

LMNDS04N15 150V N-Channel MOSFET
Features

- 150V, 4A, $R_{DS(ON)} = 65m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- SOP-8 package design

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

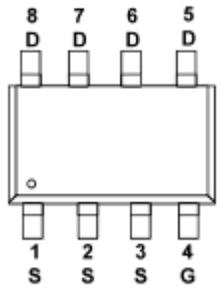
Product Description

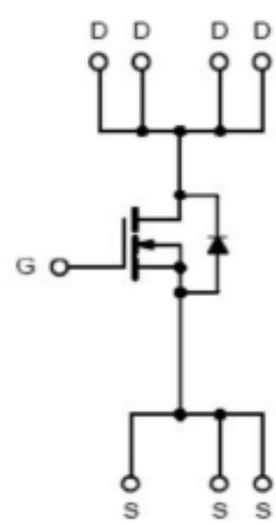
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

Applications

- Notebook
- Load Switch
- LED Applications

Pin Configuration

LMNDS04N15SF (SOP-8)			
			
Pin	Description	Pin	Description
1	Source	5	Drain
2	Source	6	Drain
3	Source	7	Drain
4	Gate	8	Drain



Ordering Information

Part Number	P/N	PKG Code	Pb Free Code	Package	Quantity Reel
LMNDS04N15SF	LMNDS04N15	S	F	SOP-8	3000 & 4000 pcs

Marking Information

Part Marking	Part Number	LFC code
DS04N15 XWMMMM	DS04N15	XWMMMM

Absolute Maximum Ratings

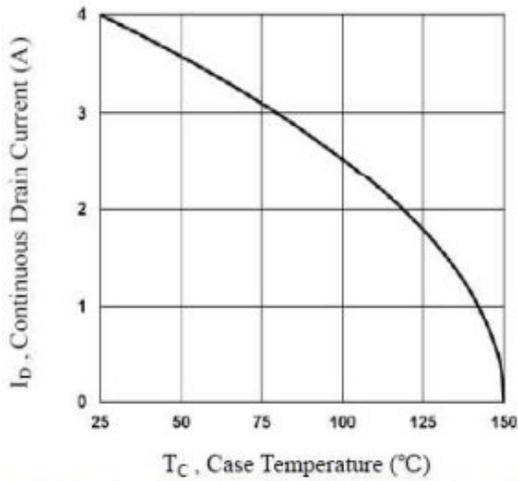
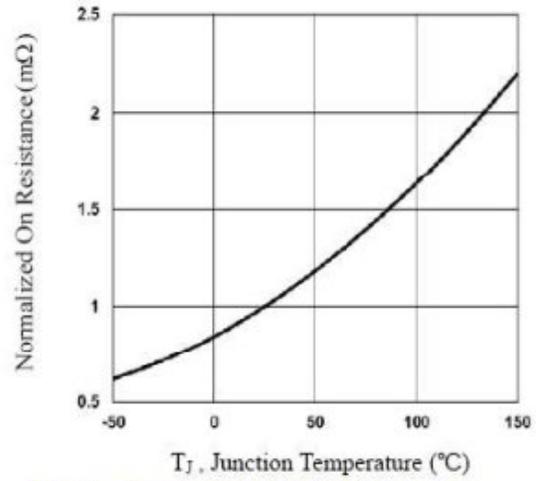
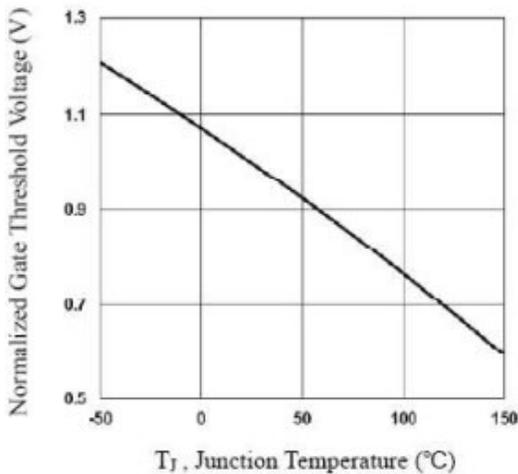
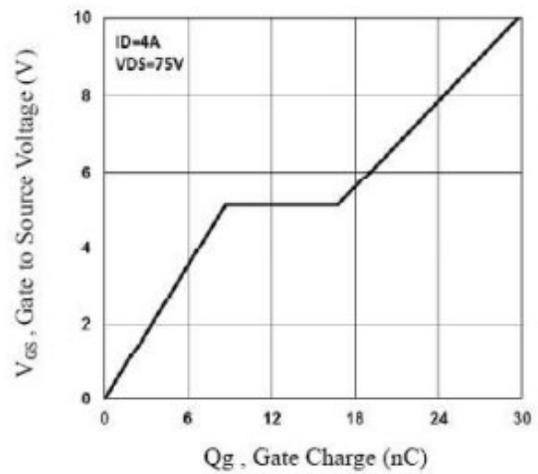
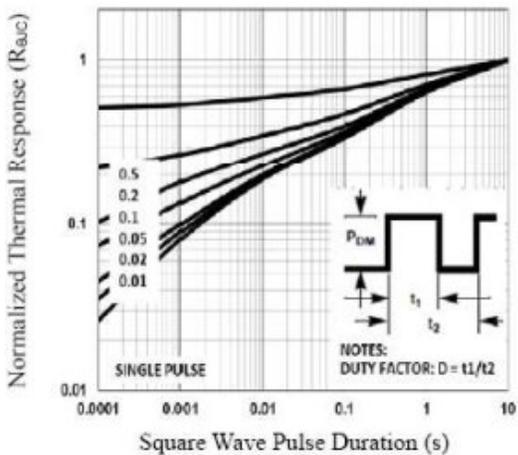
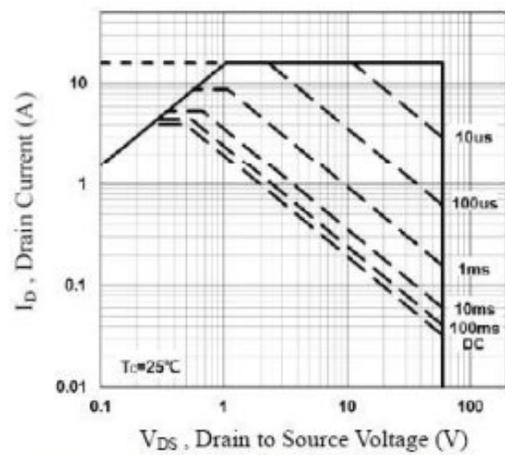
 ($T_A=25^\circ\text{C}$ Unless otherwise noted)

