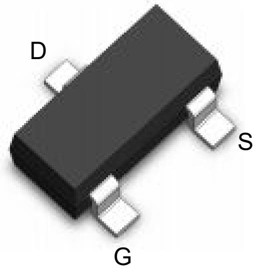
LM3L4N15

150V N-Channel Enhancement Mode MOSFET

Description

The LM3L4N15 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 6V. This device is suitable for use as a Battery protection or in other Switching application.

Dimensions SOT-23-3L

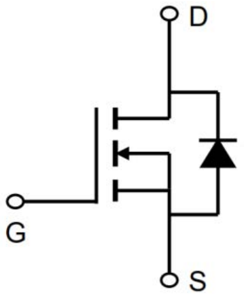


General Features

V_{DS} = 150V I_D =4A

$R_{DS(ON)}$ < 300mΩ @ V_{GS}=10V

Pin Configuration



Application

- Battery protection
- Load switch
- Uninterruptible power supply

Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
LM3L4N15	MAB5	SOT-23-3L	Ø180mm	8 mm	3000 units

Absolute Maximum Ratings (TC=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	4	A
I_D@T_A=100°C	Continuous Drain Current, V_{GS} @ 10V[1]	1.5	A
I_{DM}	Pulsed Drain Current[2]	9	A
P_D@T_A=25°C	Total Power Dissipation[3]	2	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{θJA}$	Thermal Resistance Junction-ambient [1]	125	°C/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	80	°C/W

Electrical Characteristics (TJ=25℃, unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	150	165	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	1.8	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=1.5A	-	220	280	mΩ
		V_{GS}=4.5V, I_D=1.5A		230	300	mΩ
G_{fs}	Forward Transconductance	V_{DS}=15V,I_D=1.5A	-	3	-	S
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	-	235	-	PF
C_{oss}	Output Capacitance		-	36	-	PF
C_{rss}	Reverse Transfer Capacitance		-	20	-	PF
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=75V,I_D=1A,R_L=75Ω V_{GS}=10V,R_G=6Ω	-	8	-	nS
t_r	Turn-on Rise Time		-	10	-	nS
$t_{d(off)}$	Turn-Off Delay Time		-	20	-	nS
t_f	Turn-Off Fall Time		-	15	-	nS
Q_g	Total Gate Charge	V_{DS}=75V,I_D=1.5A, V_{GS}=10V	-	8		nC
Q_{gs}	Gate-Source Charge		-	1.4	-	nC
Q_{gd}	Gate-Drain Charge		-	2.1	-	nC
V_{SD}	Diode Forward Voltage (Note 3)	V_{GS}=0V,I_S=2A	-	-	1.2	V
I_S	Diode Forward Current (Note 2)		-	-	2	A

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 ≦ 300us , duty cycle ≦ 2%

3.The power dissipation is limited by 150℃ 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.

