

FEATURES

- Low Cost
- 6000VDC Isolation
- Input 5 and 12VDC
- Efficiency up to 75%
- MTBF > 2,000,000 hours
- Industry Standard Pinout
- Internal SMT Construction
- UL 94V-0 Package Material
- Output 5, 12, 15, ± 5 , ± 12 , and ± 15 VDC
- Temperature Performance -40°C to $+85^{\circ}\text{C}$



SPECIFICATIONS: LANE-6KV Series					
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	Nom	Max	Unit
INPUT (V_{in})					
Start Voltage (5V input models)		4.5	5	5.5	VDC
Start Voltage (12V input models)		10.8	12	13.2	VDC
Reverse Polarity Input Current				0.3	A
Input Surge Voltage (1000ms) (5V input models)		-0.7		9	VDC
Input Surge Voltage (1000ms) (12V input models)		-0.7		18	VDC
Input Filter		Internal Capacitor			
OUTPUT (V_o)					
Output Voltage Range		See Rating Chart			
Output Voltage Accuracy		± 1.0	± 3.0		%
Output Voltage Balance	Dual Output, Balanced Loads	± 0.1	± 1.0		%
Load Regulation	I _o = 20% to 100%	See Rating Chart			
Line Regulation	For V _{in} Change of 1%	± 1.2	± 1.5		%
Output Power			1		W
Output Current Range		See Rating Chart			
Ripple & Noise (20MHz)			100	150	mV _{pk-pk}
Ripple & Noise (20MHz)	Over Line, Load, and Temperature			200	mV _{pk-pk}
Ripple & Noise (20MHz)				5	mV _{rms}
Temperature Coefficient		± 0.01	± 0.02		%/°C
PROTECTION					
Over Load		120			%
Short Circuit Protection		0.5 seconds max.			
Input Fuse Recommendation (5V input models)		500mA Slow-Blow Type			
Input Fuse Recommendation (12V input models)		200mA Slow-Blow Type			
GENERAL					
Efficiency		See Rating Chart			
Switching Frequency		50	80	100	KHz
Isolation Voltage Rated	60 seconds	6000			VDC
Isolation Voltage Test	Flash Tested for 1 second	6600			VDC
Isolation Resistance	500VDC	10			GΩ
Isolation Capacitance	100KHz, 1V		15	20	pF
ENVIRONMENTAL					
Operating Temperature (Ambient)		-25		+70	°C
Operating Temperature (Case)		-25		+90	°C
Storage Temperature		-40		+125	°C
Lead Temperature	1.5mm from case for 10 seconds			260	°C
Humidity				95	%
Cooling		Free air convection			
MTBF	MIL-HDBK-217F @ 25°C, Ground Benign	2,000,000 Hours			
PHYSICAL					
Weight		3.9 grams			
Dimensions		22 x 7.5 x 12.5 mm			
Case Material		Non-conductive black plastic			

