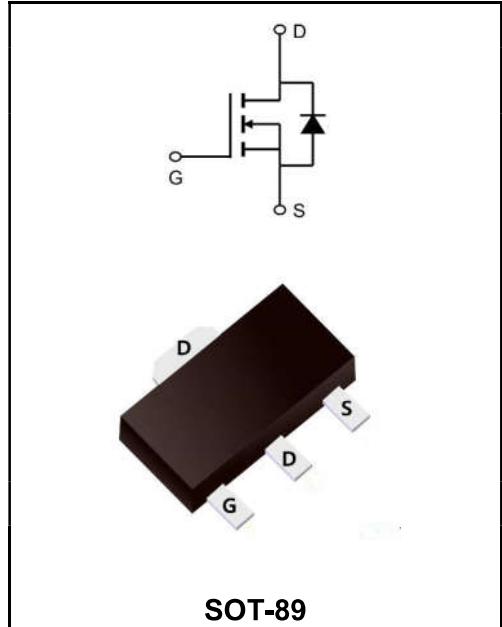


**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	5A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 110mΩ ( <b>Type:88 mΩ</b> )



**Application**

- ◆Lithium battery protection
- ◆Wireless impact
- ◆Mobile phone fast charging

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW5N10SI	SOT-89	5N10SI	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>	5	<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>	3.6	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	15	<b>A</b>
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25 °C	<b>P<sub>D</sub></b>	3.5	<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>	85	<b>°C/W</b>
Thermal Resistance Junction-Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	40	<b>°C/W</b>

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

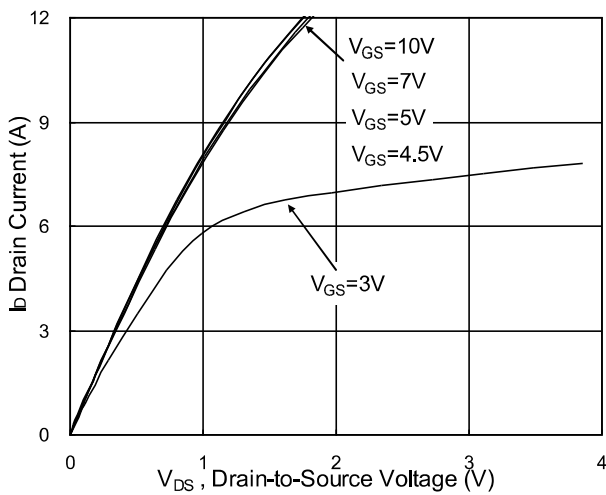
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	100	-	-	V
BVDSS Temperature Coefficient	Reference to 25°C , $I_D=1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	0.122	-	V/°C
Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=3A$	$R_{DS(on)}$	-	88	110	mΩ
	$V_{GS}=4.5V, I_D=2A$		-	95	125	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	-4.84	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	10	μA
	$V_{DS}=100V, V_{GS}=0V, T_J=55^\circ C$		-	-	100	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	nA
Forward Transconductance	$V_{DS}=5V, I_D=2A$	$g_{fs}$	-	10.2	-	S
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	$R_g$	-	2.3	4.6	Ω
Total Gate Charge(10V)	$V_{DS}=60V$ $V_{GS}=10V$ $I_D=2A$	$Q_g$	-	25.5	-	nC
Gate-Source Charge		$Q_{gs}$	-	4.2	-	
Gate-Drain Charge		$Q_{gd}$	-	4.3	-	
Turn-on delay time	$V_{DD}=50V$ $V_{GS}=10V$ $I_D=1A$ $R_G=3.3\Omega$	$t_{d(on)}$	-	17.3	-	ns
Rise Time		$T_r$	-	2.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	50	-	
Fall Time		$t_f$	-	2.8	-	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	$C_{iss}$	-	677	-	pF
Output Capacitance		$C_{oss}$	-	46	-	
Reverse Transfer Capacitance		$C_{rss}$	-	32	-	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V, \text{Force Current}$	$I_S$	-	-	2	A
Pulsed Source Current <sup>2,4</sup>		$I_{SM}$	-	-	4	A
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	$V_{SD}$	-	-	1.2	V

Note :

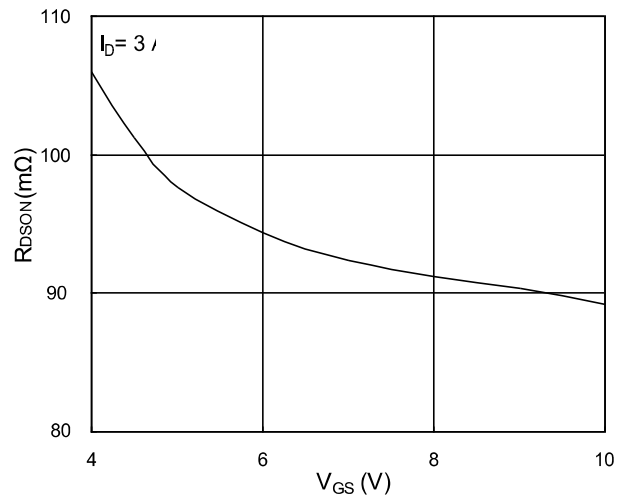
- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as  $I_D$  and  $I_{DM}$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

