

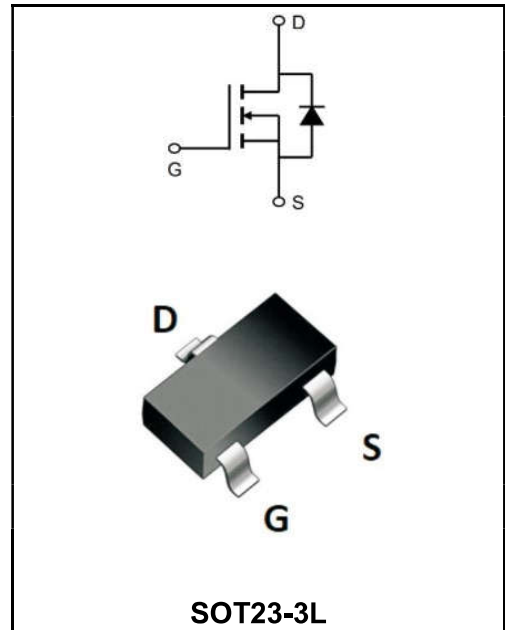
**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	6A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ</sub>(@V<sub>GS</sub>=10V)</b>	< 125mΩ( <b>Type:105 mΩ</b> )

**Application**

- ◆Automotive lighting
- ◆Load switch
- ◆Uninterruptible power supply



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW6N10MI	SOT23-3L	1006	3000PCS/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, V <sub>GS</sub> @ 10V <sup>1</sup> @T <sub>A</sub> =25°C	I <sub>D</sub>	6	A
Continuous Drain Current, V <sub>GS</sub> @ 10V <sup>1</sup> @T <sub>A</sub> =70°C	I <sub>D</sub>	3.5	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	18	A
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	P <sub>D</sub>	3.1	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(steady state) <sup>1</sup>	R <sub>θJA</sub>	135	°C/W
Thermal Resistance Junction-ambient(t<10s) <sup>1</sup>	R <sub>θJA</sub>	40	°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>	$V_{GS}=10V, I_D=4A$	$R_{DS(ON)}$	-	105	125	<b>mΩ</b>
	$V_{GS}=4.5V, I_D=2A$		-	120	145	
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.7	2.5	<b>V</b>
Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ C$	$I_{DSS}$	-	-	1	<b>μA</b>
	$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ C$		-	-	50	
Gate- Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	$I_{GSS}$	-	-	±100	<b>nA</b>
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	$R_g$	-	2.3	4.6	<b>Ω</b>
Total Gate Charge(10V)	$V_{DS}=30V$ $V_{GS}=10V$ $I_D=4A$	$Q_g$	-	3.57	-	<b>nC</b>
Gate-Source Charge		$Q_{gs}$	-	0.76	-	
Gate-Drain Charge		$Q_{gd}$	-	0.71	-	
Turn-on delay time	$V_{DD}=30V$ $V_{GS}=10V$ $R_G=3.3\Omega$ $I_D=1A$	$t_{d(on)}$	-	11	-	<b>ns</b>
Rise Time		$T_r$	-	6	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	30	-	
Fall Time		$t_f$	-	4	-	
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	$C_{iss}$	-	582	-	<b>pF</b>
Output Capacitance		$C_{oss}$	-	330	-	
Reverse Transfer Capacitance		$C_{rss}$	-	36	-	
Continuous Source Current <sup>1,4</sup>	$V_G=V_D=0V, \text{ Force Current}$	$I_S$	-	-	2	<b>A</b>
Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	$V_{SD}$	-	-	1.2	<b>V</b>

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z 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

