

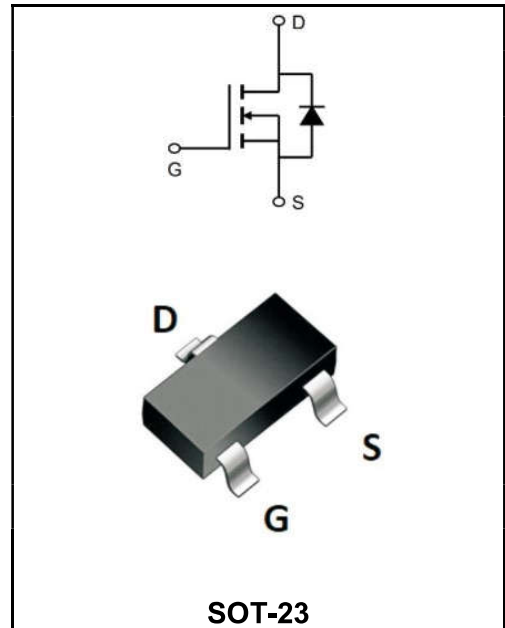
**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	2.8A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 320mΩ( <b>Type:270 mΩ</b> )

**Application**

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



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW3N10B	SOT-23	MA4	3000PCS/Tape

**Maximum Ratings at Tc=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, V <sub>GS</sub> @ 10V <sup>1</sup> @T <sub>A</sub> =25°C	<b>I<sub>D</sub></b>	2.8	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ 10V <sup>1</sup> @T <sub>A</sub> =70°C	<b>I<sub>D</sub></b>	1	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	5	<b>A</b>
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	<b>P<sub>D</sub></b>	1	<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>	125	<b>°C/W</b>
Thermal Resistance Junction-Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	80	<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	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	100	-	-	V
BVDSS Temperature Coefficient	Reference to 25°C, $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.067	-	V/°C
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=1A$	$R_{DS(ON)}$	-	260	310	mΩ
	$V_{GS}=4.5V, I_D=0.5A$		-	270	320	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	1.5	2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-4.2	-	mV/°C
Drain -Source Leakage Current	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	μA
	$V_{DS}=80V, V_{GS}=0V, T_J=55^\circ C$		-	-	5	
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=1A$	$g_{FS}$	-	2.4	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	$R_g$	-	2.8	5.6	
Total Gate Charge(10V)	$V_{DS}=80V$ $V_{GS}=10V$ $I_D=1A$	$Q_g$	-	9.7	13.6	nC
Gate-Source Charge		$Q_{gs}$	-	1.6	2.2	
Gate-Drain Charge		$Q_{gd}$	-	1.7	2.4	
Turn-on delay time	$V_{DD}=50V$ $V_{GS}=10V$ $R_G=3.3$ $I_D=1A$	$t_{d(on)}$	-	1.6	3.2	ns
Rise Time		$T_r$	-	19	34	
Turn-Off Delay Time		$t_{d(OFF)}$	-	13.6	27	
Fall Time		$t_f$	-	19	38	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	508	711	pF
Output Capacitance		$C_{oss}$	-	29	41	
Reverse Transfer Capacitance		$C_{rss}$	-	16.4	23	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V, \text{Force Current}$	$I_S$	-	-	1.2	A
Pulsed Source Current <sup>2,4</sup>		$I_{SM}$	-	-	5	A
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	$V_{SD}$	-	-	1.2	V
Reverse Recovery Time	$I_F=1A, dI/dt=100A/\mu s,$ $T_J=25^\circ C$	$t_{rr}$	-	14	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	9.3	-	nC

Note :

1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.

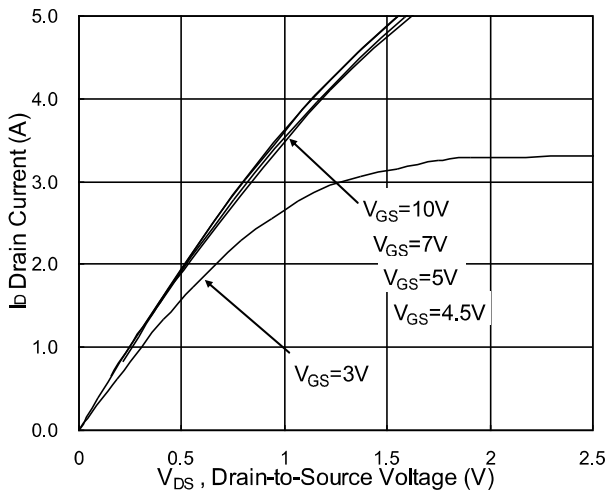
2.The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$

