

Size: 0.87 x 0.30 x 0.49 inches
22.0 x 7.5 x 12.5 mm

Weight: 0.14oz (3.9g)

FEATURES

- 1 Watt Output Power
- Small SIP Package
- Single & Dual Outputs
- Low Coupling Capacity
- Short Circuit Protection
- -25°C to +85°C Operating Temperature
- MTBF > 2,000,000 Hours
- 3000VACrms (6000VDC) I/O Isolation
- Reinforced Insulation Rated for 300VAC Working Voltage
- cUL/UL60950-1, CSA C22.2 No. 60950-1-03, IEC/EN 60950-1 Industrial Safety Approvals
- UL60601-1, CSA C22.2 No. 601-1, IEC/EN 60601-1 (3rd Edition) Medical Safety Approvals

DESCRIPTION

The LANE-6KV series of 1 watt DC/DC power converters are specially designed to provide ultra-high levels of isolation in a miniature SIP package. This series consists of 12 models with nominal input voltages of 5V and 12V and standard output voltages of 5V, 12V, and 15V in both single and dual output configurations. The LANE-6KV has both industrial and medical (3rd edition) approvals and offers an economical solution for many applications in industrial controls and instrumentation, consumer electronics, and wherever a certified supplementary or reinforced insulation system is required to comply with relative safety standards.

MODEL SELECTION TABLE

SINGLE OUTPUT MODELS

Model Number	Input Voltage	Output Voltage	Output Current		Input Current (Typ)		Load Regulation	Output Power	Efficiency (Typ)	Maximum Capacitive Load
			Min ⁽¹⁾	Max	No Load	Max Load				
LANE505N6KV	5 VDC (4.5 - 5.5 VDC)	5 VDC	4mA	200mA	55mA	303mA	10%	1W	66%	680µF
LANE512N6KV		12 VDC	2mA	80mA		291mA	8%	1W	66%	680µF
LANE515N6KV		15 VDC	1mA	65mA		295mA	8%	1W	66%	680µF
LANE1205N6KV	12 VDC (10.8 - 13.2 VDC)	5 VDC	4mA	200mA	30mA	126mA	10%	1W	66%	680µF
LANE1212N6KV		12 VDC	2mA	80mA		121mA	8%	1W	66%	680µF
LANE1215N6KV		15 VDC	1mA	65mA		123mA	8%	1W	66%	680µF

DUAL OUTPUT MODELS

Model Number	Input Voltage	Output Voltage	Output Current		Input Current (Typ)		Load Regulation	Output Power	Efficiency (Typ)	Maximum Capacitive Load
			Min ⁽¹⁾	Max	No Load	Max Load				
LANE505ND6KV	5 VDC (4.5 - 5.5 VDC)	±5 VDC	±2mA	±100mA	55mA	303mA	10%	1W	66%	±220µF
LANE512ND6KV		±12 VDC	±1mA	±40mA		267mA	8%	1W	72%	±220µF
LANE515ND6KV		±15 VDC	±1mA	±35mA		287mA	8%	1W	73%	±220µF
LANE1205ND6KV	12 VDC (10.8 - 13.2 VDC)	±5 VDC	±2mA	±100mA	30mA	126mA	10%	1W	66%	±220µF
LANE1212ND6KV		±12 VDC	±1mA	±40mA		108mA	8%	1W	74%	±220µF
LANE1215ND6KV		±15 VDC	±1mA	±35mA		117mA	8%	1W	75%	±220µF

TECHNICAL 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.

