LMN0910P 100V N-Channel MOSFET

Features

- 100V,2A, $R_{DS(ON)}$ =200mΩ@V_{GS} = 10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

These devices are well suited for high efficiency fast switching applications.

Product Description

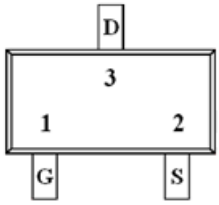
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

Applications

- Notebook
- Load Switch
- LED applications

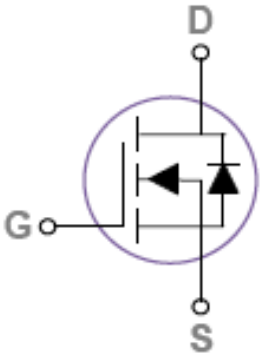
Pin Configuration

LMN0910PJZF (SOT-23)



Top Views

Pin	Description
1	Gate
2	Source
3	Drain



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Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMN0910PJZF	LMN0910P	JZ	F	SOT-23	3000 pcs

Marking Information

Part Marking	Part Number	LFC code
d XWMM	d	XWMM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25ºC	2	A
		T_C=100ºC	1.3	
I_{DM}	Pulsed Drain Current[1]		8	A
P_D	Power Dissipation (T_C=25ºC)		1.56	W
	Power Dissipation (Derate above 25ºC)		0.012	W/ºC
T_J	Operating Junction Temperature Range		-50 to +150	ºC
T_{STG}	Storage Temperature Range		-50 to +150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		80	ºC/W

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Electrical Characteristics

(T_J=25ºC Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2	1.8	2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=100V, V_{GS}=0V			1	uA
		V_{DS}=80V, V_{GS}=0V, T_J=125ºC			10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			2	A
I_{SM}	Pulsed Source Current				8	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=2A		161	200	mΩ
		V_{GS}=4.5V, I_D=1A		169	210	
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=1A		5		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A			1	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=1MHz		820	1190	pF
C_{oss}	Output Capacitance			35	55	
C_{rss}	Reverse Transfer Capacitance			20	30	
R_g	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		1.3	2.6	Ω
Q_g	Total Gate Charge[2,3]	V_{DS}=50V, V_{GS}=10V, I_D=2A		13.4	21	nC
Q_{gs}	Gate-Source Charge[2,3]			2.9	6	
Q_{gd}	Gate-Drain Charge[2,3]			1.7	4	
$t_{d(on)}$	Turn-On Time[2,3]	V_{DD}=30V, I_D=1A, V_{GS}=10V, R_G=3.3Ω		1.6	3	ns
T_r				6.6	13	
$t_{d(off)}$	Turn-Off Time[2,3]			11.5	22	
T_f				3.6	7	

Note:
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

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Typical Performance Characteristics