3.The power dissipation is limited by 150°C junction temperature

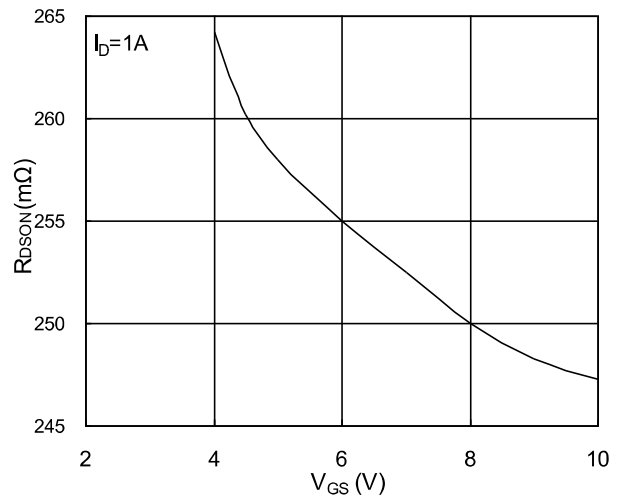
4 .The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

**Ratings and Characteristic Curves**

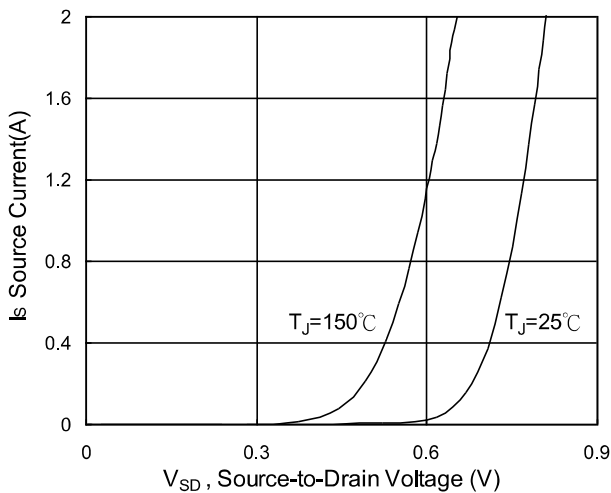
**Typical Characteristics**



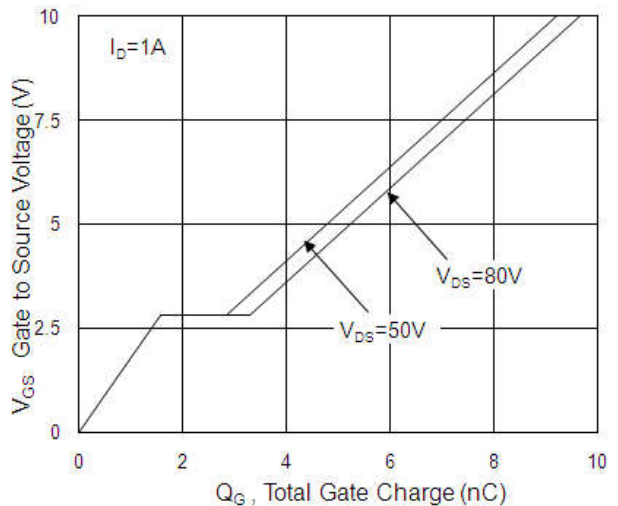
**Fig.1 Typical Output Characteristics**



