

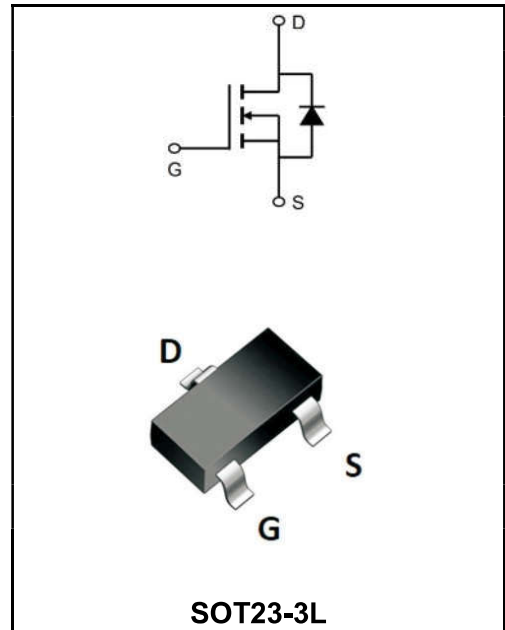
**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	8A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 100mΩ ( <b>Type:80 mΩ</b> )

**Application**

- ◆Automotive lighting
- ◆Load switch
- ◆PSE



**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW8N10MI	SOT23-3L	1008	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
Drain Current, V <sub>GS</sub> @ 10V @T <sub>C</sub> =25°C	I <sub>D</sub>	8	A
Drain Current, V <sub>GS</sub> @ 10V @T <sub>C</sub> =100°C	I <sub>D</sub>	6.5	A
Pulsed Drain Current <sup>1</sup>	I <sub>DM</sub>	24	A
Total Power Dissipation @T <sub>C</sub> =25°C	P <sub>D</sub>	30	W
Total Power Dissipation <sup>3</sup> @T <sub>A</sub> =25°C	P <sub>D</sub>	2.7	W
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C
Maximum Thermal Resistance, Junction ambient	R <sub>θJA</sub>	100	°C/W
Maximum Thermal Resistance, Junction-case	R <sub>θJC</sub>	5.1	°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>	1.2	1.85	2.5	<b>V</b>
Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D=5A$	<b>R<sub>DS(ON)</sub></b>	-	80	100	<b>mΩ</b>
	$V_{GS}=4.5V, I_D=3A$		-	95	125	
Forward Transconductance	$V_{DS}=5V, I_D=5A$	<b>g<sub>FS</sub></b>	-	14	-	<b>S</b>
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	<b>R<sub>g</sub></b>	-	3	-	<b>Ω</b>
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	<b>C<sub>iss</sub></b>	-	1100	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	55	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	40	-	
Total Gate Charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=5A$	<b>Q<sub>g</sub></b>	-	11.9	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	2.8	-	
Gate-Drain("Miller") Charge		<b>Q<sub>gd</sub></b>	-	1.7	-	
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>	-	3.8	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	25.8	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	16	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	8.8	-	
Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V, \text{ Force Current}$	<b>I<sub>S</sub></b>	-	-	14.6	<b>A</b>
Pulsed Source Current <sup>2,5</sup>		<b>I<sub>SM</sub></b>	-	-	25	<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>

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  $\cong 300\mu s$  , duty cycle  $\cong 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

