LMN3112S 30V N-Channel MOSFET

Features

- 30V, 10.6A, $R_{DS(ON)}$=12mΩ@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.

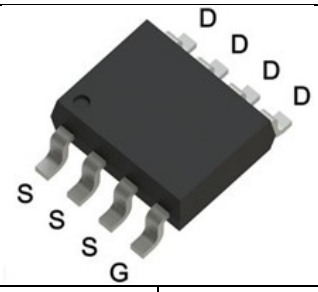
These devices are well suited for high efficiency fast switching applications.

Applications

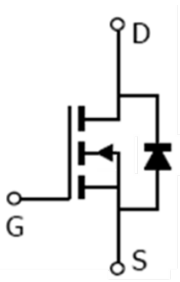
- MB / VGA / Vcore
- DC-DC Converters
- Power Management Functions

Pin Configuration

LMN3112SF (SOP-8L)



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



Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMN3112SF	LMN3112	S	F	SOP-8	4000 PCS

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
3112S XWMMMM	3112S	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_J=150℃)	T_A=25℃	10.6	A
		T_A=75℃	8.5	
		T_C=25℃	16	
I_{DM}	Pulsed Drain Current[1]		40	A
E_{AS}	Single Pulse Avalanche Energy[2]		21	
P_D	Power Dissipation	T_A=25℃	2.1	W
		T_A=75℃	1.4	
		T_C=25℃	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		60	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		25	℃/W

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		9.8	12	mΩ
		V_{GS}=4.5V, I_D=5A		15.7	18	
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		Ω

Note :

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. VDD=15V, VGS=10V, L=0.1mH, IAS=13A, Starting TJ=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics