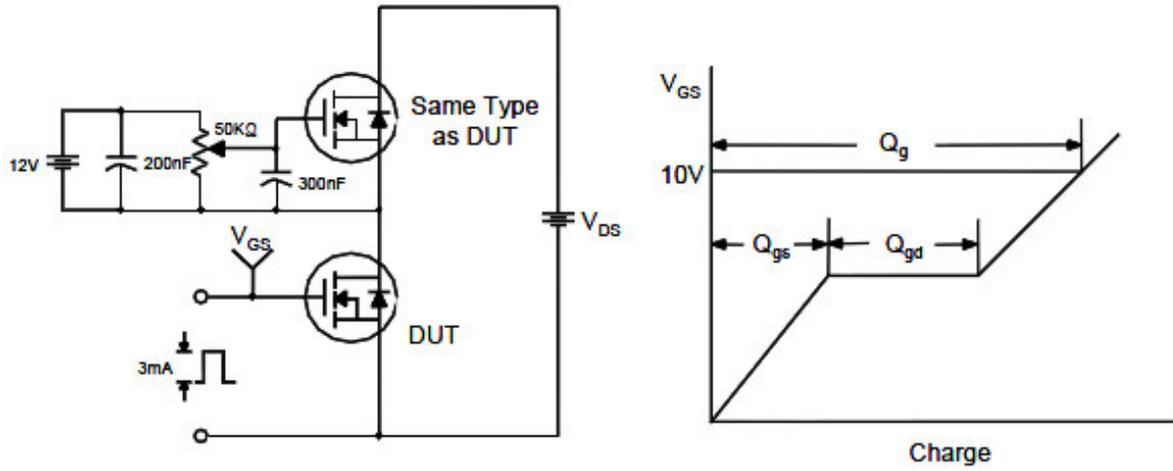
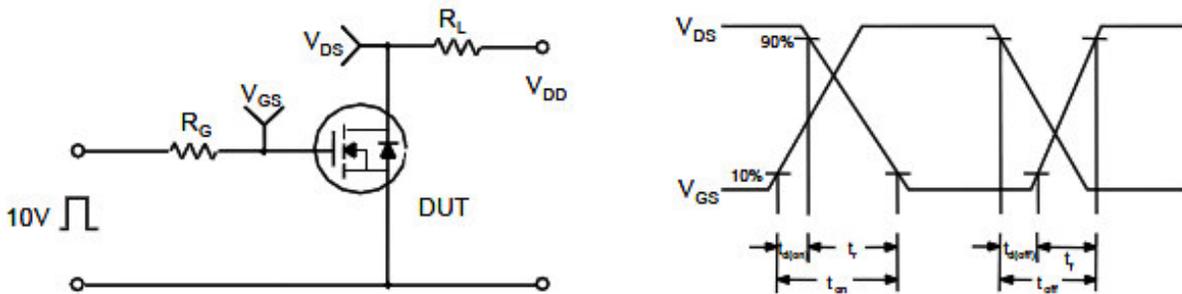
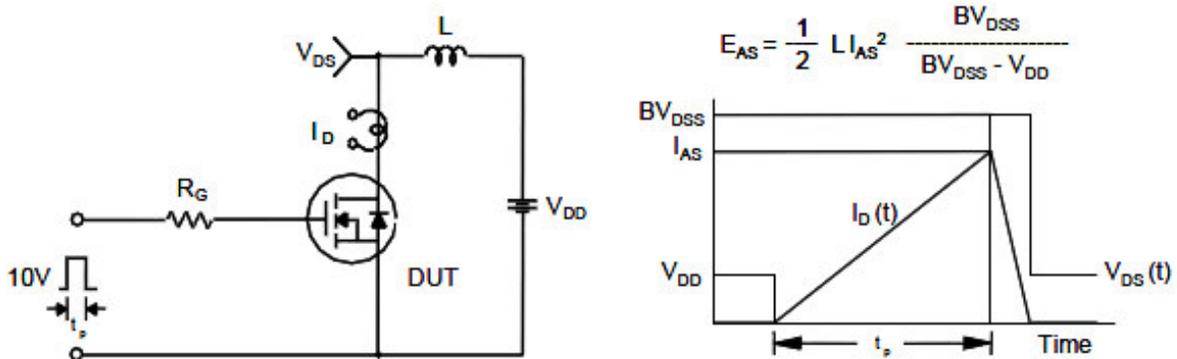
Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	150	V
V_{GSS}	Gate-Source Voltage	± 25	V
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	4
		$T_A=100^\circ\text{C}$	2.5
I_{DM}	Pulsed Drain Current	16	A
P_D	Power Dissipation($T_A=25^\circ\text{C}$)	2.5	W
	Power Dissipation(Derate above 25°C)	0.02	W/ $^\circ\text{C}$
T_J	Operating Junction Temperature Range	-50 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	50	$^\circ\text{C}/\text{W}$

