

## LMN3112S 30V N-Channel MOSFET

### Features

- 30V, 10.6A,  $R_{DS(ON)}=12m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

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.

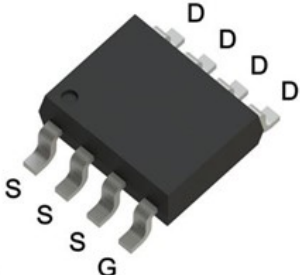
### Product Description

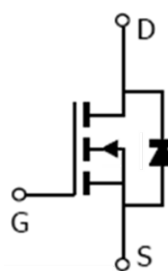
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has

### 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<sub>C</sub>=25°C Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current (T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	A
		T <sub>A</sub> =75°C	
		T <sub>C</sub> =25°C	
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	40	A
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>2</sup>	21	
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	W
		T <sub>A</sub> =75°C	
		T <sub>C</sub> =25°C	
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	60	°C/W
R <sub>θJC</sub>	Thermal Resistance-Junction to Case	25	°C/W

## Electrical Characteristics

### LMN3112S

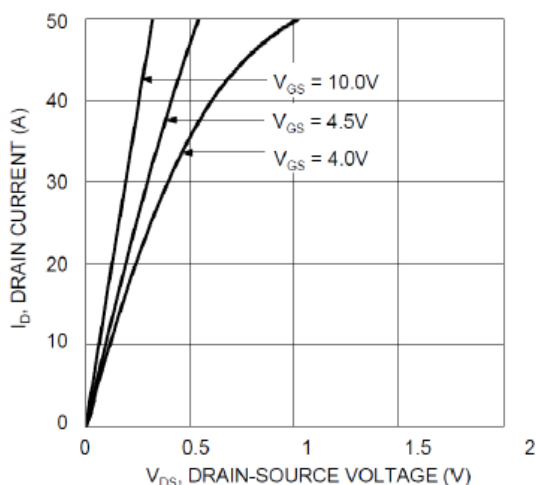
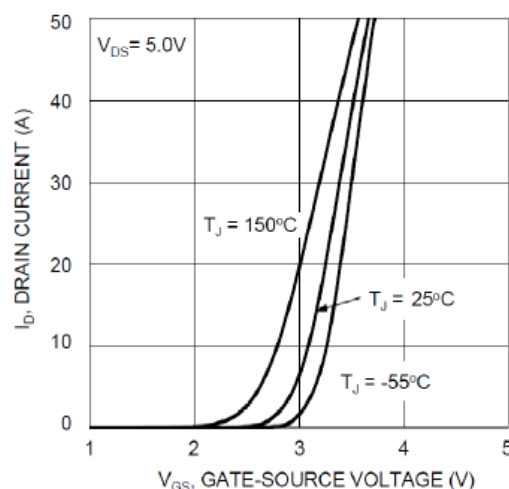
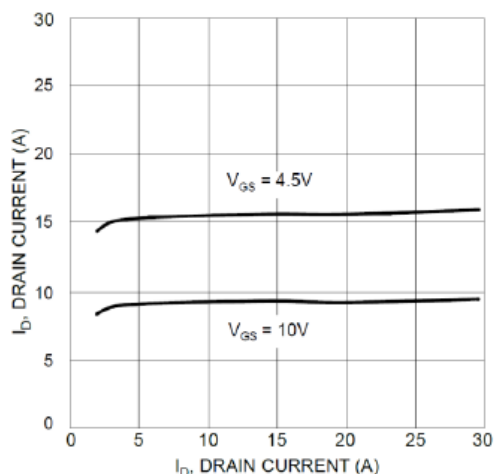
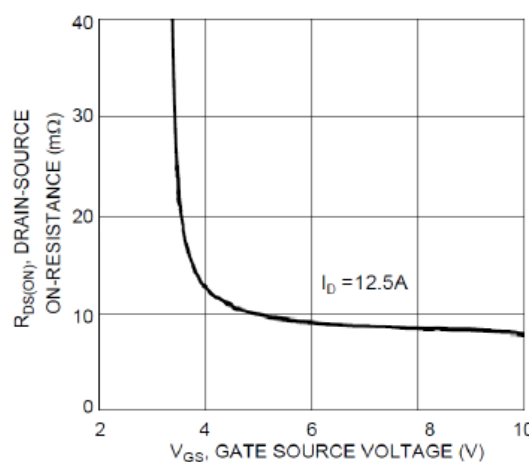
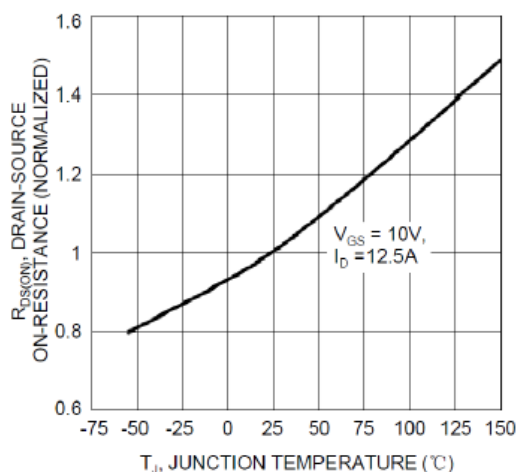
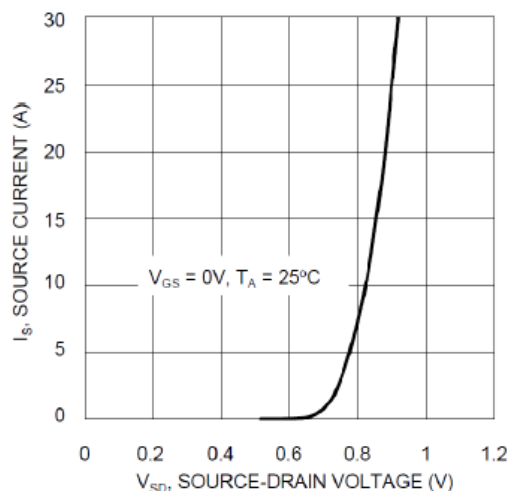
(T<sub>C</sub>=25°C Unless otherwise noted)

