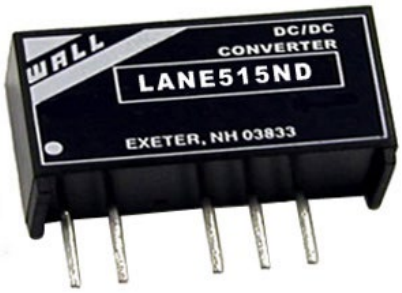


FEATURES

- 3.3, 5, 9, 12, 15, 24, and 48VDC Nominal Input Voltages
- 1 Watt Output Power
- RoHS Compliant
- Unregulated Output Types
- Two Package Sizes Available
- DAP Case Material
- No External Components Required
- 5-Pin SIP Package
- High Efficiency up to 82%
- Internal SMD Construction
- Industry Standard Pinout

DESCRIPTION

When board space is at a premium and voltage conversions require low power, the LAN E series miniature converters offer superior solutions at an economical price. A multitude of options and operating ranges allow you to custom-tailor these converters to application requirements. At the compact size of 0.77” x 0.24” x 0.39” or 0.77” x 0.28” x 0.39”, the LAN E series provides 1 Watt of power while maintaining specifications over the entire industrial operating temperature range.

MODEL SELECTION TABLE

Single Output Models

Model Number[1]	Input Voltage Range	Output Voltage		Output Current		Efficiency		Ripple & Noise	Output Power
		Package 1	Package 2	Package 1	Package 2	Package 1	Package 2		
LANE3.333N	3.3VDC (2.97~3.63VDC)	3.3VDC	-	303mA	-	70%	-	100mVp-p	1 Watt
LANE3.305N		5VDC	5VDC	200mA	200mA	70%	70%		
LANE3.309N		9VDC	9VDC	112mA	112mA	75%	75%		
LANE3.312N		12VDC	12VDC	84mA	84mA	78%	78%		
LANE3.315N		15VDC	15VDC	67mA	67mA	80%	80%		
LANE3.324N		24VDC	24VDC	42mA	42mA	82%	82%		
LANE533N	5VDC (4.5~5.5VDC)	3.3VDC	-	303mA	-	70%	-	100mVp-p	1 Watt
LANE505N		5VDC	5VDC	200mA	200mA	70%	70%		
LANE509N		9VDC	9VDC	112mA	112mA	75%	75%		
LANE512N		12VDC	12VDC	84mA	84mA	78%	78%		
LANE515N		15VDC	15VDC	67mA	67mA	80%	80%		
LANE524N		24VDC	24VDC	42mA	42mA	82%	82%		
LANE933N	9VDC (8.1~9.9VDC)	3.3VDC	-	303mA	-	70%	-	100mVp-p	1 Watt
LANE905N		5VDC	5VDC	200mA	200mA	70%	70%		
LANE909N		9VDC	9VDC	112mA	112mA	75%	75%		
LANE912N		12VDC	12VDC	84mA	84mA	78%	78%		
LANE915N		15VDC	15VDC	67mA	67mA	80%	80%		
LANE924N		24VDC	24VDC	42mA	42mA	82%	82%		
LANE1233N	12VDC (10.8~13.2VDC)	3.3VDC	-	303mA	-	70%	-	100mVp-p	1 Watt
LANE1205N		5VDC	5VDC	200mA	200mA	70%	70%		
LANE1209N		9VDC	9VDC	112mA	112mA	75%	75%		
LANE1212N		12VDC	12VDC	84mA	84mA	78%	78%		
LANE1215N		15VDC	15VDC	67mA	67mA	80%	80%		
LANE1224N		24VDC	24VDC	42mA	42mA	82%	82%		
LANE1533N	15VDC (13.5~16.5VDC)	3.3VDC	-	303mA	-	70%	-	100mVp-p	1 Watt
LANE1505N		5VDC	5VDC	200mA	200mA	70%	70%		
LANE1509N		9VDC	9VDC	112mA	112mA	75%	75%		
LANE1512N		12VDC	12VDC	84mA	84mA	78%	78%		
LANE1515N		15VDC	15VDC	67mA	67mA	80%	80%		
LANE1524N		24VDC	24VDC	42mA	42mA	82%	82%		
LANE2433N	24VDC (21.6~26.4VDC)	3.3VDC	-	303mA	-	70%	-	100mVp-p	1 Watt
LANE2405N		5VDC	5VDC	200mA	200mA	70%	70%		
LANE2409N		9VDC	9VDC	112mA	112mA	75%	75%		
LANE2412N		12VDC	12VDC	84mA	84mA	78%	78%		
LANE2415N		15VDC	15VDC	67mA	67mA	80%	80%		
LANE2424N		24VDC	24VDC	42mA	42mA	82%	82%		
LANE485NP	48VDC (43.2~52.8VDC)	-	5VDC	-	200mA	-	70%	100mVp-p	1 Watt
LANE489NP		-	9VDC	-	112mA	-	75%		
LANE4812NP		-	12VDC	-	84mA	-	78%		
LANE4815NP		-	15VDC	-	67mA	-	80%		
LANE4824NP		-	24VDC	-	42mA	-	82%		

