pulse Avalanche Energy <sup>4</sup>	$E_{AS}$	8	mJ
Storage Temperature Range	$T_{STG}$	-55 to +150	°C
Operating Junction Temperature Range	$T_J$	-55 to +150	°C
Maximum Thermal Resistance, Junction-case	$R_{thj-c}$	6	°C/W
Maximum Thermal Resistance, Junction ambient	$R_{thj-a}$	62.5	°C/W

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

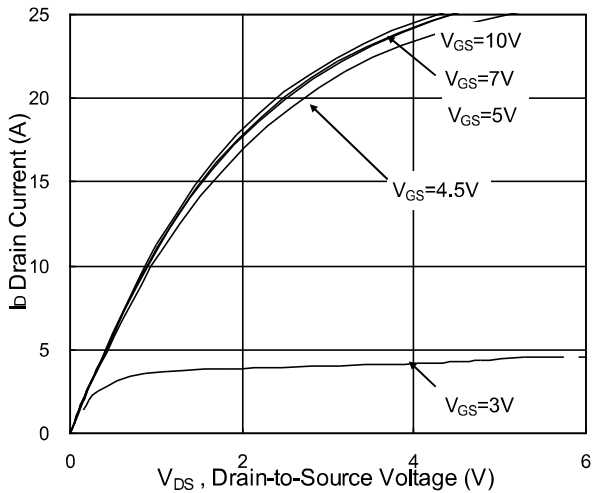
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	<b>V(BR)DSS</b>	100	107	-	<b>V</b>
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	<b>I<sub>DSS</sub></b>	-	-	1.0	<b>μA</b>
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	<b>V<sub>GS(th)</sub></b>	1.0	2.0	2.5	<b>V</b>
Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=10A$	<b>R<sub>DS(ON)</sub></b>	-	88	105	<b>mΩ</b>
	$V_{GS}=4.5V, I_D=8A$		-	93	125	
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$	<b>C<sub>iss</sub></b>	-	610	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	40	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	25	-	
Total Gate Charge	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=10A$	<b>Q<sub>g</sub></b>	-	12	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	2.2	-	
Gate-Drain("Miller") Charge		<b>Q<sub>gd</sub></b>	-	2.5	-	
Turn-on delay time	$V_{DS}=30V$ $I_D=5A$ $R_G=1.8\Omega$ $V_{GS}=10V$	<b>t<sub>d(on)</sub></b>	-	7	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	5	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	16	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	6	-	
Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V, \text{ Force Current}$	<b>I<sub>S</sub></b>	-	-	10	<b>A</b>
Pulsed Source Current <sup>2,5</sup>		<b>I<sub>SM</sub></b>	-	-	40	<b>A</b>
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=10A$	<b>V<sub>SD</sub></b>	-	-	1.2	<b>V</b>
Body Diode Reverse Recovery Time	$I_F=10A, dI/dt=100A/\mu s$	<b>t<sub>rr</sub></b>	-	21	-	<b>ns</b>
Body Diode Reverse Recovery Charge		<b>Q<sub>rr</sub></b>	-	21	-	<b>nC</b>

Note :

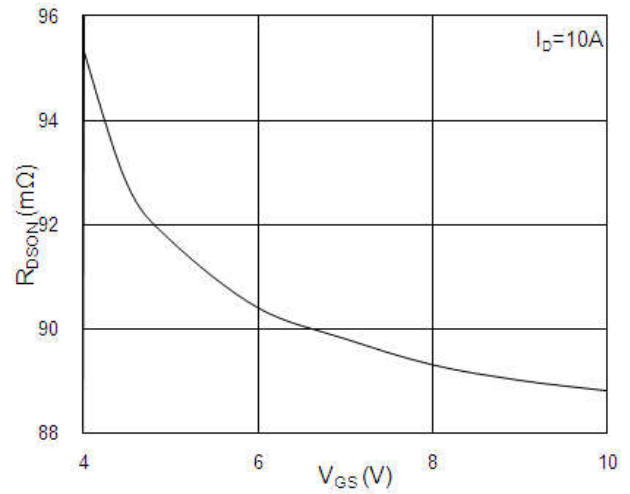
- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$
- 3.The EAS data shows Max. rating . The test condition is  $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=11A$
- 4.The power dissipation 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**