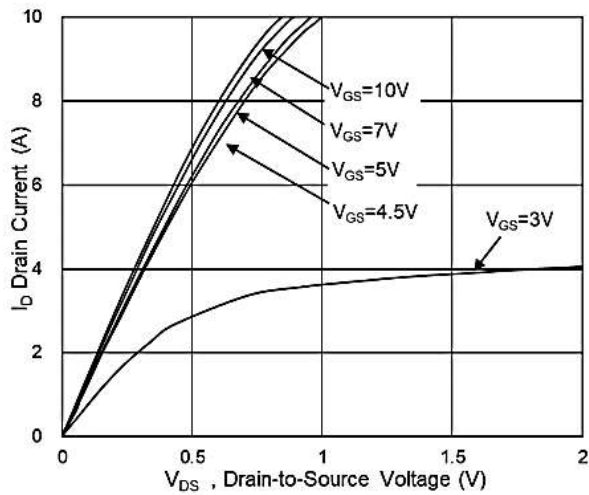


Fig.1 Typical Output Characteristics

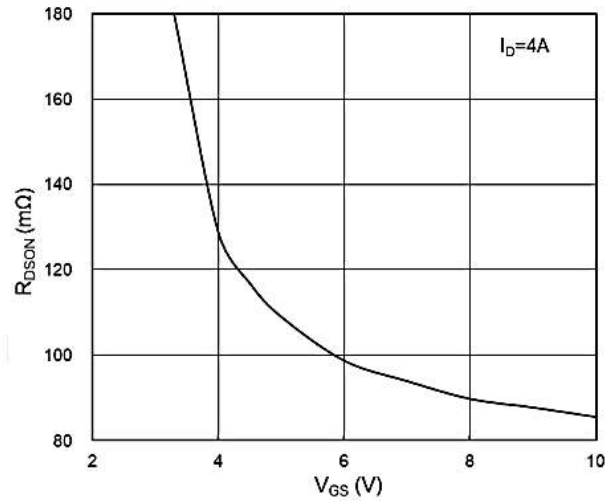


Fig.2 On-Resistance vs G-S Voltage

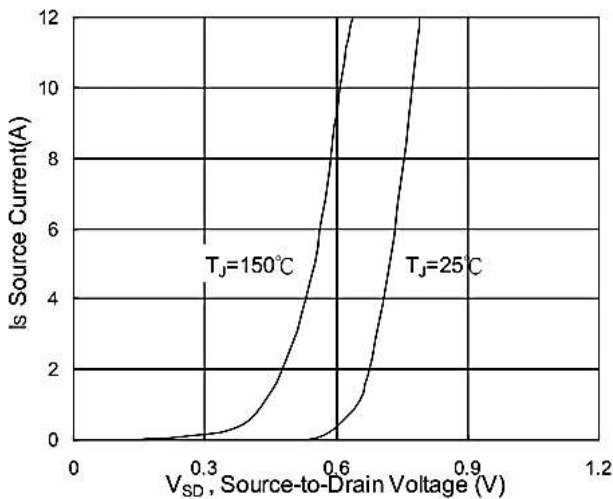


Fig.3 Source Drain Forward Characteristics