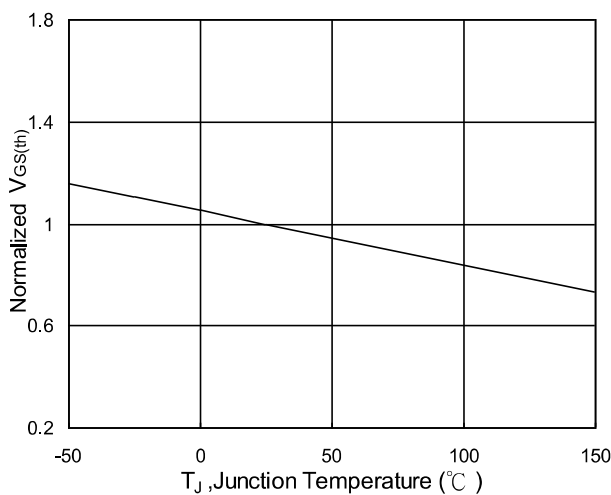
**Fig.2 On-Resistance vs. Gate-Source**



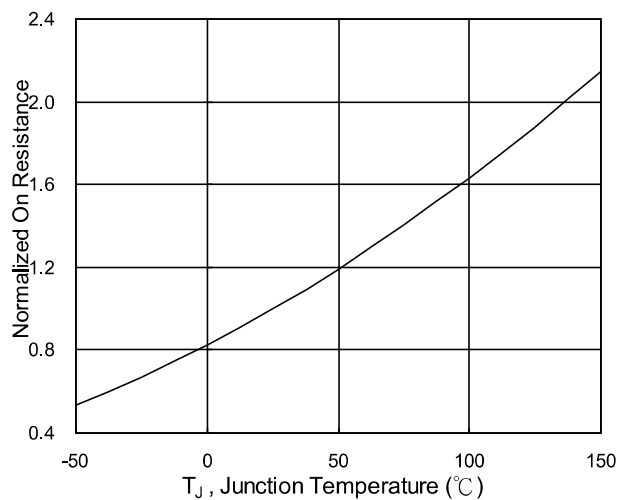
**Fig.3 Forward Characteristics of Reverse**