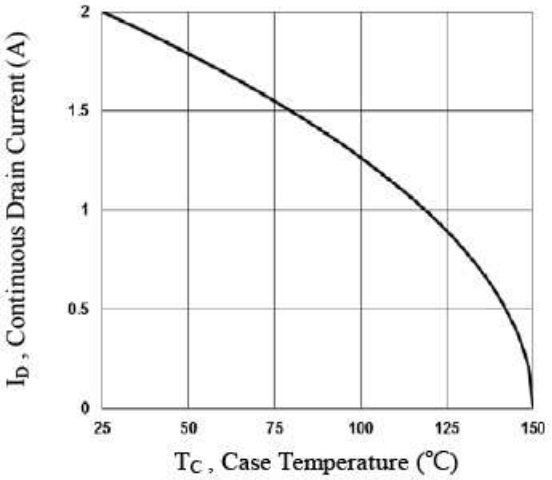

Fig.1 Continuous Drain Current vs. T_c

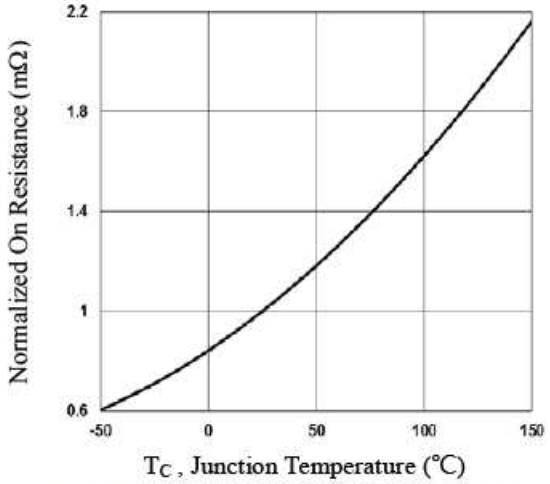

Fig.2 Continuous Drain Current vs. T_c

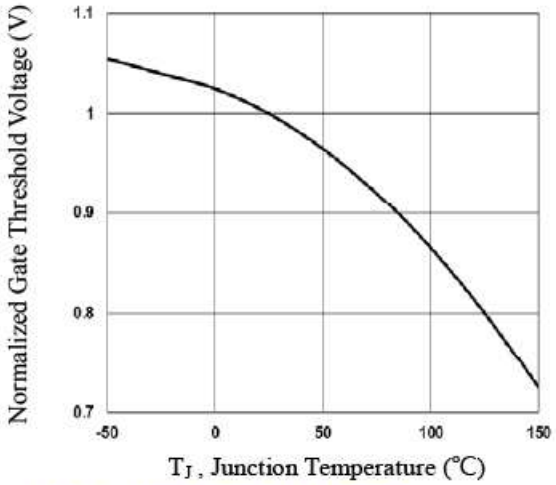

Fig.3 Normalized V_{th} vs. T_J

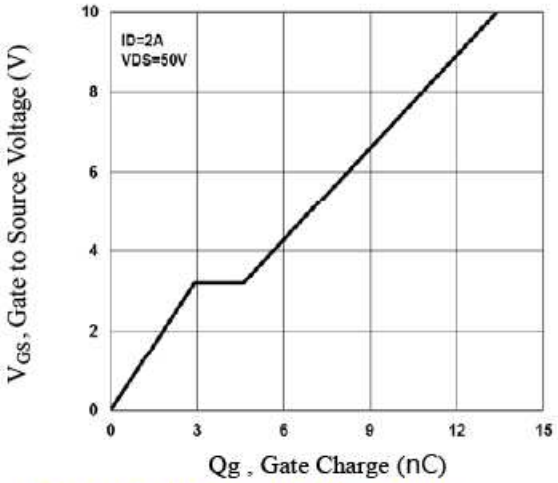

Fig.4 Gate Charge Waveform

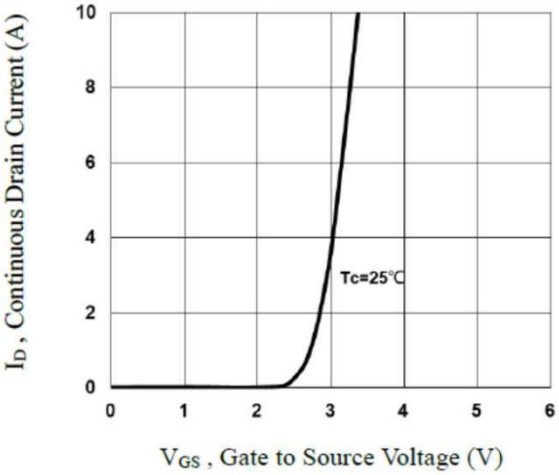

Fig.5 Transfer Characteristics

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Typical Performance Characteristics (continue.)