**Ratings and Characteristic Curves**

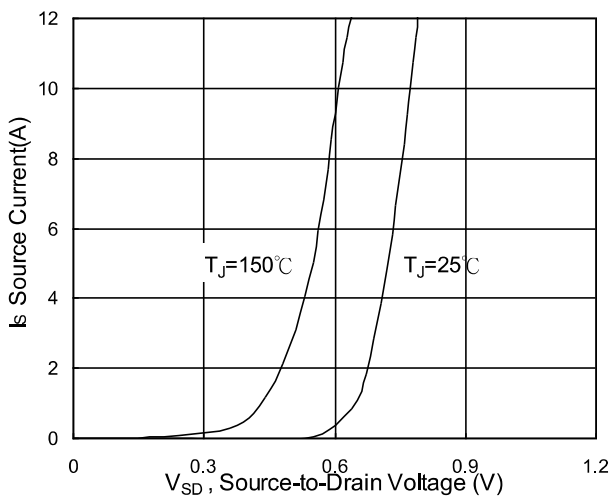
**Typical Characteristics**



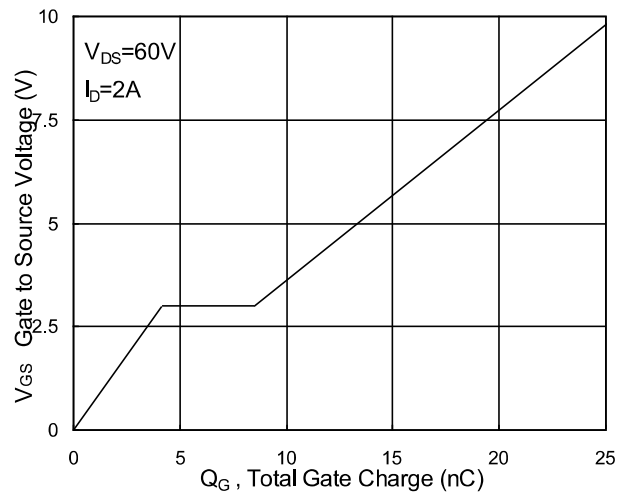
**Fig.1 Typical Output Characteristics**



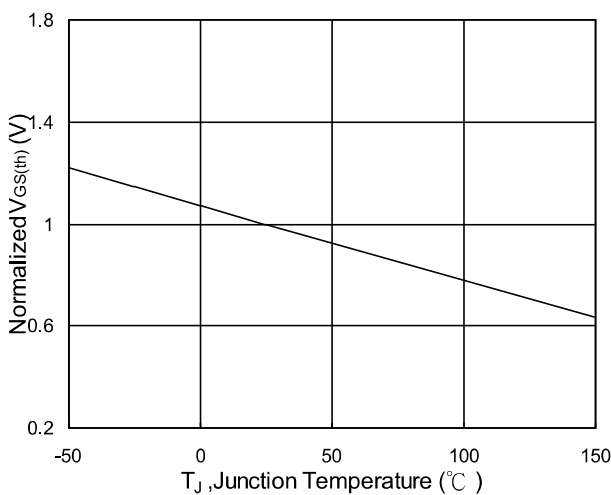
**Fig.2 On-Resistance vs. Gate-Source**



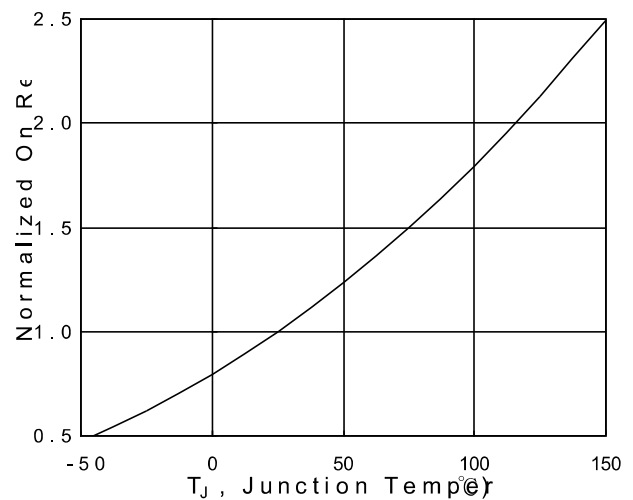
**Fig.3 Forward Characteristics Of Reverse**