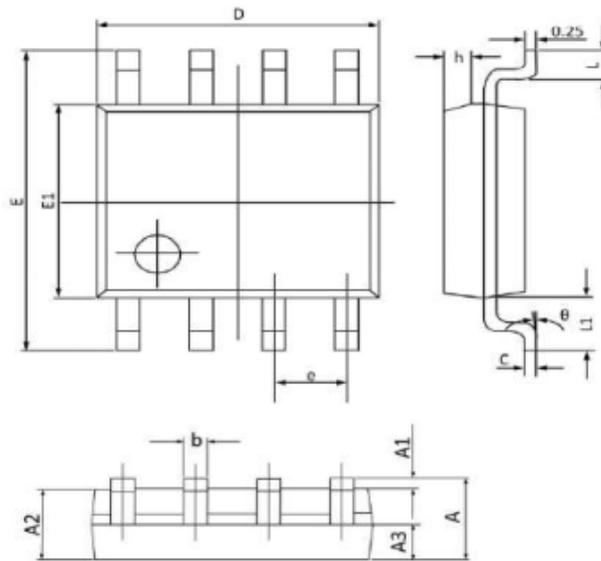
Electrical Characteristics

 (T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	150			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±25V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =150V, V _{GS} =0V			1	uA
		V _{DS} =120V, V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0, Force Current			4	A
I _{SM}	Pulsed Source Current				8	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =4A		52	65	mΩ
		V _{GS} =6V, I _D =2A		60	85	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =3A		8		S
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz		1790	3000	pF
C _{oss}	Output Capacitance			160	300	
C _{rss}	Reverse Transfer Capacitance			82	150	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		1.4	2.8	Ω
Q _g	Total Gate Charge	V _{DS} =75V, V _{GS} =10V, I _D =4A		30	60	nC
Q _{gs}	Gate-Source Charge			8.7	16	
Q _{gd}	Gate-Drain Charge			8	16	
t _{d(on)}	Turn-On Time	V _{DD} =75V, I _D =1A, V _{GS} =10V, R _G =6Ω		14.5	28	ns
T _r				19.2	18	
t _{d(off)}	Turn-Off Time			33.6	60	
T _f				22.8	25	

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. T_c

Fig.2 Normalized $R_{DS(on)}$ vs. T_j

Fig.3 Normalized V_{th} vs. T_j

Fig.4 Gate Charge Characteristics

Fig.5 Normalized Transient Impedance

Fig.6 Maximum Safe Operation Area

Typical Characteristics
Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms


Package Dimension
SOP-8


Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270 BSC		0.050 BSC	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050 BSC		0.041 BSC	
θ	0°	8°	0°	8°