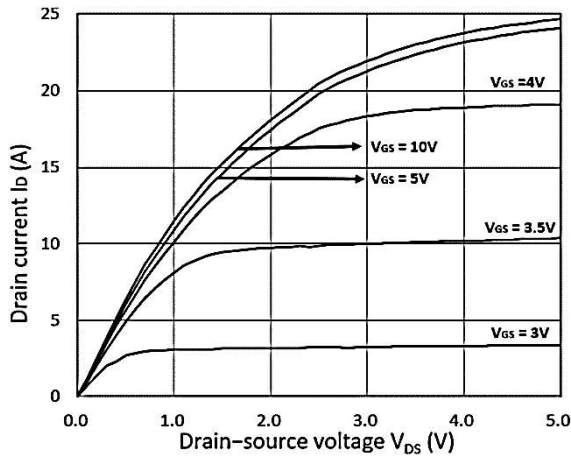


Figure 1. Output Characteristics

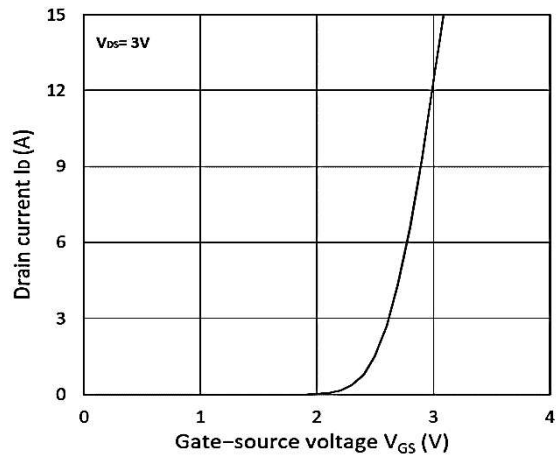


Figure 2. Transfer Characteristics

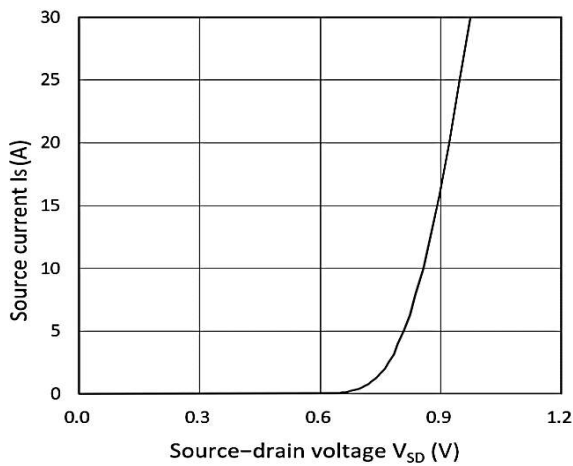


Figure 3. Forward Characteristics of Reverse

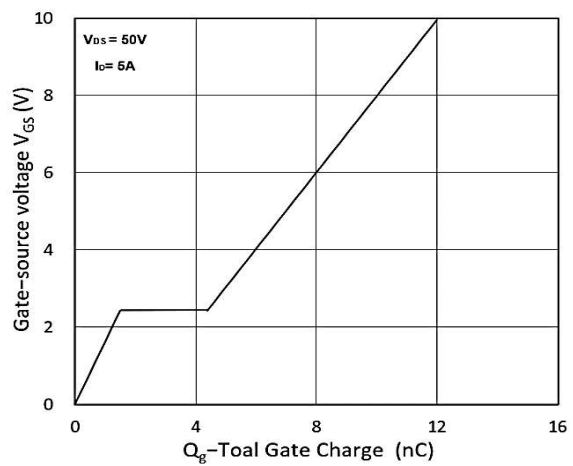


Figure 4. Gate Charge Characteristics

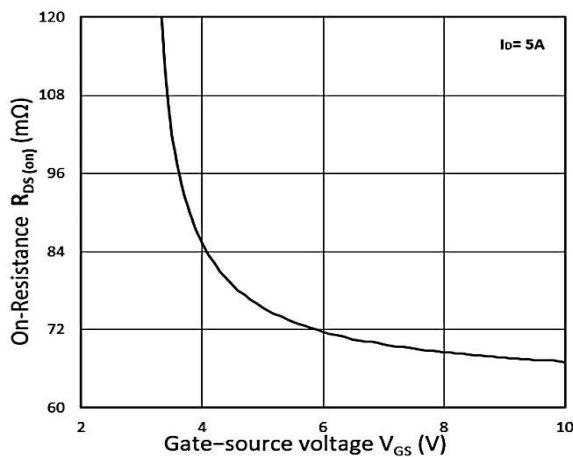