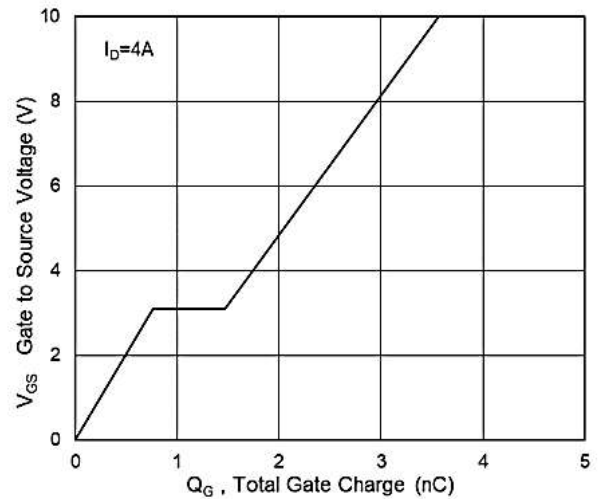


Fig.4 Gate-Charge Characteristics

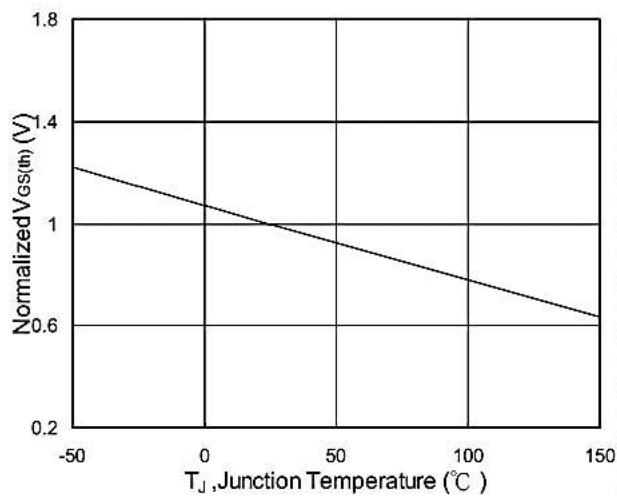


Fig.5 Normalized  $V_{GS(th)}$  vs  $T_J$

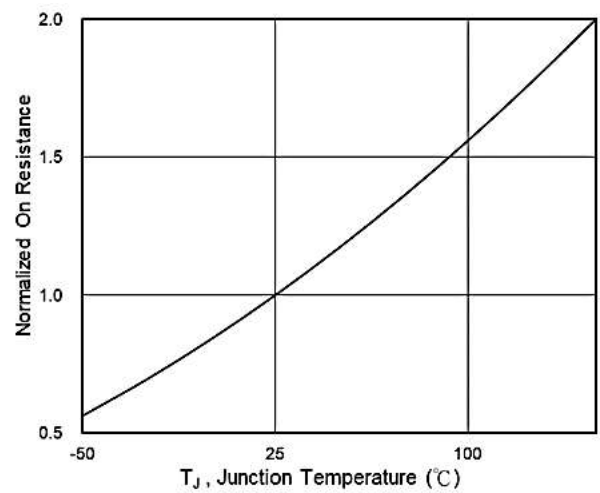
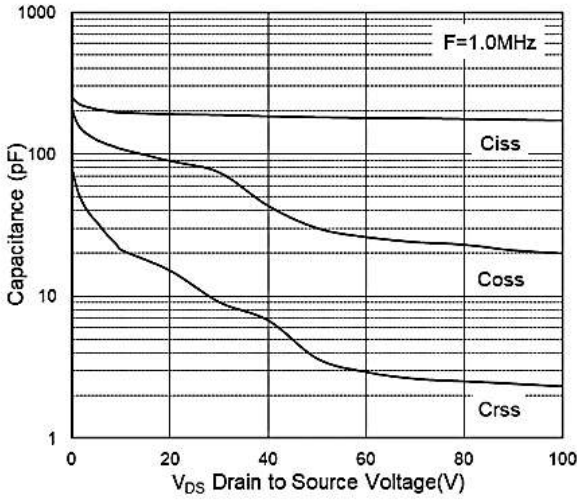
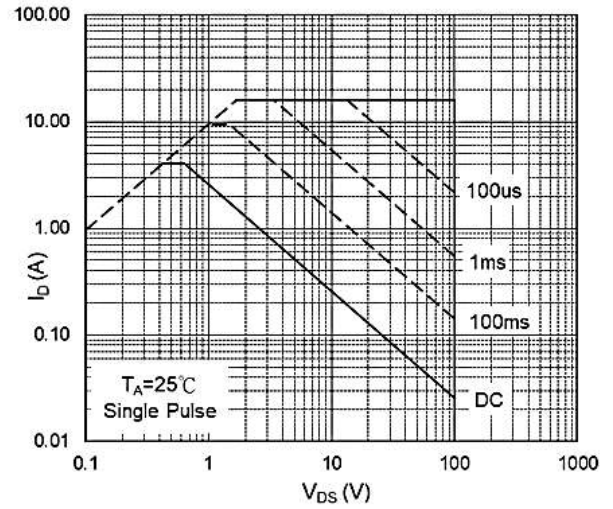