Typical Characteristics

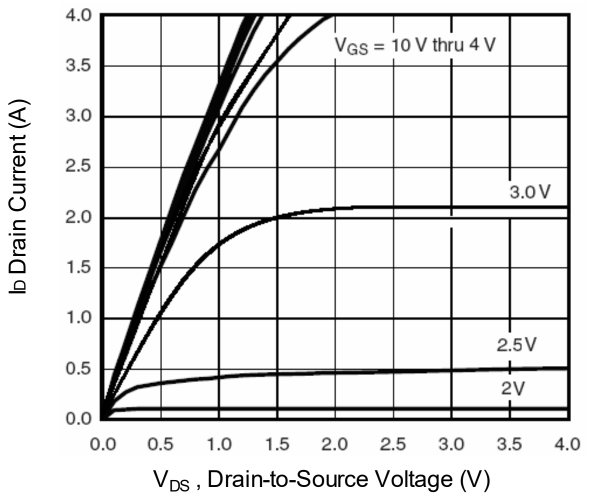


Fig.1 Typical Output Characteristics

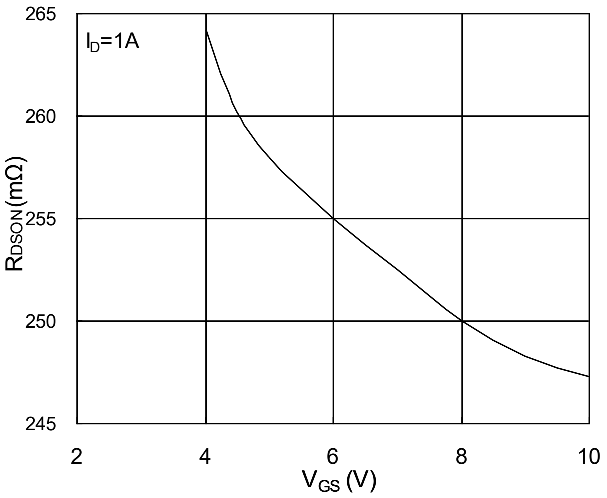


Fig.2 On-Resistance vs. Gate-Source

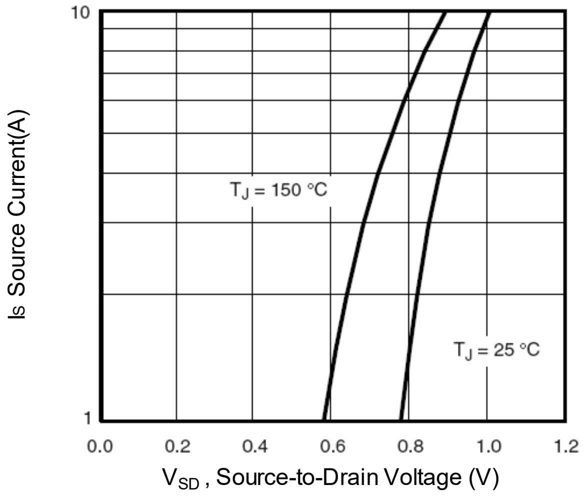


Fig.3 Forward Characteristics of Reverse

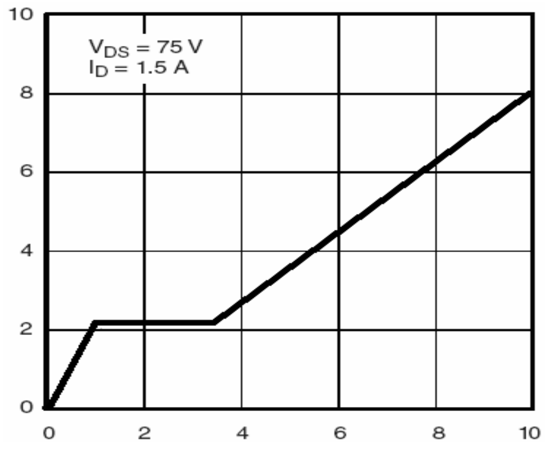


Fig.4 Gate-Charge Characteristics