OUTPUT VOLTAGE / CURRENT RATING CHART

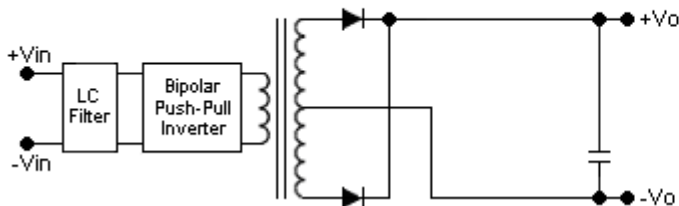
Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Load Regulation	Efficiency (Typ)	Max Capacitive Load
			Min	Max	No Load	Max Load			
LANE505N6KV	5 VDC (4.5 ~ 5.5) VDC	5 VDC	4 mA	200 mA	55mA (typ)	303 mA	10%	66%	680 μ F
LANE512N6KV		12 VDC	2 mA	80 mA		291 mA	8%	66%	680 μ F
LANE515N6KV		15 VDC	1 mA	65 mA		295 mA	8%	66%	680 μ F
LANE505ND6KV		\pm 5 VDC	\pm 2 mA	\pm 100 mA		303 mA	10%	66%	220 μ F
LANE512ND6KV		\pm 12 VDC	\pm 1 mA	\pm 40 mA		267 mA	8%	72%	220 μ F
LANE515ND6KV		\pm 15 VDC	\pm 1 mA	\pm 35 mA		287 mA	8%	73%	220 μ F
LANE1205N6KV	12 VDC (10.8 ~ 13.2) VDC	5 VDC	4 mA	200 mA	30mA (typ)	126 mA	10%	66%	680 μ F
LANE1212N6KV		12 VDC	2 mA	80 mA		121 mA	8%	66%	680 μ F
LANE1215N6KV		15 VDC	1 mA	65 mA		123 mA	8%	66%	680 μ F
LANE1205ND6KV		\pm 5 VDC	\pm 2 mA	\pm 100 mA		126 mA	10%	66%	220 μ F
LANE1212ND6KV		\pm 12 VDC	\pm 1 mA	\pm 40 mA		108 mA	8%	74%	220 μ F
LANE1215ND6KV		\pm 15 VDC	\pm 1 mA	\pm 35 mA		117 mA	8%	75%	220 μ F

NOTES

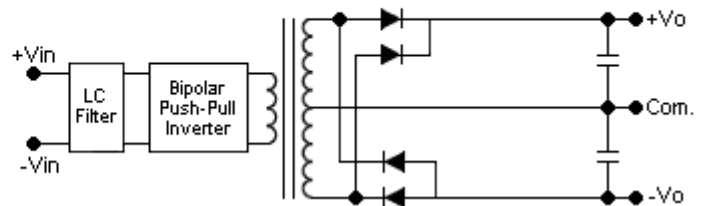
1. Specifications typical at +25°C, resistive load, nominal input voltage, rated output current unless otherwise noted.
2. Ripple and noise measured at 20MHz bandwidth.
3. The LANE-6KV series requires a minimum load on the output to maintain specified regulation. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
4. All DC/DC converters should be externally fused at the front end for protection.
5. Other input and output voltages may be available, please contact factory.
6. Specifications subject to change without notice.