MODEL SELECTION TABLE

Dual Output Models

Model Number[1]	Input Voltage Range	Output Voltage		Output Current		Efficiency		Ripple & Noise	Output Power
		Package 1	Package 2	Package 1	Package 2	Package 1	Package 2		
LANE3.333ND	3.3VDC (2.97~3.63VDC)	±3.3VDC	-	±150mA	-	70%	-	100mVp-p	1 Watt
LANE3.305ND		±5VDC	±5VDC	±100mA	±100mA	70%	70%		
LANE3.309ND		±9VDC	±9VDC	±56mA	±56mA	75%	75%		
LANE3.312ND		±12VDC	±12VDC	±42mA	±42mA	78%	78%		
LANE3.315ND		±15VDC	±15VDC	±34mA	±34mA	80%	80%		
LANE3.324ND		±24VDC	±24VDC	±21mA	±21mA	82%	82%		
LANE533ND	5VDC (4.5~5.5VDC)	±3.3VDC	-	±150mA	-	70%	-	100mVp-p	1 Watt
LANE505ND		±5VDC	±5VDC	±100mA	±100mA	70%	70%		
LANE509ND		±9VDC	±9VDC	±56mA	±56mA	75%	75%		
LANE512ND		±12VDC	±12VDC	±42mA	±42mA	78%	78%		
LANE515ND		±15VDC	±15VDC	±34mA	±34mA	80%	80%		
LANE524ND		±24VDC	±24VDC	±21mA	±21mA	82%	82%		
LANE933ND	9VDC (8.1~9.9VDC)	±3.3VDC	-	±150mA	-	70%	-	100mVp-p	1 Watt
LANE905ND		±5VDC	±5VDC	±100mA	±100mA	70%	70%		
LANE909ND		±9VDC	±9VDC	±56mA	±56mA	75%	75%		
LANE912ND		±12VDC	±12VDC	±42mA	±42mA	78%	78%		
LANE915ND		±15VDC	±15VDC	±34mA	±34mA	80%	80%		
LANE924ND		±24VDC	±24VDC	±21mA	±21mA	82%	82%		
LANE1233ND	12VDC (10.8~13.2VDC)	±3.3VDC	-	±150mA	-	70%	-	100mVp-p	1 Watt
LANE1205ND		±5VDC	±5VDC	±100mA	±100mA	70%	70%		
LANE1209ND		±9VDC	±9VDC	±56mA	±56mA	75%	75%		
LANE1212ND		±12VDC	±12VDC	±42mA	±42mA	78%	78%		
LANE1215ND		±15VDC	±15VDC	±34mA	±34mA	80%	80%		
LANE1224ND		±24VDC	±24VDC	±21mA	±21mA	82%	82%		
LANE1533ND	15VDC (13.5~16.5VDC)	±3.3VDC	-	±150mA	-	70%	-	100mVp-p	1 Watt
LANE1505ND		±5VDC	±5VDC	±100mA	±100mA	70%	70%		
LANE1509ND		±9VDC	±9VDC	±56mA	±56mA	75%	75%		
LANE1512ND		±12VDC	±12VDC	±42mA	±42mA	78%	78%		
LANE1515ND		±15VDC	±15VDC	±34mA	±34mA	80%	80%		
LANE1524ND		±24VDC	±24VDC	±21mA	±21mA	82%	82%		
LANE2433ND	24VDC (21.6~26.4VDC)	±3.3VDC	-	±150mA	-	70%	-	100mVp-p	1 Watt
LANE2405ND		±5VDC	±5VDC	±100mA	±100mA	70%	70%		
LANE2409ND		±9VDC	±9VDC	±56mA	±56mA	75%	75%		
LANE2412ND		±12VDC	±12VDC	±42mA	±42mA	78%	78%		
LANE2415ND		±15VDC	±15VDC	±34mA	±34mA	80%	80%		
LANE2424ND		±24VDC	±24VDC	±21mA	±21mA	82%	82%		
LANE485NDP	48VDC (43.2~52.8VDC)	-	±5VDC	-	±100mA	-	70%	100mVp-p	1 Watt
LANE489NDP		-	±9VDC	-	±56mA	-	75%		
LANE4812NDP		-	±12VDC	-	±42mA	-	78%		
LANE4815NDP		-	±15VDC	-	±34mA	-	80%		
LANE4824NDP		-	±24VDC	-	±21mA	-	82%		