**Fig.4 Gate-Charge Characteristics**

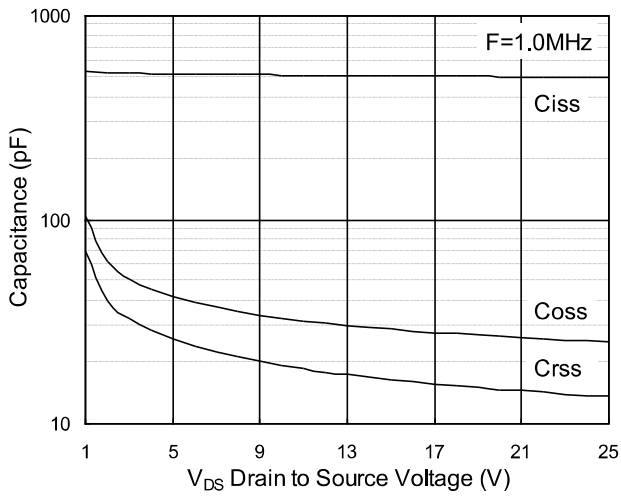


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

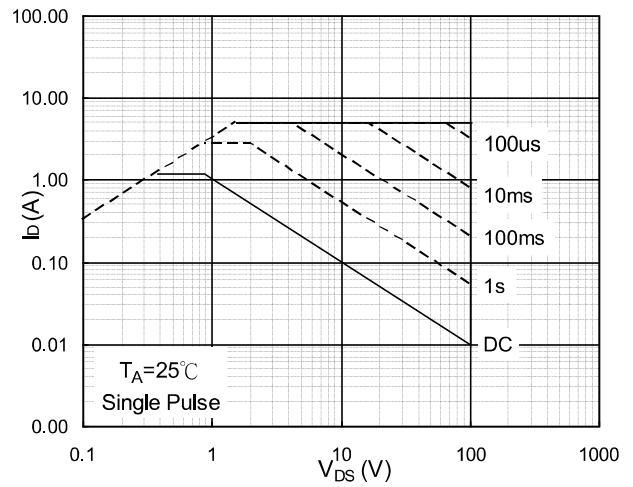


**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

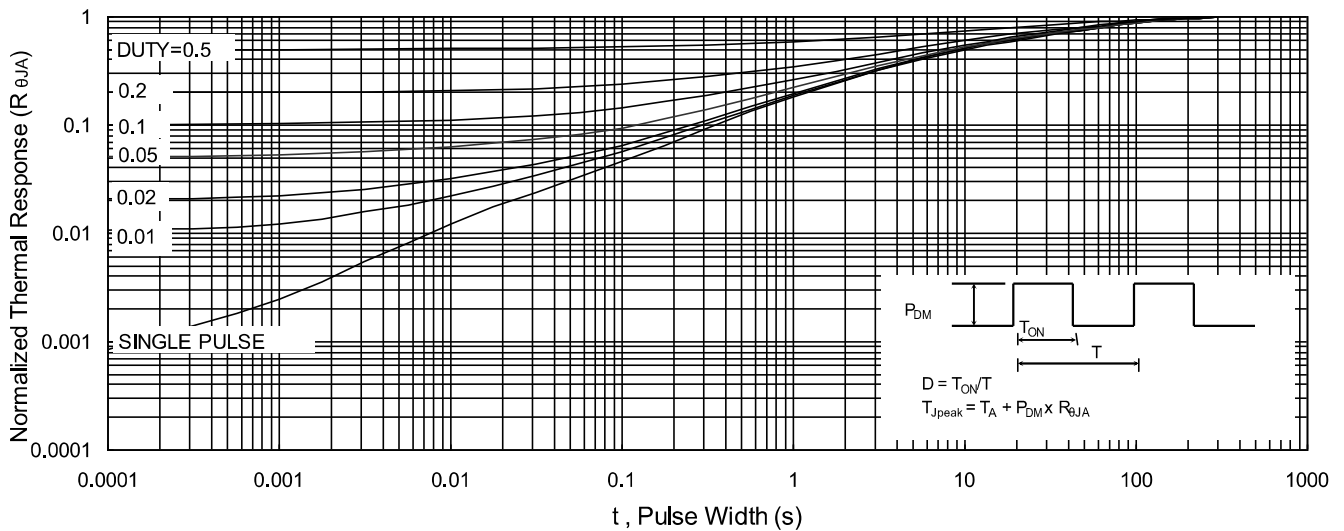
**Ratings and Characteristic Curves**



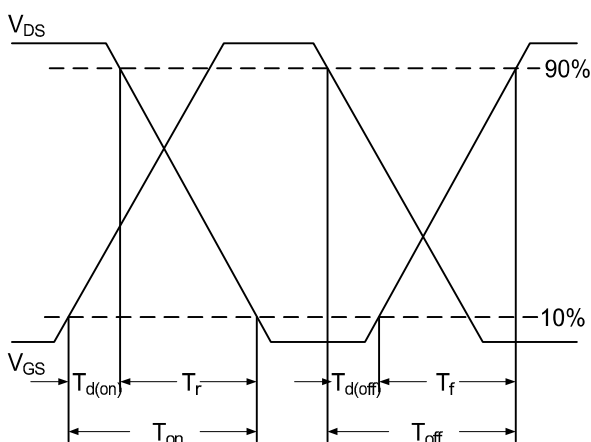
**Fig.7 Capacitance**



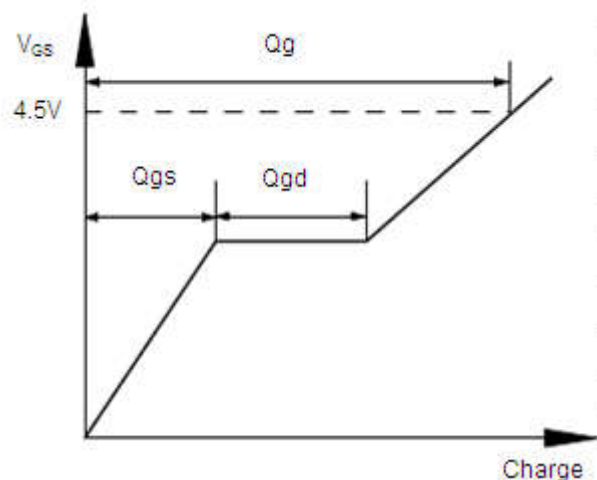
**Fig.8 Safe Operating Area**



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

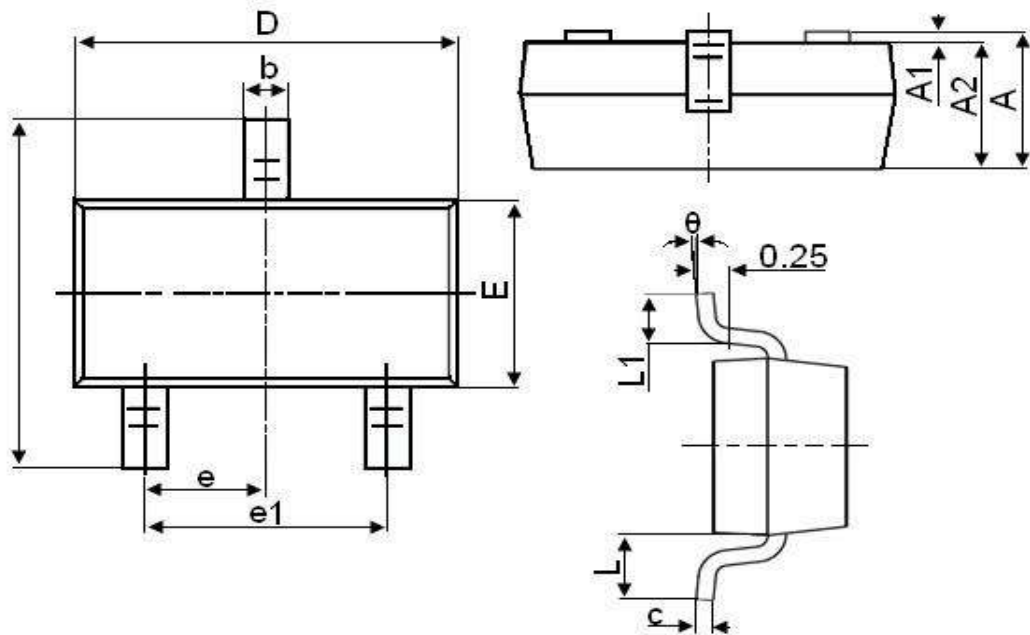


**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**

SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°