BLOCK DIAGRAMS

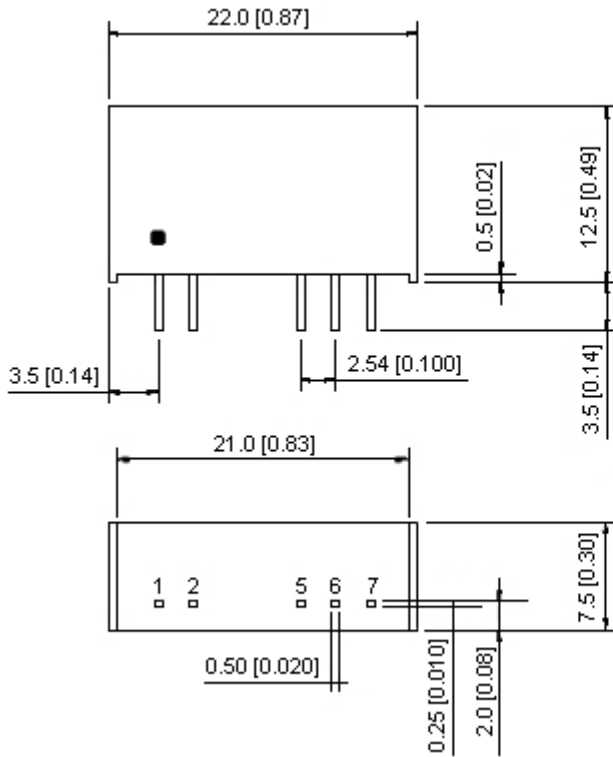
Single Output



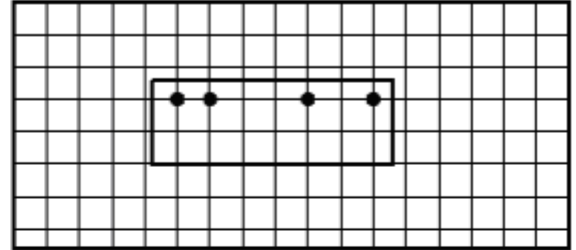
Dual Output



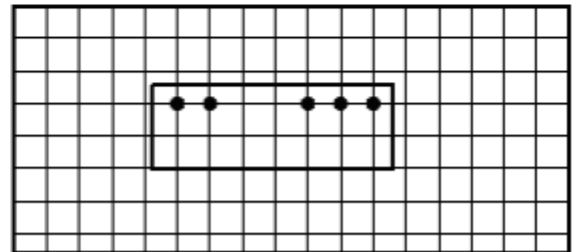
MECHANICAL DRAWING



Single Output



Dual Output



1. All dimensions in mm (inches)
2. Tolerance: X.X±0.25 (X.XX±0.01)
X.XX±0.25 (X.XXX±0.01)
3. Pin tolerance: ±0.05 (±0.002)

PIN CONNECTIONS		
Pin	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	No Pin	Common
7	+Vout	+Vout

The LANE-6KV Series converter is encapsulated in a low thermal resistance molding compound that has excellent resistance/electrical characteristics over a wide temperature range or in high humidity environments. The encapsulant and unit case are both rated to UL 94V-0 flammability specifications. Leads are tin plated for improved solderability.

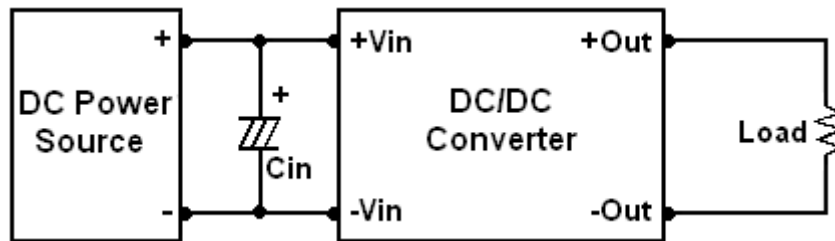
DESIGN & FEATURE CONSIDERATIONS

Input Source Impedance

The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module.

In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup.

Capacitor mounted close to the power module helps ensure stability of the unit, it is recommended to use a good quality low Equivalent Series Resistance ($ESR < 1.0\Omega$ at 100 KHz) capacitor of a 2.2uF for the 5V input devices and a 1.0uF for the 12V input devices.

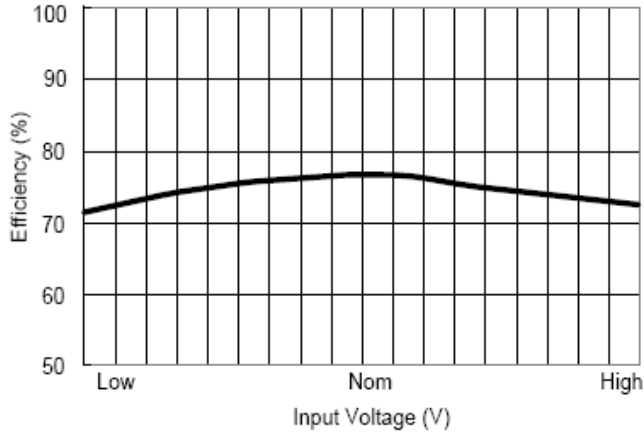


Maximum Capacitive Load

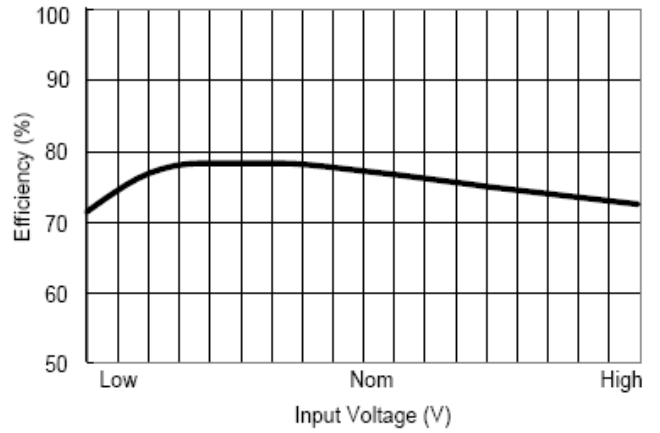
The LANE-6KV Series has a limitation of maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time.

