LMN3112Z 30V N-Channel MOSFET

Features

- 30V, 12.6A, $R_{DS(ON)}$=10mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

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.

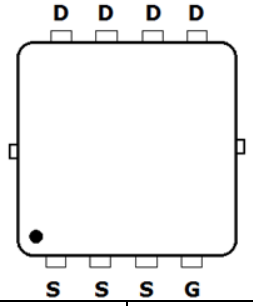
These devices are well suited for high efficiency fast switching applications.

Applications

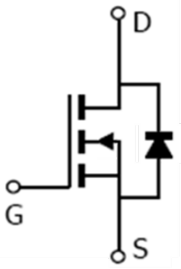
- MB / VGA / Vcore
- DC-DC Converters
- Power Management Functions

Pin Configuration

LMN3112ZF (DFN3X3-8L)



Pin	Description
1,2,3	Source
4	Gate
5,6,7,8	Drain



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Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN3112ZF	LMN3112	Z	F	DFN3x3-8L	5000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
3112ZF XWMMMM	3112ZF	XWMMMM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25℃	12.6	A
		T_A=75℃	10	
I_{DM}	Pulsed Drain Current[1]		45	A
E_{AS}	Single Pulse Avalanche Energy[2]		21	
P_D	Power Dissipation	T_A=25℃	2.3	W
		T_A=75℃	1.5	
T_J	Operating Junction Temperature		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		53	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4.7	℃/W

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Electrical Characteristics

(T_C=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	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2		2.5	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V			1	uA
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=10A		7.9	10	mΩ
		V_{GS}=4.5V, I_D=5A		13	16	
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=3A			10	S
V_{SD}	Diode Forward Voltage[3]	I_S=1A, V_{GS}=0V		0.7	1	V
Dynamic						
Q_g	Total Gate Charge[3,4]	V_{DS}=15V, V_{GS}=4.5V, I_D=12.5A		8		nC
Q_{gs}	Gate-Source Charge[3,4]			4		
Q_{gd}	Gate-Drain Charge[3,4]			2		
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		1040		pF
C_{oss}	Output Capacitance			445		
C_{rss}	Reverse Transfer Capacitance			40		
$t_{d(on)}$	Turn-On Time[3,4]	V_{DD}=15V, I_D=12.5A, V_{GS}=10V, R_G=6Ω		10		ns
t_r	Rise Time[3,4]			9		
$t_{d(off)}$	Turn-Off Time[3,4]			24		
t_f	Fall Time[3,4]			8		
R_g	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.1		Ω

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=15V, V_{GS}=10V, L=0.1mH, I_{AS}=12A, Starting T_J=25℃.
3. The data tested by pulsed, pulse width ≦ 300us, duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

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Typical Performance Characteristics