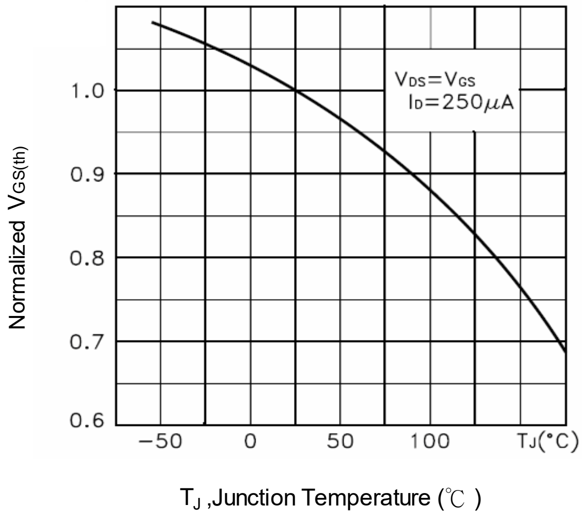


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

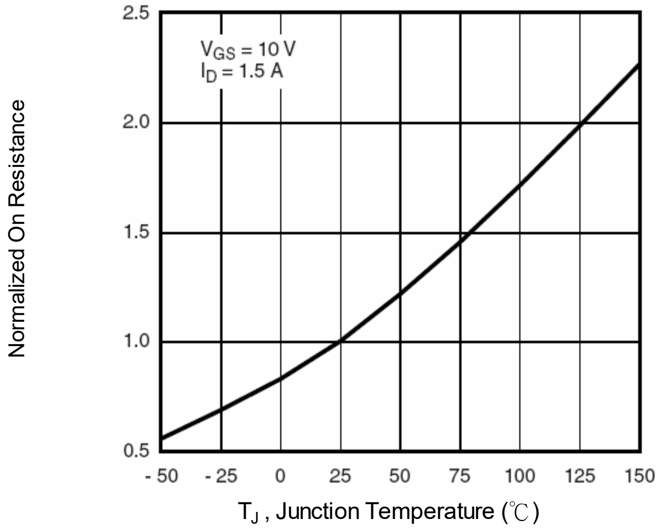


Fig.6 Normalized R_{DSON} vs. T_J

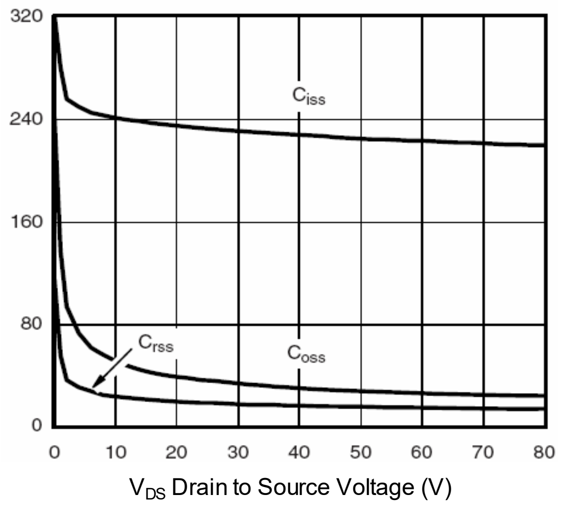


Fig.7 Capacitance

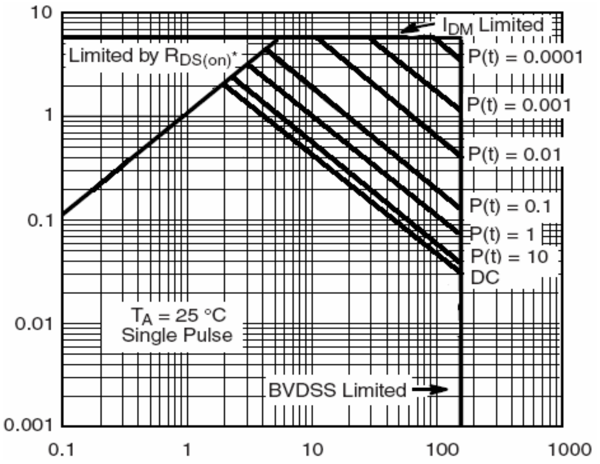


Fig.8 Safe Operating Area

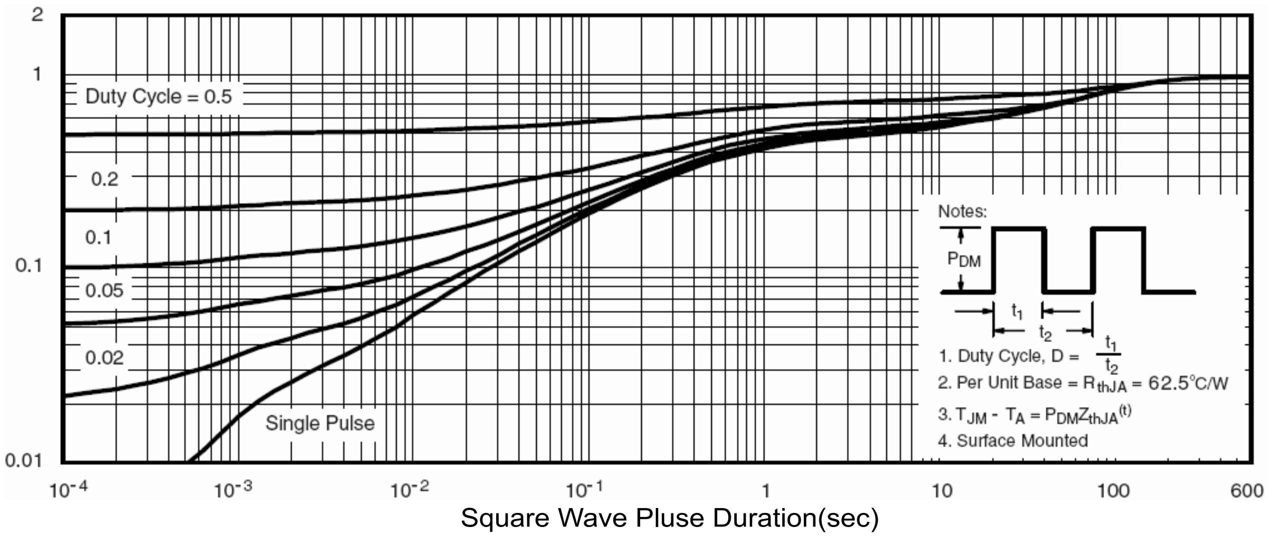
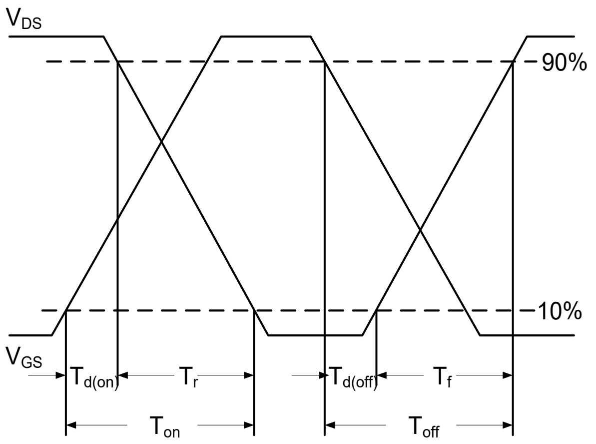