For optimum performance we recommend 220uF maximum capacitive load for dual outputs and 680uF capacitive load for single outputs. The maximum capacitance can be found in the Output Voltage / Current Rating Chart.

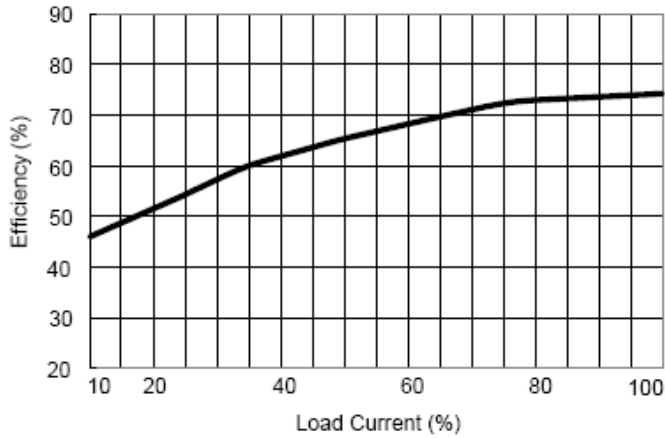
Efficiency vs Input Voltage (Single Output)



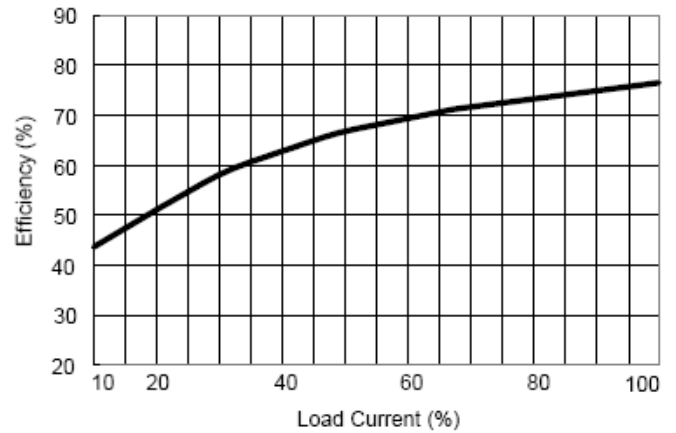
Efficiency vs Input Voltage (Dual Output)



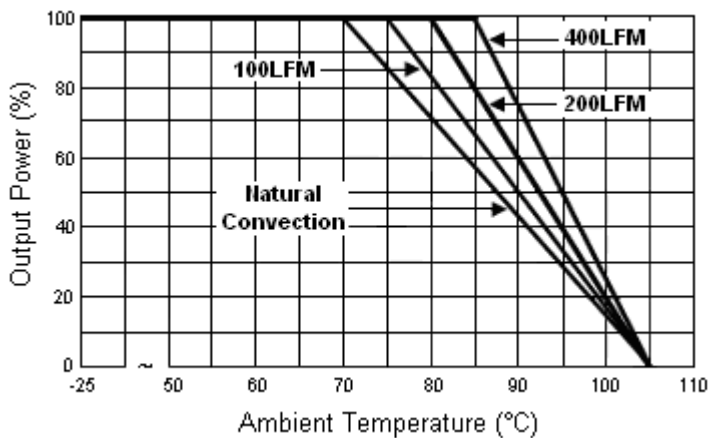
Efficiency vs Output Load (Single Output)



Efficiency vs Output Load (Dual Output)



Derating Curve



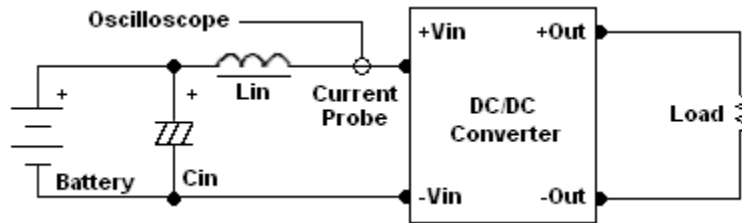
TEST CONFIGURATIONS

Input Reflected-Ripple Current Test Setup

Input reflected-ripple current is measured with an inductor L_{in} (4.7uH) and C_{in} (220uF, ESR < 1.0Ω at 100 KHz) to simulate source impedance.