**Fig.4 Gate-Charge Characteristics**

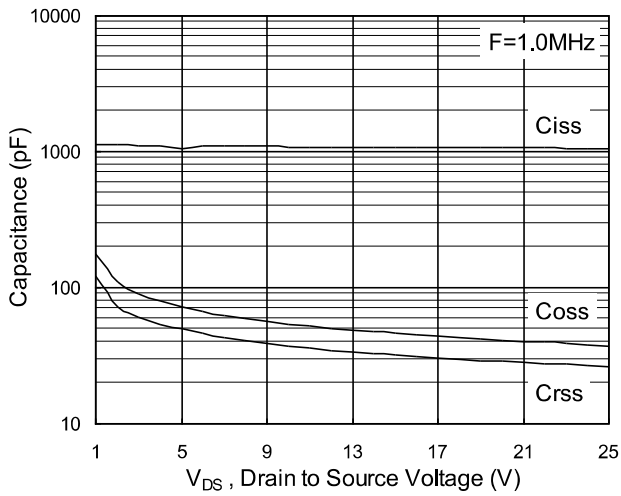


**Fig.5 Normalized V<sub>GS(th)</sub> vs. T<sub>J</sub>**

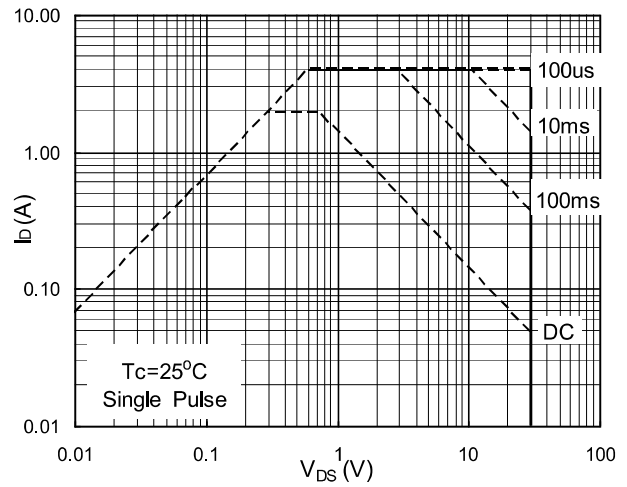


**Fig.6 Normalized R<sub>DS(on)</sub> vs. T<sub>J</sub>**

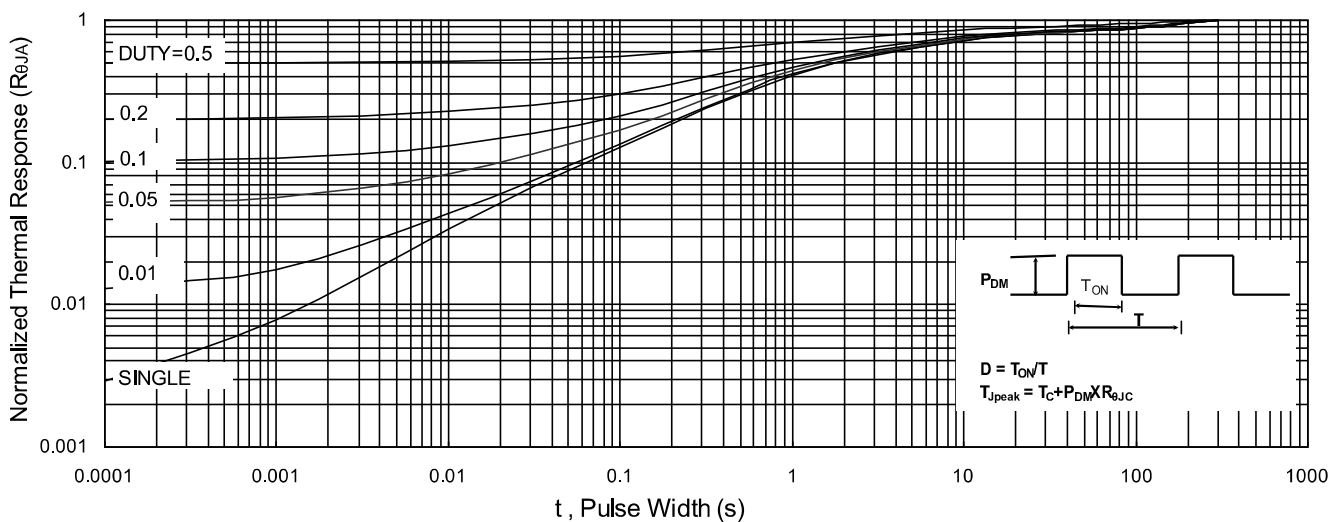
**Ratings and Characteristic Curves**



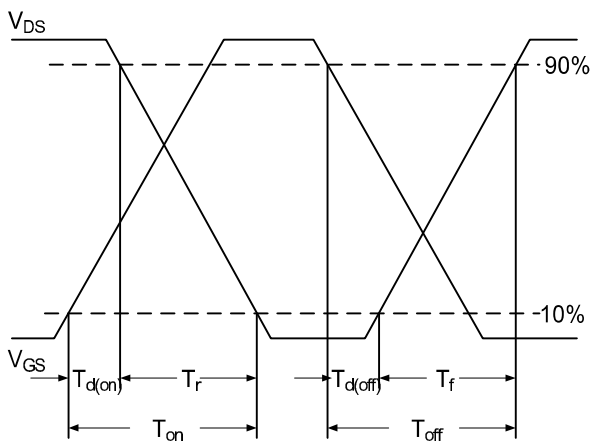