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Input Voltage Range	Vo, Io Nom				±10	%
Input Filter				Capacitor		
OUTPUT SPECIFICATIONS						
Output Voltage				See Table		
Voltage Tolerance	100% Full Load				±5	%
Line Regulation	For 1% of Vin			1.2		%
Load Regulation	10% to 100% Full Load	3.3V & 5V output models			15	%
		9V, 12V, 15V, 24V			10	
Output Power				See Table		
Output Current				See Table		
Ripple & Noise	BW=DC to 20MHz				100	mVp-p
Transient Response Setting Time	50% load step change			350		µS
PROTECTION						
Short Circuit Protection	Short term				1	Sec
ENVIRONMENTAL SPECIFICATIONS						
Operating Ambient Temperature			-40		+85	ºC
Humidity	Non-Condensing				95	%
Cooling				Free Air Convection		
MTBF	MIL-HDBK-217F @25ºC		3,500,000			Hours
GENERAL SPECIFICATIONS						
Efficiency(2)				See Table		
Switching Frequency	Full Load, Nominal Input			100		KHz
Isolation Resistance	500VDC		1000			MΩ
PHYSICAL SPECIFICATIONS						
Weight	Package 1			0.074oz (2.1g)		
	Package 2 (“P” suffix)			0.095oz (2.7g)		
Dimensions (L x W x H)	Package 1			0.77in x 0.24in x 0.39in (19.5mm x 6mm x 10mm)		
	Package 2 (“P” suffix)			0.77in x 0.28in x 0.39in (19.5mm x 7.1mm x 10mm)		
Case Material				DAP		
SAFETY						
Safety Approvals	Single Outputs			UL 60950(3)		

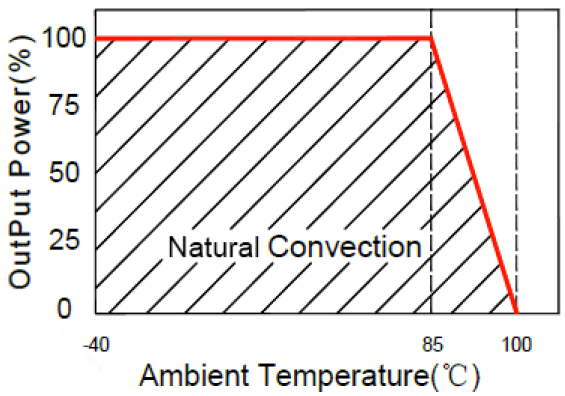
NOTES

(1) Add “P” to end of model number to indicate Package 2 type.
3.3VDC output voltage is only available for Package 1 type.
48VDC nominal input voltage models are only available for Package 2 type.
(2) As the input voltage increases there will be an increase in efficiency.
(3) This product is Listed to applicable standards and requirements by UL.

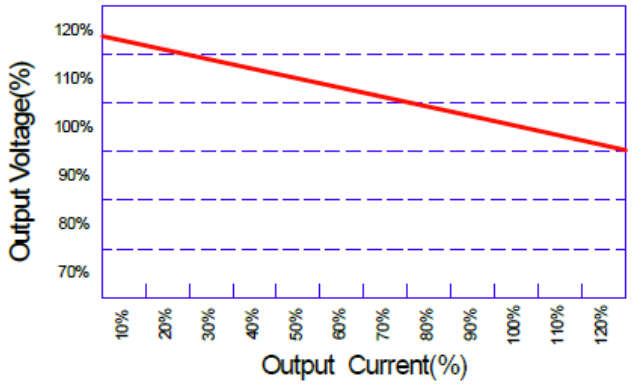
**Due to advances in technology, specifications are subject to change without notice.*

DERATING CURVES

Temperature Derating Graph

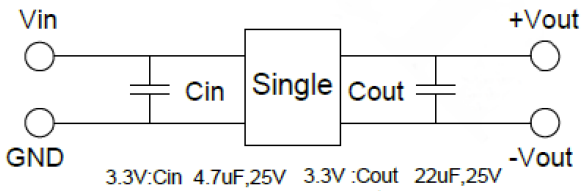


Tolerance Envelope Graph



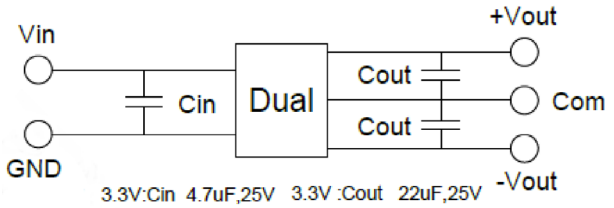
RECOMMENDED TEST CIRCUITS

Single Output



3.3V:Cin	4.7uF,25V	3.3V :Cout	22uF,25V
5V :Cin	4.7uF,25V	5V :Cout	10uF,25V
9V :Cin	4.7uF,25V	9V :Cout	4.7uF,25V
12V :Cin	2.2uF,25V	12V:Cout	2.2uF,25V
15V:Cin	1uF,50V	15V:Cout	1uF,50V
24V:Cin	1uF,50V	24V:Cout	1uF,50V
48V:Cin	1uF,100V		