Fig.6 Normalized  $R_{DSON}$  vs  $T_J$

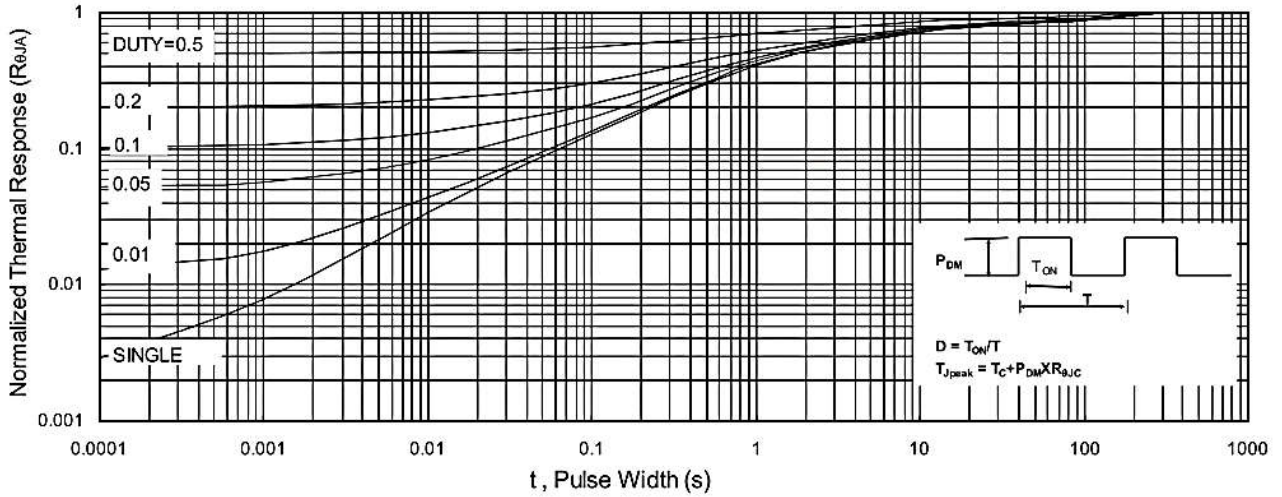
Ratings and Characteristic Curves



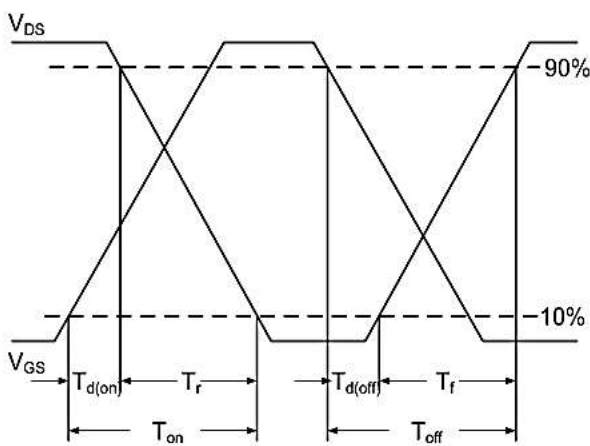
**Fig.7 Capacitance**



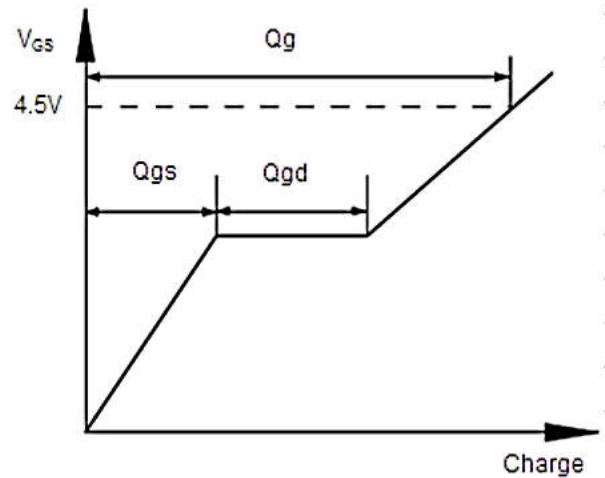
**Fig.8 Safe Operating Area**



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

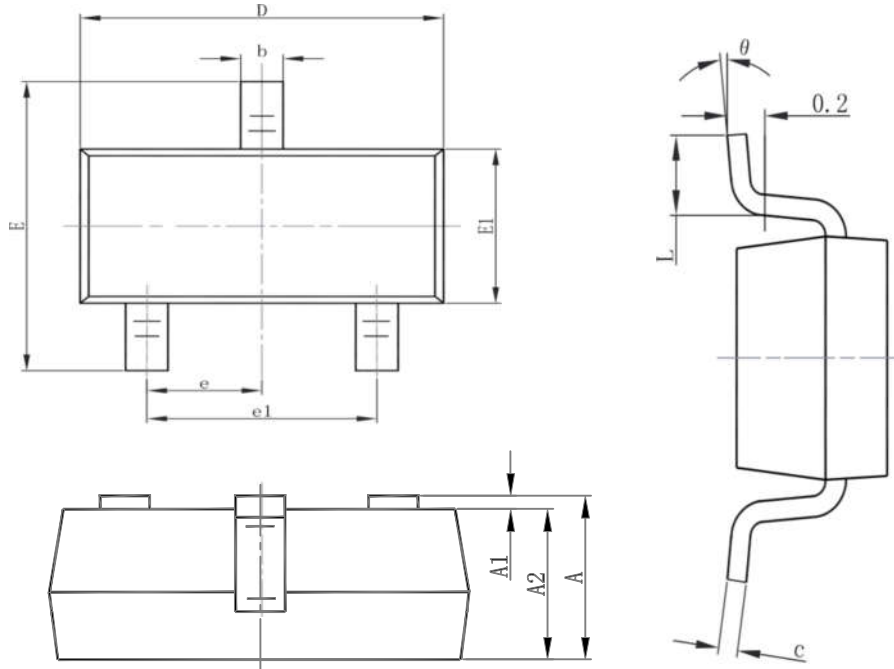


**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**

**SOT23-3L**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°