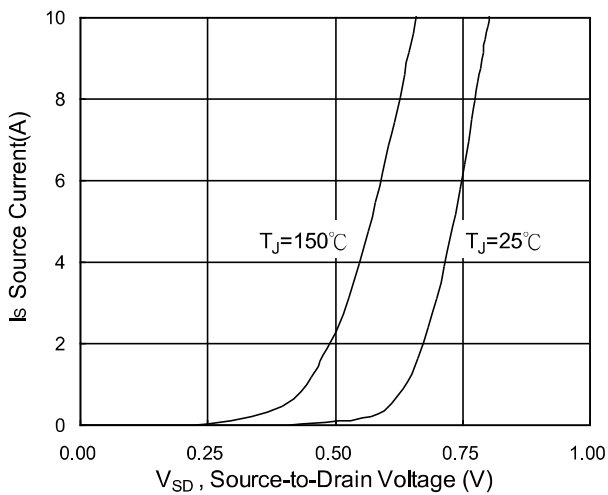
**Typical Characteristics**



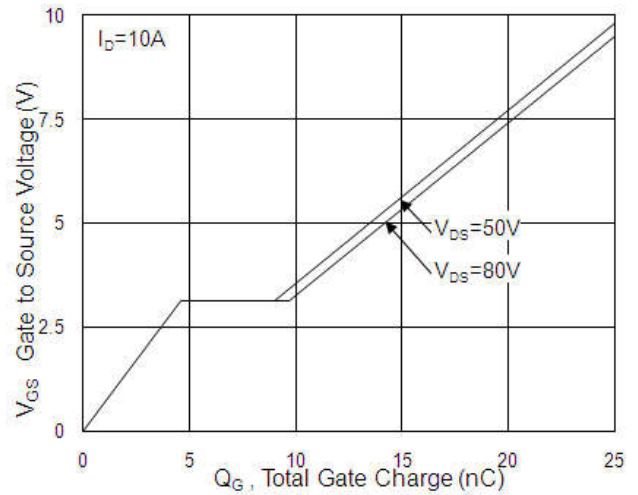
**Fig.1 Typical Output Characteristics**