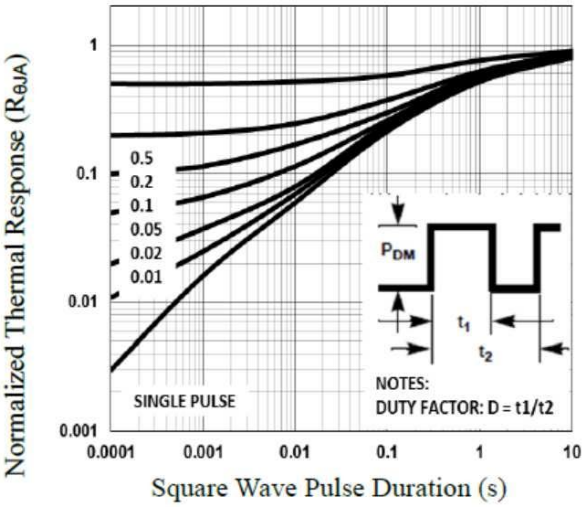

Fig. 6 Normalized Transient Impedance

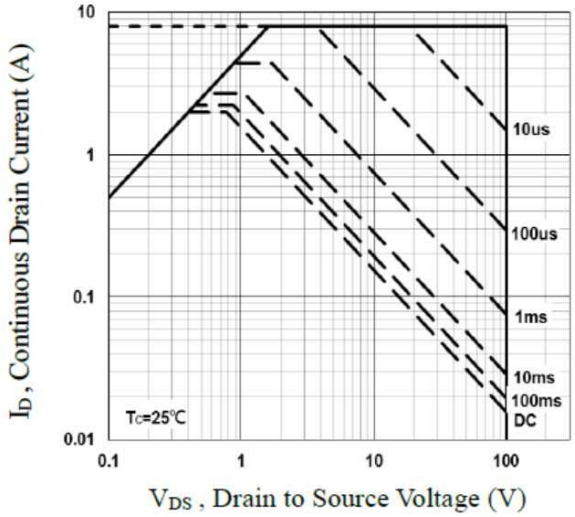

Fig.7 Maximum Safe Operation Area

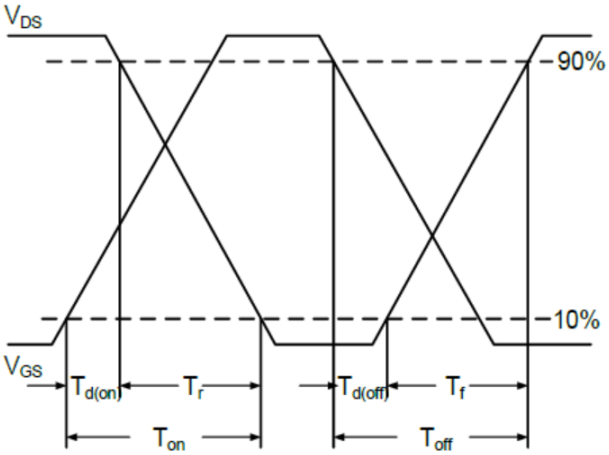

Fig.8 Switching Time Waveform

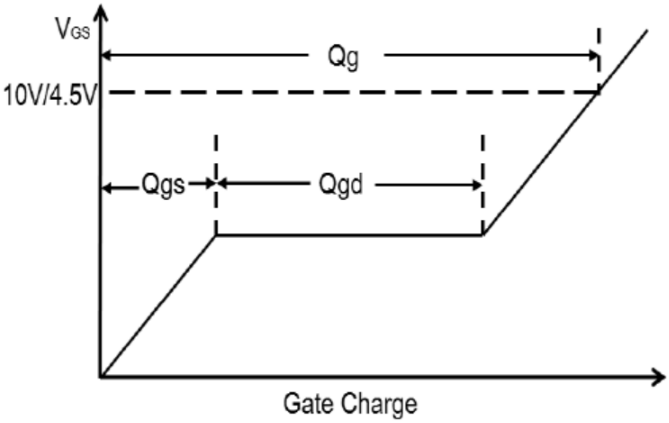

Fig.9 Gate Charge Waveform

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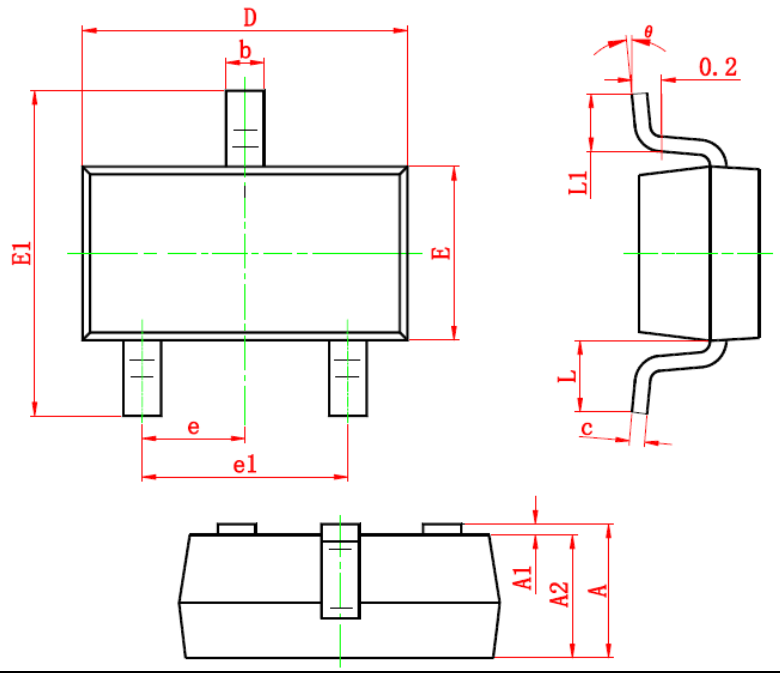
Package Dimension

SOT-23



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0º	8º	0º	8º

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