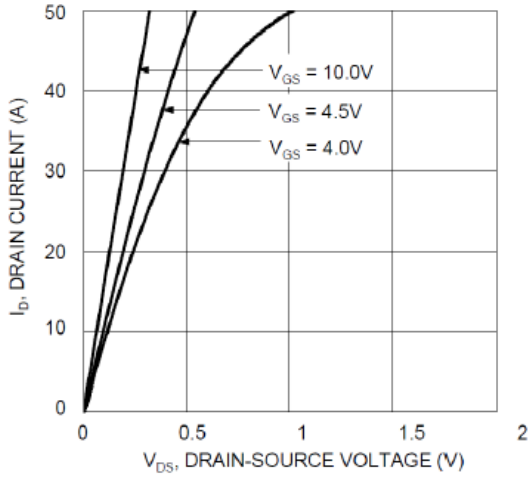

Fig. 1 Typical Output Characteristics

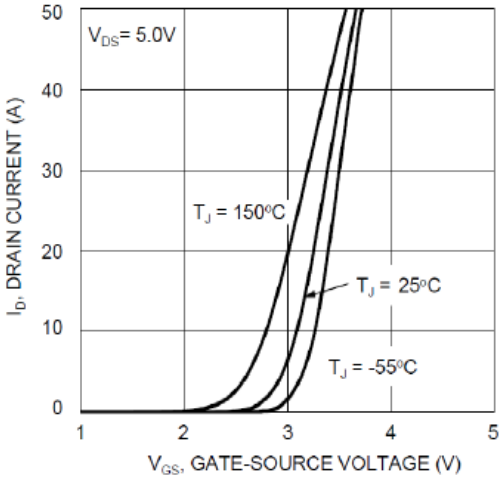

Fig. 2 Typical Transfer Characteristics

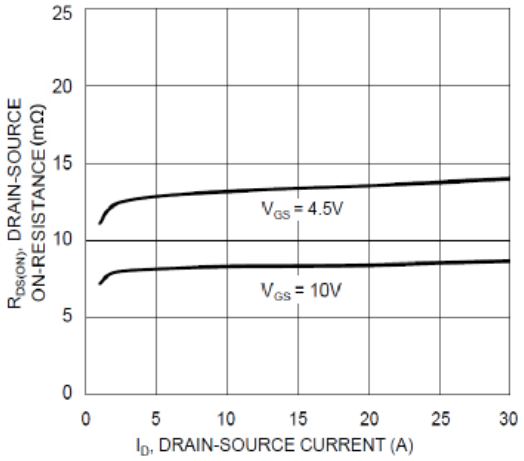

Fig. 3 Typical On-Resistance vs I_D and V_{GS}

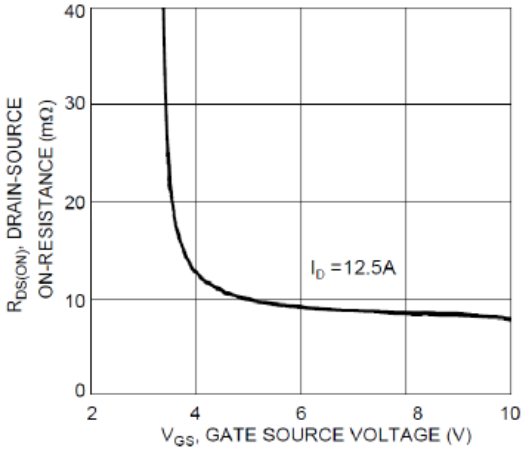

Fig. 4 Typical Transfer Characteristic

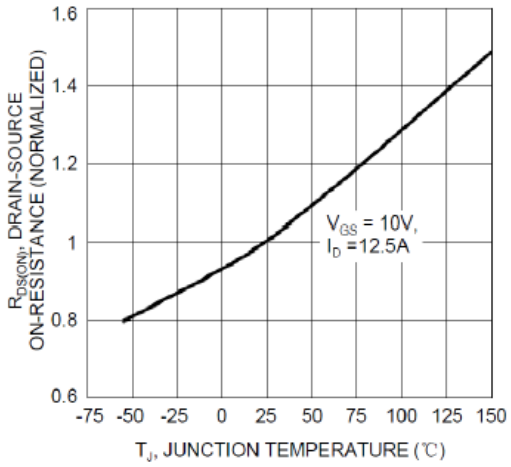

Figure. 5 On-Resistance Variation with T_J

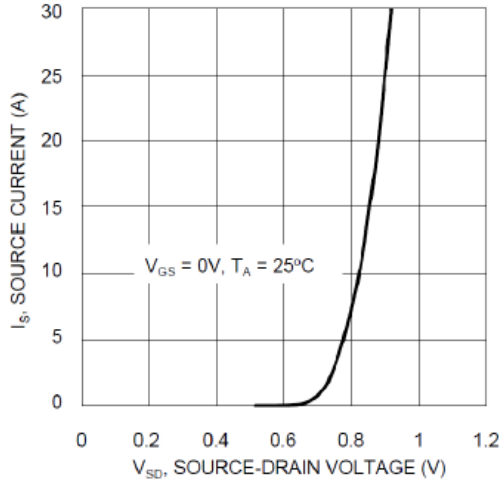

Fig. 6 Diode Forward Voltage vs. Current

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Typical Performance Characteristics(continue)