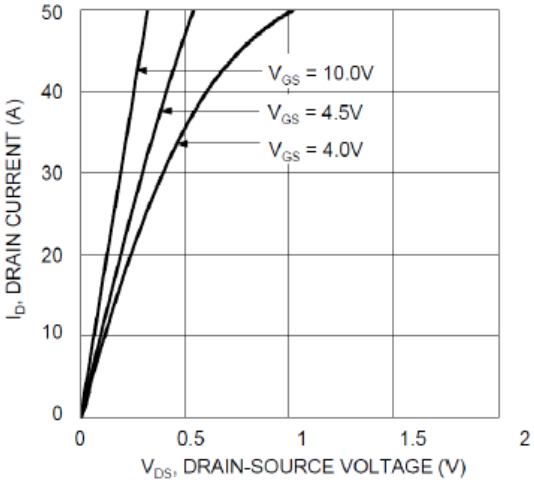


Fig. 1 Typical Output Characteristics

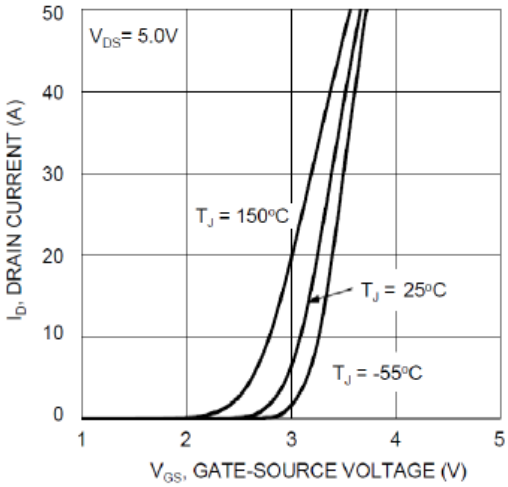


Fig. 2 Typical Transfer Characteristics

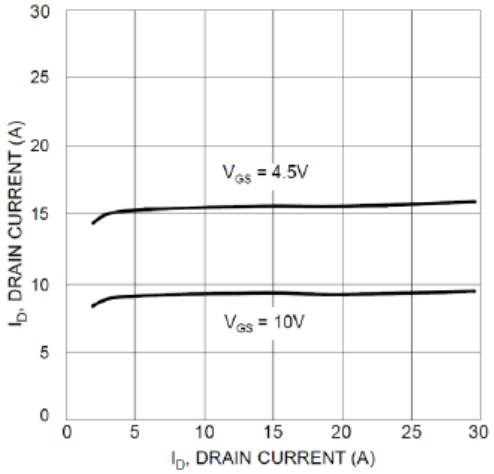


Fig. 3 Typical On-Resistance vs I_D and V_{GS}

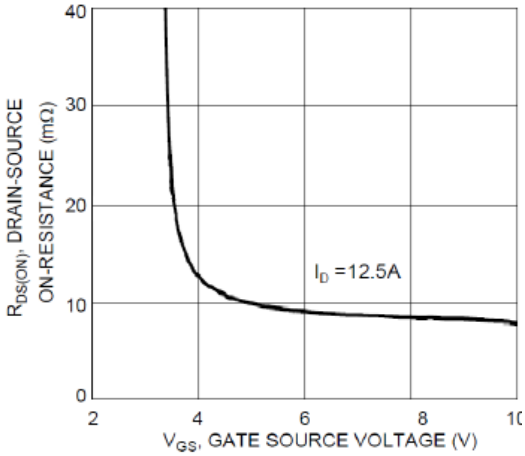


Fig. 4 Typical Transfer Characteristic

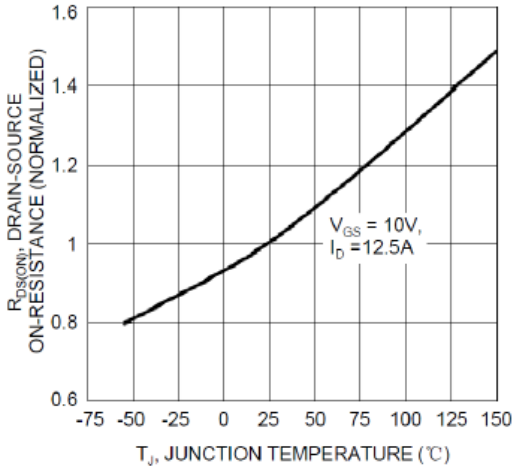


Figure. 5 On-Resistance Variation with T_J

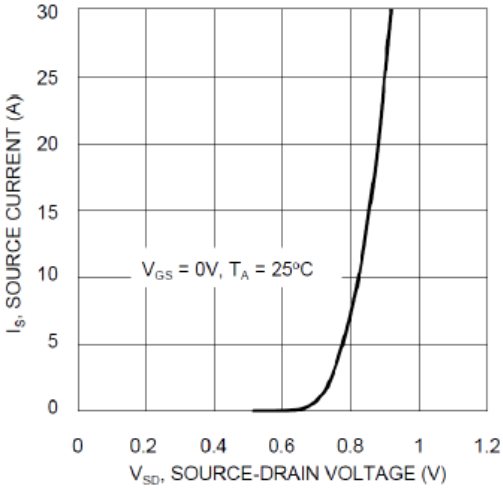


Fig. 6 Diode Forward Voltage vs. Current

Typical Performance Characteristics(continue)

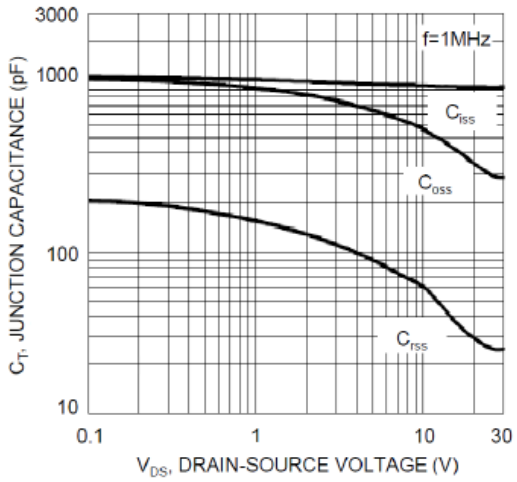


Fig. 7 Typical Capacitance

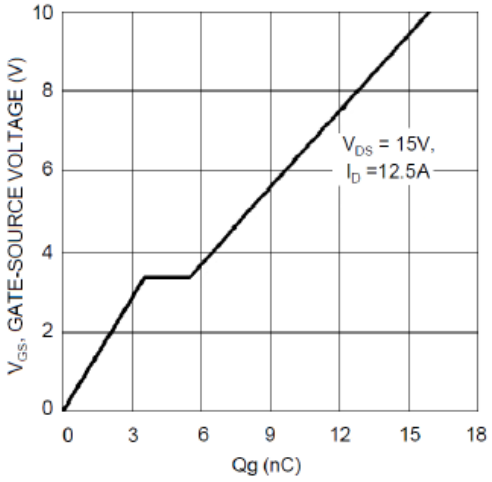
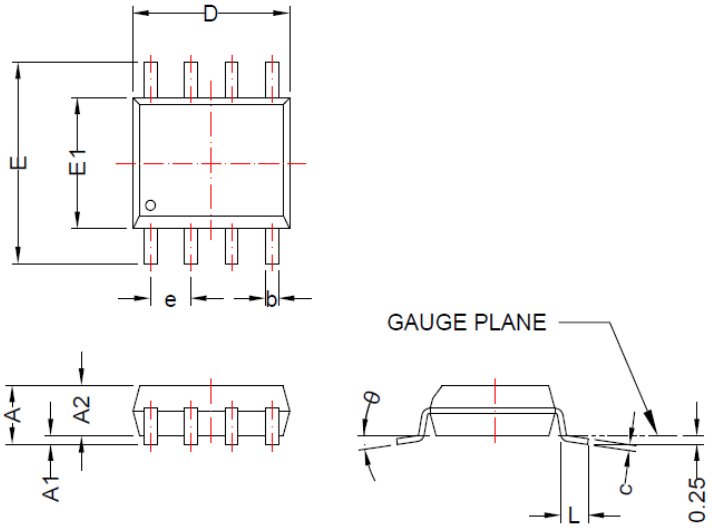


Fig. 8 Gate Charge

Package Dimension:

SOP-8



DIMENSI0N D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 mm PER END.

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	-	0.049	-
b	0.31	0.51	0.012	0.020
c	0.10	0.26	0.004	0.010
D	4.70	5.10	0.185	0.201
E	5.80	6.20	0.228	0.244
E1	3.70	4.10	0.146	0.161
e	1.27 BSC		0.050 BSC	
L	0.4	1.27	0.016	0.050
θ	0°	8°	0°	8°

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