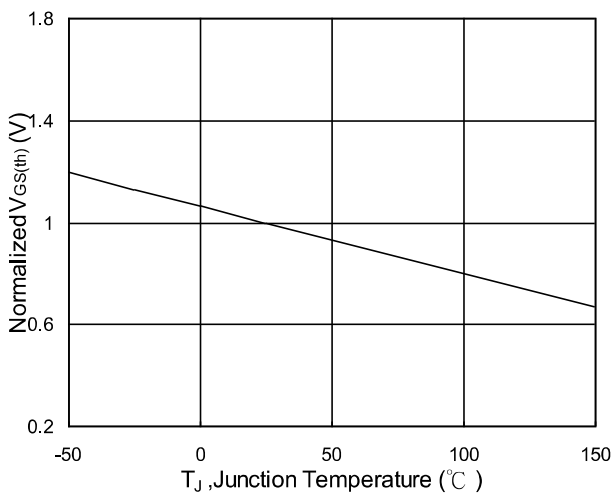
**Fig.2 On-Resistance vs. Gate-Source**



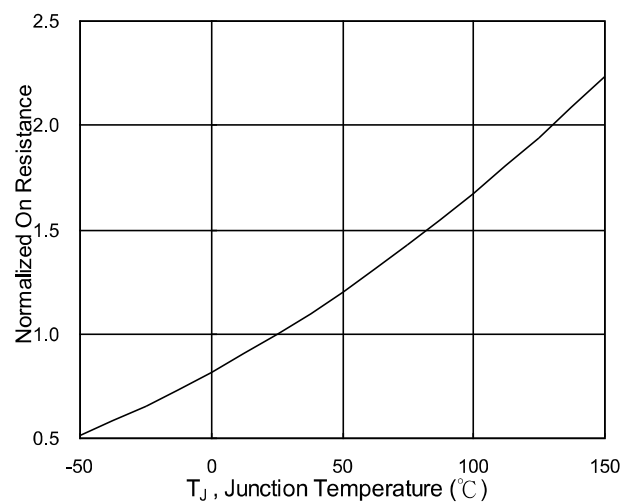
**Fig.3 Forward Characteristics Of Reverse**