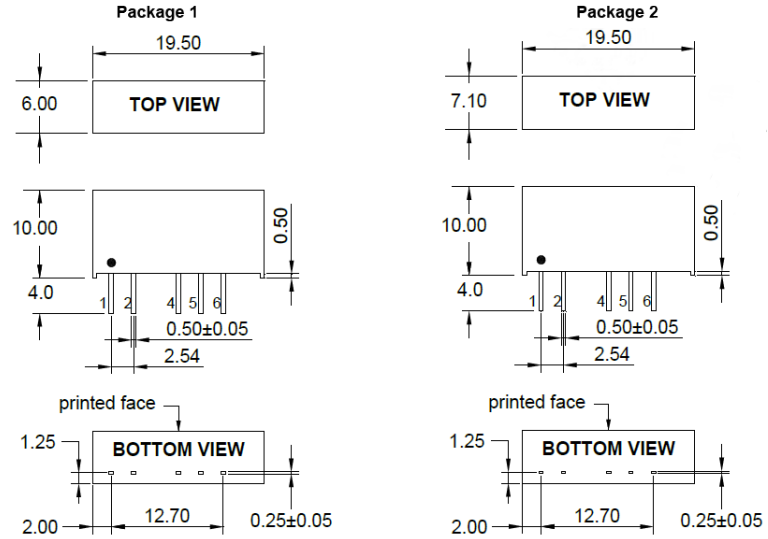
Dual Outputs



3.3V:Cin	4.7uF,25V	3.3V :Cout	22uF,25V
5V :Cin	4.7uF,25V	5V :Cout	10uF,25V
9V :Cin	4.7uF,25V	9V :Cout	4.7uF,25V
12V :Cin	2.2uF,25V	12V:Cout	2.2uF,25V
15V:Cin	1uF,50V	15V:Cout	1uF,50V
24V:Cin	1uF,50V	24V:Cout	1uF,50V
48V:Cin	1uF,100V		

MECHANICAL DRAWINGS

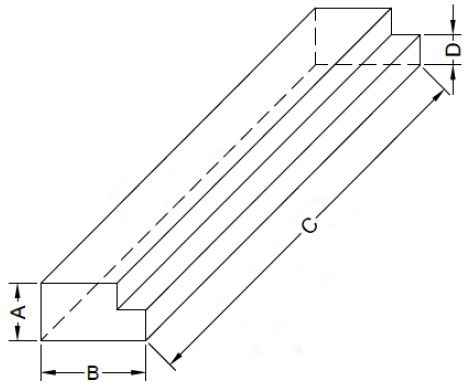
Markings and Dimensions



PIN	1	2	4	5	6
Single	+Vin	-Vin	-Vout	NO PIN	+Vout
Dual	+Vin	-Vin	-Vout	Common	+Vout

UNIT: mm unless otherwise specified, all tolerances are ±0.25

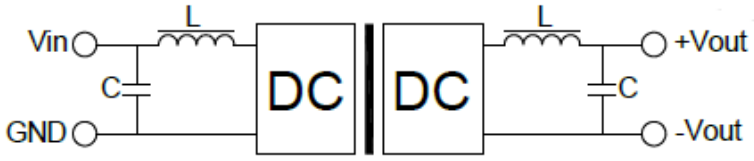
Packaging



Size (mm)			
A	B	C	D
9.5	16.5	522	5.0

FILTERING

In some circuits, which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter must be appropriate. If the capacitance is too big, a startup problem may arise. To ensure safe and reliable operation, please refer to the capacitance table below for the maximum filter capacitor size for each output voltage. To get an extremely low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference (see figure 1 below.



<Figure 1>

External Capacitor Table

Vin	External Capacitor	Vout	External Capacitor
3.3VDC	4.7uF/25V	3.3VDC	22uF/16V
5VDC	4.7uF/25V	5VDC	10uF/25V
9VDC	4.7uF/25V	9VDC	4.7uF/25V
12VDC	2.2uF/25V	12VDC	2.2uF/25V
15VDC	1uF/50V	15VDC	1uF/50V
24VDC	1uF/50V	24VDC	1uF/50V
48VDC	1uF/100V	--	--

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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