Fig.9 Normalized Maximum Transient Thermal Impedance



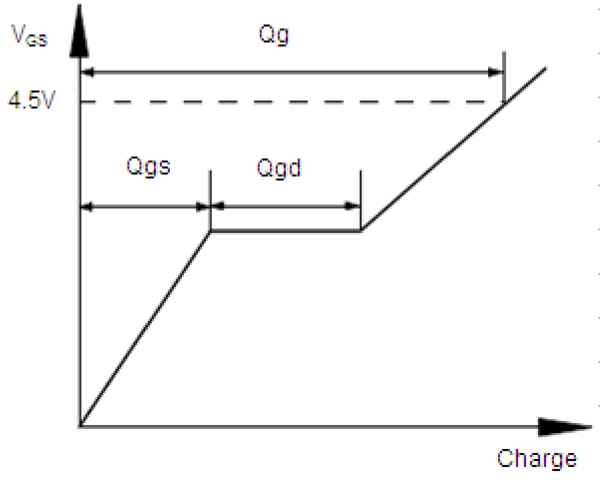
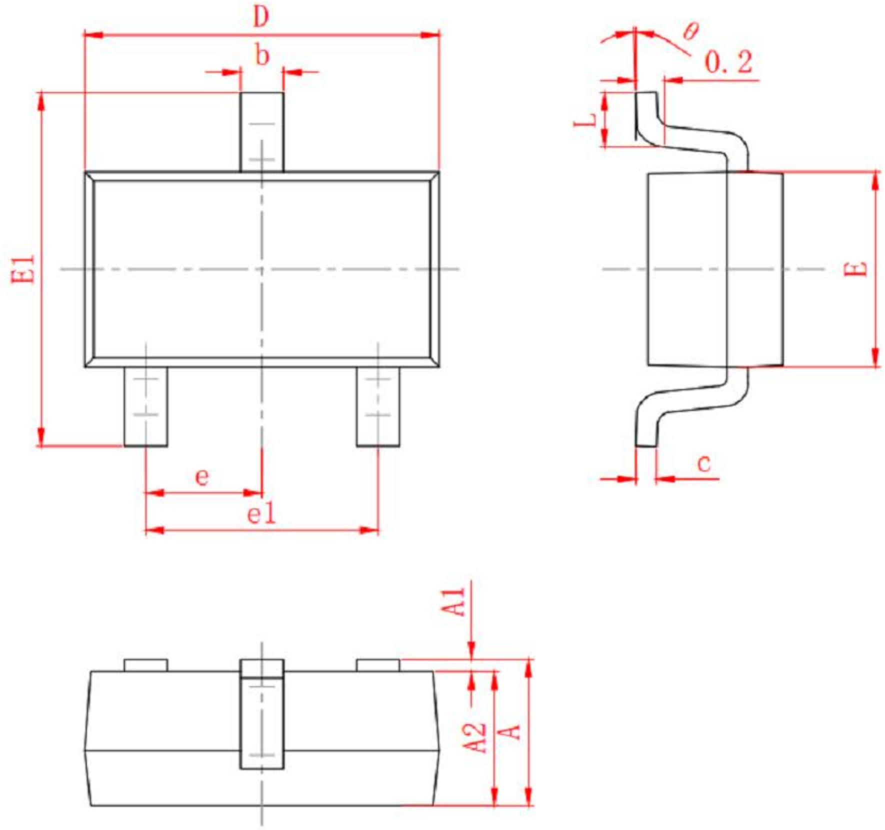


Fig.10 Switching Time Waveform

Fig.11 Gate Charge Waveform

Package Mechanical Data:SOT-23-3L



SOT23-3L

SYMBOL	MILLIMETER	
	MIN	MAX
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.250	0.450
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950 (BSC)	
e1	1.800	2.000
L	0.300	0.500
θ	0°	8°

单位：mm

Shanghai Leiditech Electronic Co.,Ltd
Email: sale1@leiditech.com
Tel : +86- 021 50828806
Fax : +86- 021 50477059