**Fig.4 Gate-Charge Characteristics**

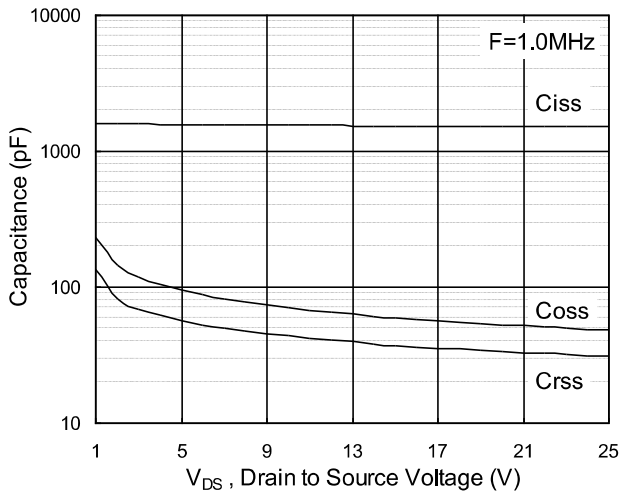


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

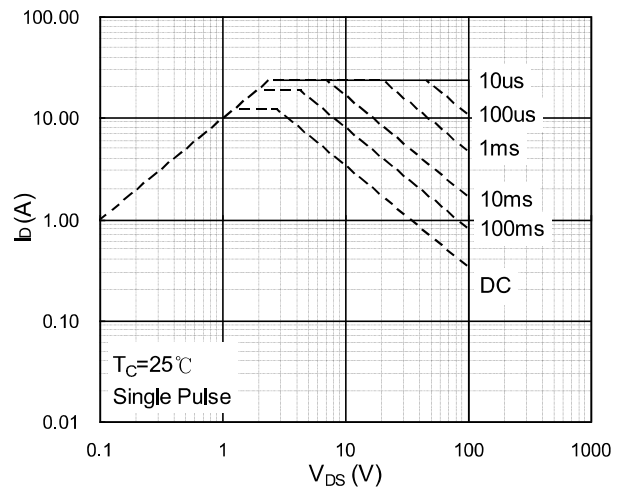


**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

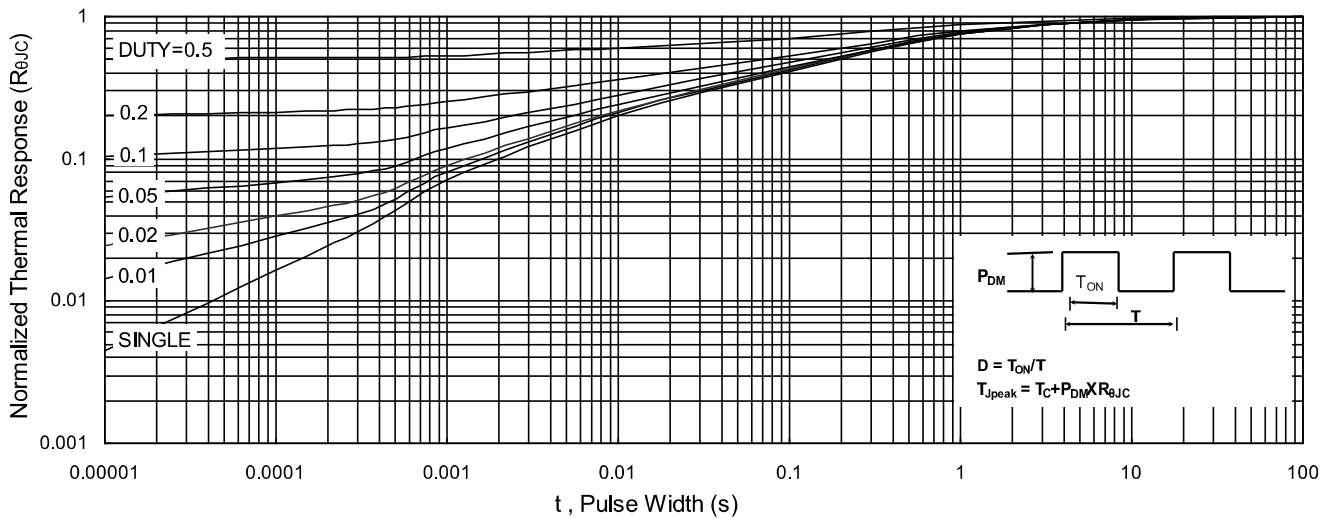
**Ratings and Characteristic Curves**



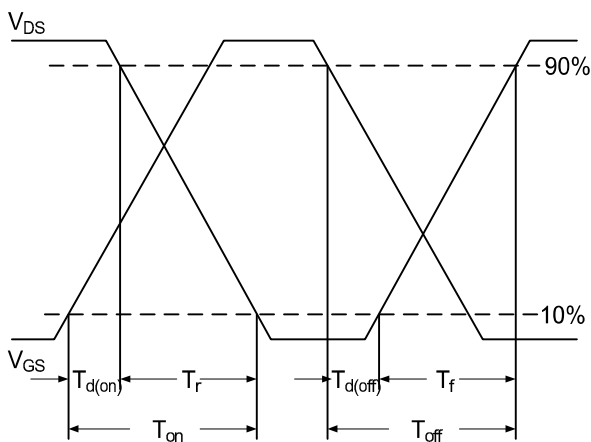
**Fig.7 Capacitance**



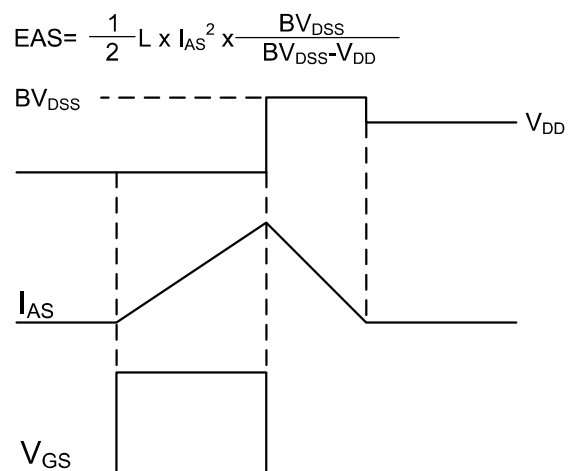
**Fig.8 Safe Operating Area**



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



**Fig.10 Switching Time Waveform**



**Fig.11 Unclamped Inductive Switching Waveform**

Package Outline Dimensions Millimeters

TO-251

	Dim.	Min.	Max.
	A	2.2	2.4
	A2	0.95	1.15
	A3	0.45	0.65
	b	0.65	0.85
	c	0.45	0.55
	D	6.45	6.75
	D2	5.2	5.4
	E	5.8	6
	E2	0.95	1.25
	e	Typ 2.3	
	e1	Typ 4.6	
	L	4	4.2
	L1	1.2	1.5
All Dimensions in millimeter			