Figure 5.  $R_{DS(on)}$  vs.  $V_{GS}$

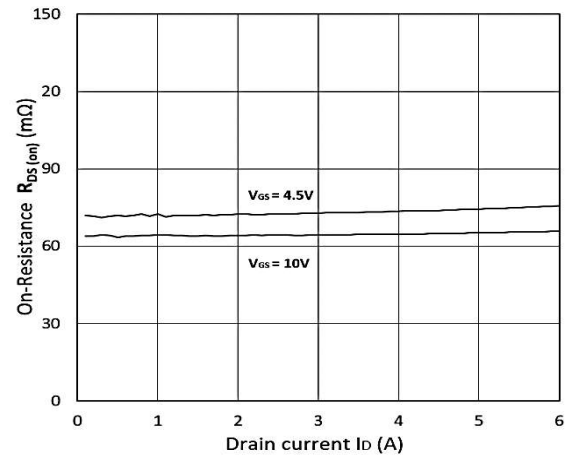


Figure 6.  $R_{DS(on)}$  vs.  $I_D$

Ratings and Characteristic Curves

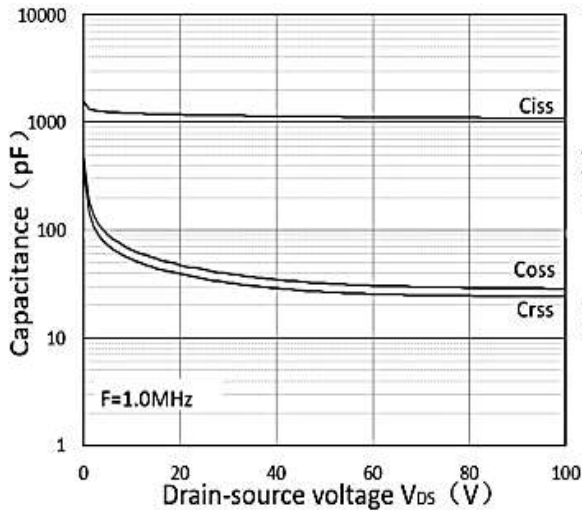


Figure 7. Capacitance Characteristics

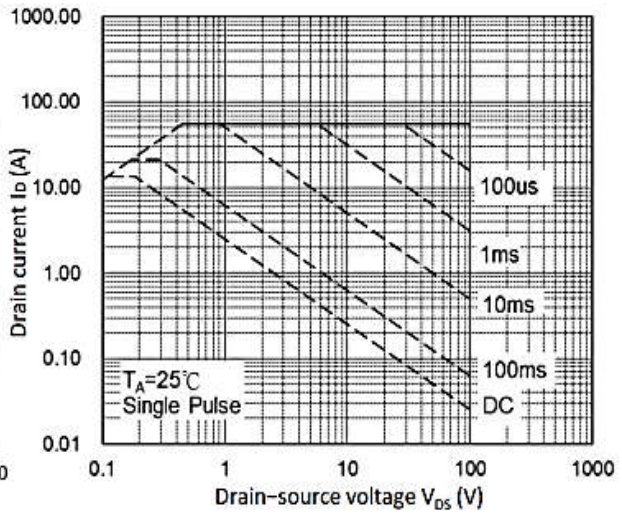


Figure 8. Safe Operating Area

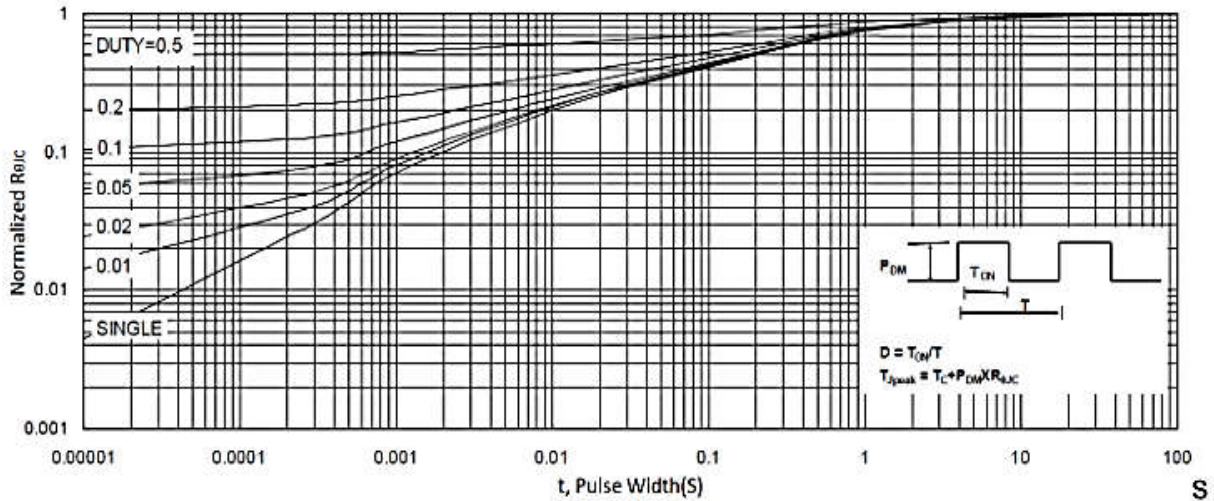