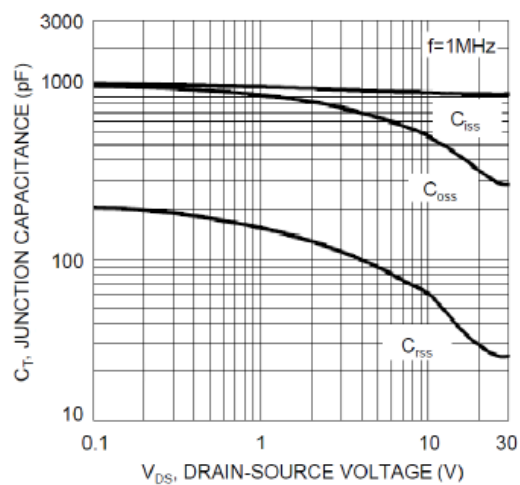
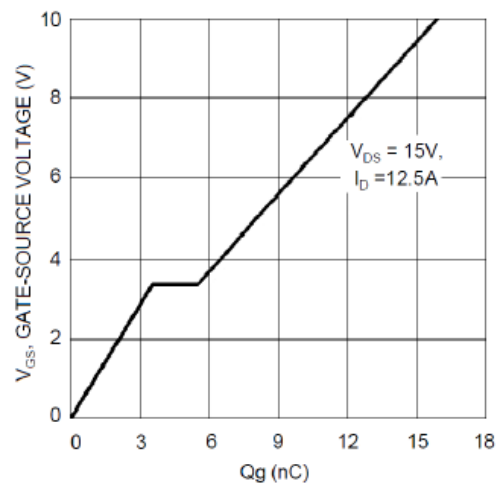
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.2		2.5	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	uA
R <sub>DS(on)</sub>	Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =10A		9.8	12	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A		15.7	18	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =3A			10	S
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.7	1	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge <sup>3,4</sup>	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =12.5A		8		nC
Q <sub>gs</sub>	Gate-Source Charge <sup>3,4</sup>			4		
Q <sub>gd</sub>	Gate-Drain Charge <sup>3,4</sup>			2		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		1040		pF
C <sub>oss</sub>	Output Capacitance			445		
C <sub>rss</sub>	Reverse Transfer Capacitance			40		
t <sub>d(on)</sub>	Turn-On Time <sup>3,4</sup>	V <sub>DD</sub> =15V, I <sub>D</sub> =12.5A, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω		10		ns
t <sub>r</sub>	Rise Time <sup>3,4</sup>			9		
t <sub>d(off)</sub>	Turn-Off Time <sup>3,4</sup>			24		
t <sub>f</sub>	Fall Time <sup>3,4</sup>			8		
R <sub>g</sub>	Gate Resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1		Ω

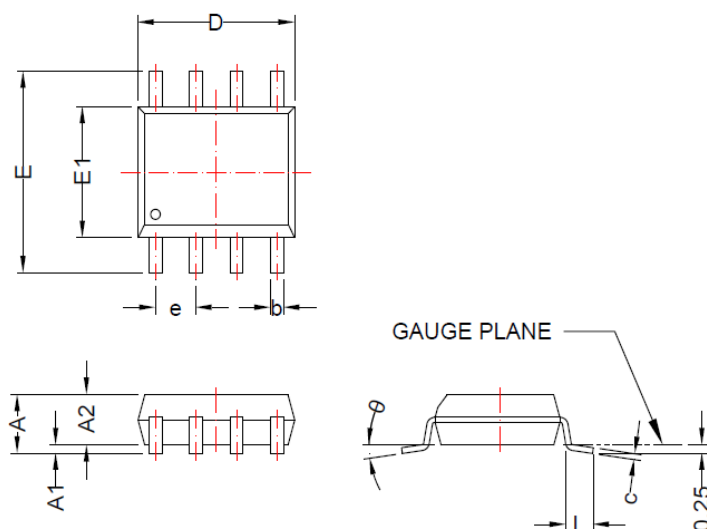
Note :

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. V<sub>DD</sub>=15V, V<sub>GS</sub>=10V, L=0.1mH, I<sub>AS</sub>=13A, Starting T<sub>J</sub>=25°C.
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**


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

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