**Fig.7 Capacitance**



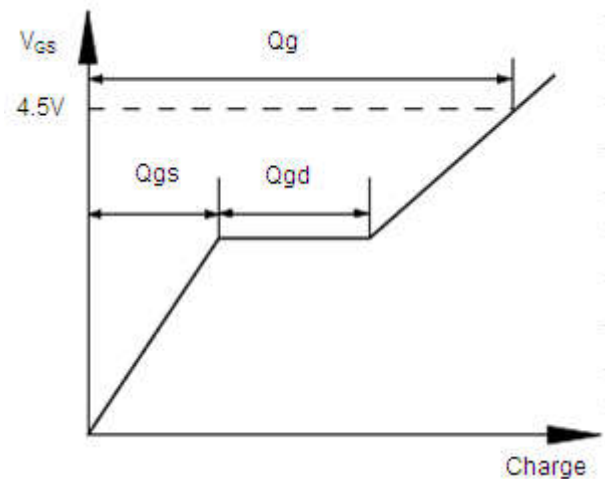
**Fig.8 Safe Operating Area**



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

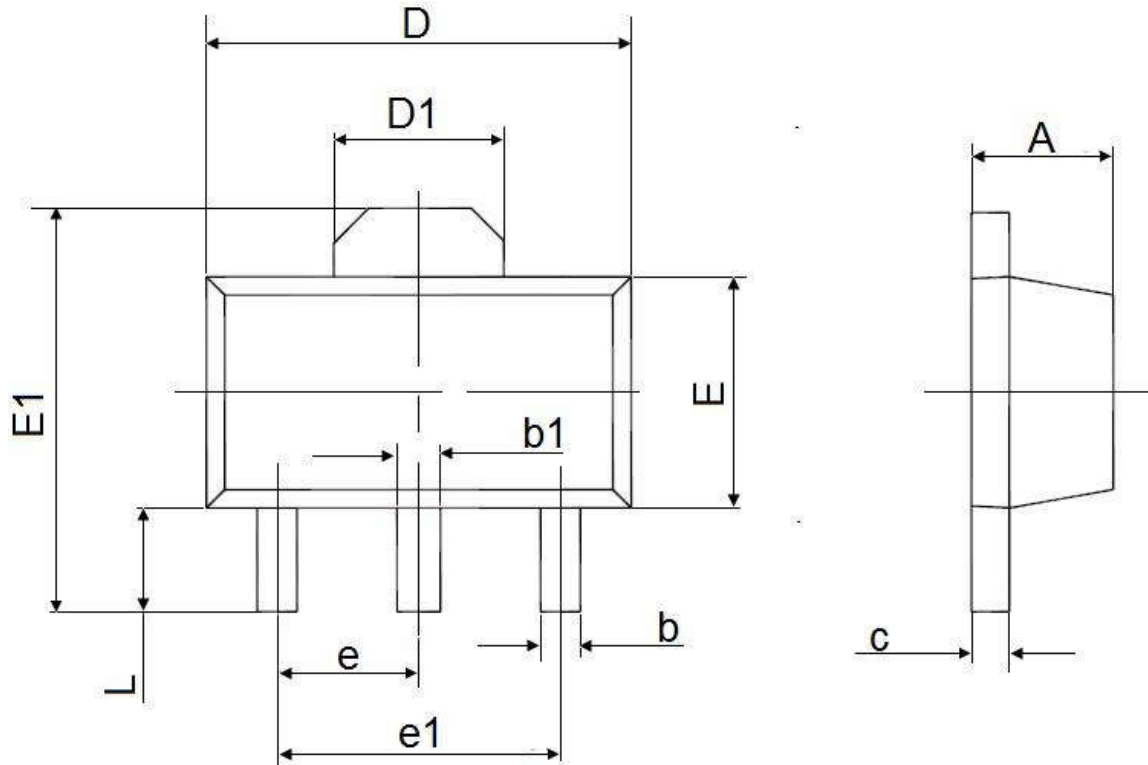


**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**

**SOT-89**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047