Figure 9. Normalized Maximum Transient Thermal Impedance

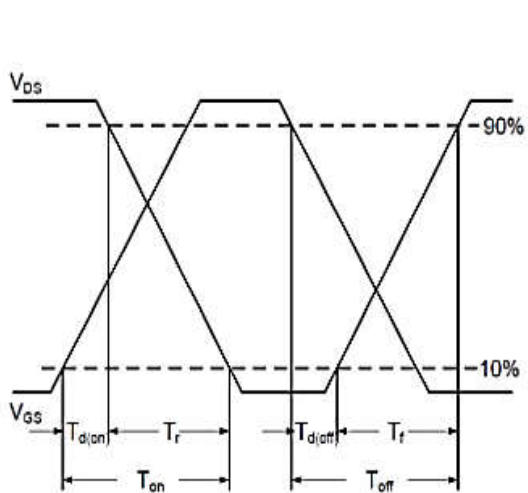


Figure 10. Switching Time Waveform

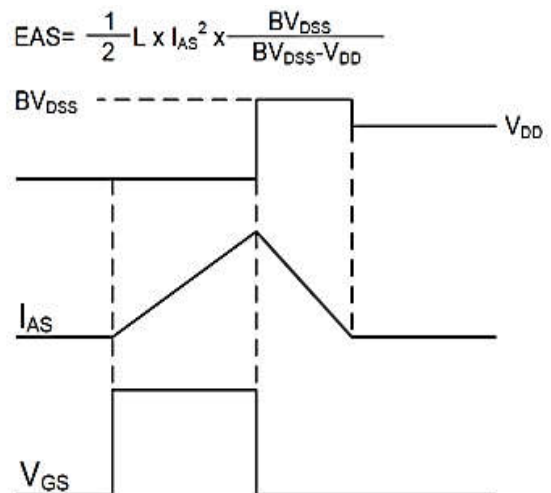
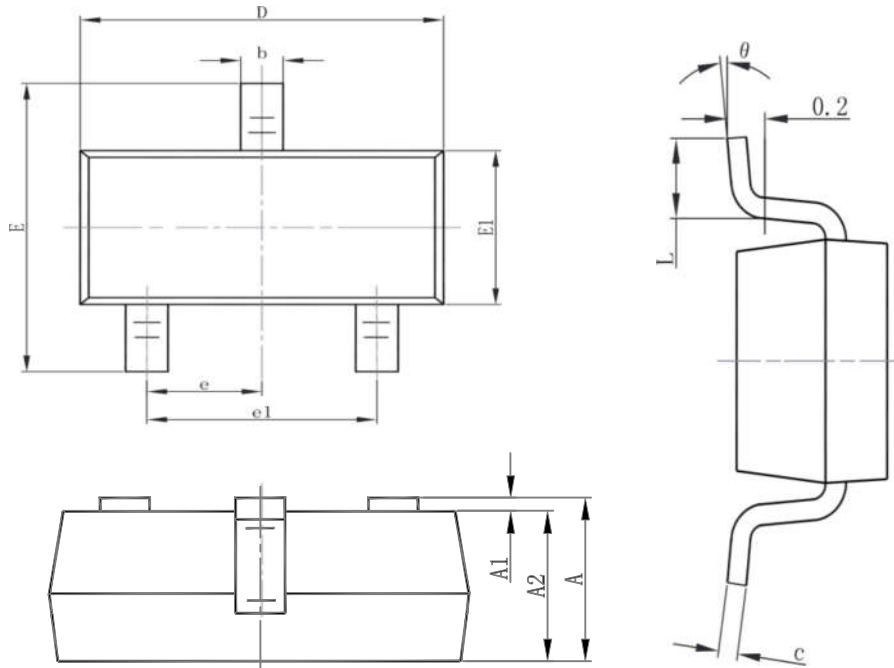


Figure 11. Unclamped Inductive Switching Waveform

**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
θ	0°	8°	0°	8°