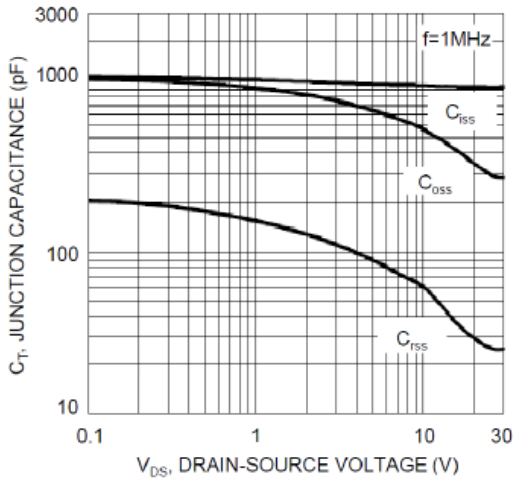

Fig. 7 Typical Capacitance

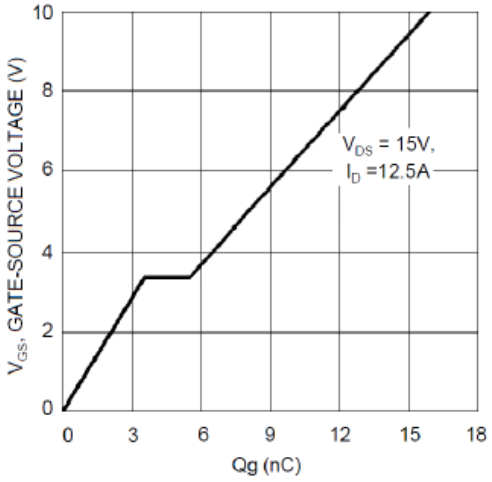

Fig. 8 Gate Charge

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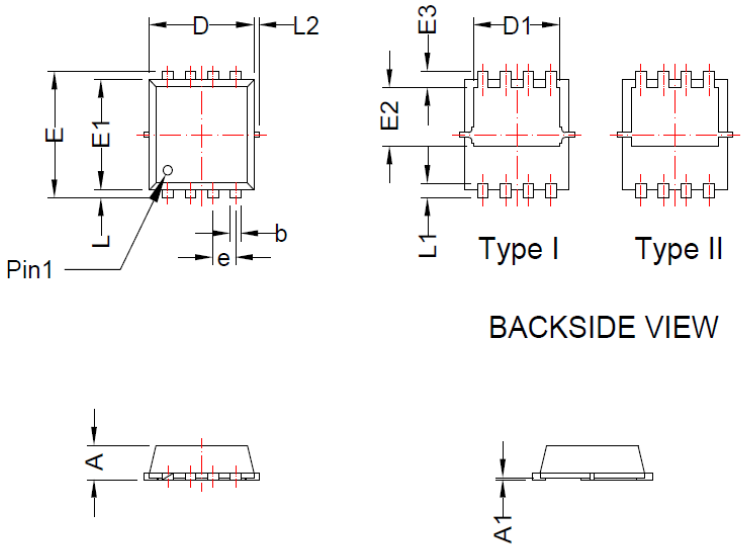
Package Dimension:

DFN3X3-8L



DIMENSION D AND E1 DOES NOT INCLUDE MOLD FLASH,PROTRUSIONS OR GATE BURRS.MOLD FLASH,PROTRUSIONS OR GATE BURRS SHALL HOT EXCEED 0.5mm PER INTERLEAD FLASH OR PROTRUSIOB SHALL NOT EXCEED 0.5mm PER SIDE.

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.90	0.028	0.035
A1	0.00	0.05	0.000	0.002
b	0.24	0.37	0.009	0.015
c	0.10	0.25	0.004	0.010
D	2.90	3.25	0.114	0.128
D1	2.35	2.60	0.093	0.102
E	3.05	3.45	0.120	0.136
E1	2.90	3.20	0.114	0.126
E2	1.35	2.00	0.053	0.079
E3	0.30	0.60	0.012	0.024
e	0.65 BSC		0.026 BSC	
L	0.02	0.2	0.001	0.008
L1	0.28	0.5	0.011	0.020
L2	-	0.15	-	0.006

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