Capacitor C_{in} offsets possible battery impedance.

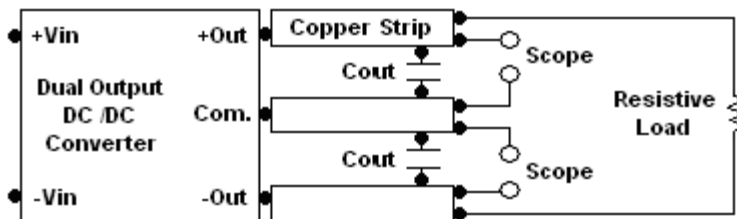
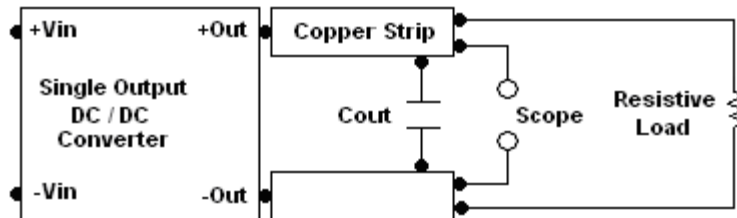
Current ripple is measured at the input terminals of the module. Measurement bandwidth is 0-500 KHz.



Peak-to-Peak Output Noise Measurement Test

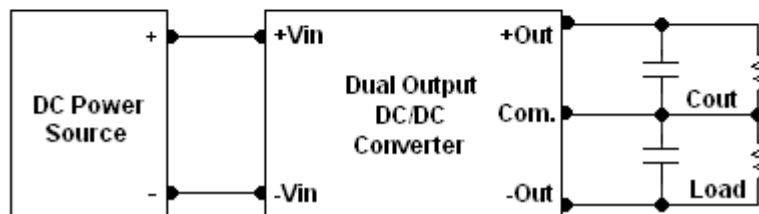
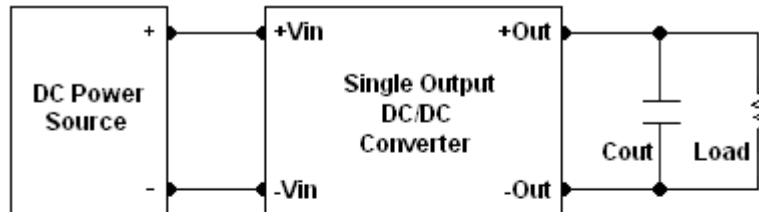
Use a C_{out} 0.33uF ceramic capacitor.

Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 50mm and 75mm from the DC/DC Converter.



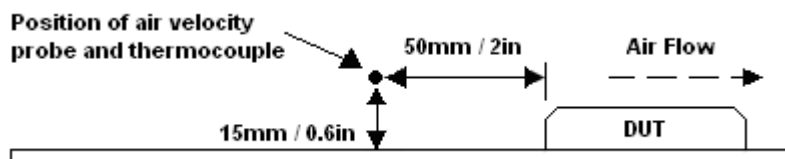
Output Ripple Reduction

A good quality low ESR capacitor placed as close as possible across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 1.5uF capacitors at the output.



Thermal Considerations

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module, and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 90°C. The derating curves are determined from measurements obtained in an experimental apparatus.



COMPANY INFORMATION:

Wall Industries, Inc. has created custom and modified units for over 40 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on time and on budget. Our ISO9001-2000 certification is just one example of our commitment to producing a high quality, well documented product for our customers.

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