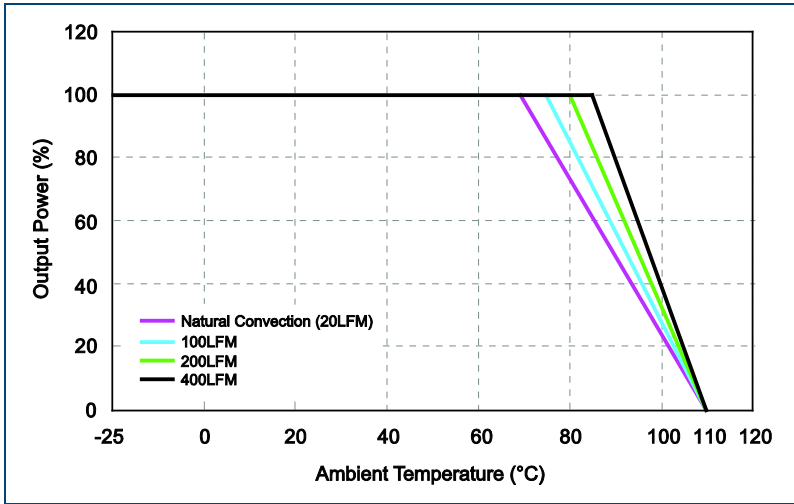
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range	5VDC nominal input models	4.5	5	5.5	VDC
	12VDC nominal input models	10.8	12	13.2	
Input Surge Voltage (1sec, max.)	5VDC nominal input models	-0.7		9	VDC
	12VDC nominal input models	-0.7		29	
Reverse Polarity Input Current				0.3	A
Input Current	No Load	See Table			
Internal Power Dissipation				650	mW
Input Filter Type		LC filter			
OUTPUT SPECIFICATIONS					
Output Voltage		See Table			
Voltage Accuracy			±1.0	±3.0	%
Line Regulation	For Vin change of 1%		±1.2	±1.5	%
Load Regulation	20% load to 100% load	5VDC and ±5VDC output models		10	%
		Others		8	
Cross Regulation	Dual output models; Balanced loads		±0.1	±1.0	%
Output Power				1	W
Output Current		See Table			
Minimum Load	See Note 1	See Table			
Maximum Capacitive Load		See Table			
Ripple & Noise	20MHz bandwidth			150	mVp-p
Temperature Coefficient			±0.01	±0.02	%/°C
PROTECTION					
Short Circuit Protection				0.5	s
GENERAL SPECIFICATIONS					
Efficiency	Nominal input voltage and full load	See Table			
Switching Frequency		50	80	100	KHz
Isolation Voltage (I/P to O/P)	60 seconds	3000			VACrms
Isolation Test Voltage (I/P to O/P)	Flash tested for 1 second	4500			V _{pk}
Isolation Resistance (I/P to O/P)	500VDC	10			GΩ
Isolation Capacitance (I/P to O/P)	100KHz, 1V		15	20	pF
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	See power derating curve	-25		+85	°C
Case Temperature				+90	°C
Storage Temperature		-50		+125	°C
Relative Humidity	Non-condensing			95	% RH
Cooling	Natural convection is about 20LFM but is not equal to still air (0 LFM)	Free air convection			
Lead Temperature	1.5mm from case for 10 sec.			260	°C
MTBF	MIL-HDBK-217F at 25°C, ground benign	2,000,000 hours			
PHYSICAL SPECIFICATIONS					
Weight		0.14oz (3.9g)			
Dimensions (L x W x H)		0.87 x 0.30 x 0.49 inches (22.0 x 7.5 x 12.5 mm)			
Case Material	Flammability to UL 94V-0 rated	Non-conductive black plastic			
Pin Material		Alloy 42			
SAFETY					
Safety Approvals	Industrial	CUL/UL60950-1 ⁽⁴⁾ , CSA C22.2 No. 60950-1-03, IEC/EN 60950-1			
	Medical	UL 60601-1 ⁽⁴⁾ , CSA C22.2 No.601-1, IEC/EN 60601-1 (3rd edition)			

NOTES

- 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.
- All DC/DC converters should be externally fused at the front end for protection.
- Other input and output voltages may be available, please contact factory.
- This product is Listed to applicable standards and requirements by UL.

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

DERATING CURVE



MECHANICAL DRAWING

PIN CONNECTIONS

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

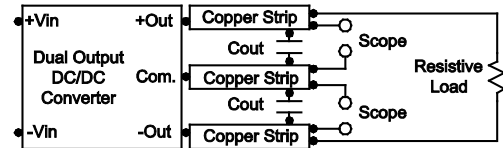
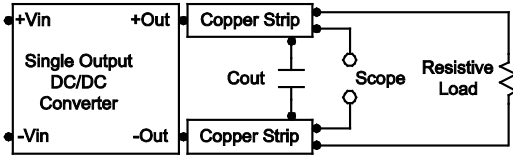
NOTES:

- Unit: inches (mm)
- Tolerance: X.X±0.25 (X.XX±0.01)
X.XX±0.13 (X.XXX±0.005)
- Pins: ±0.05 (±0.002)
- Weight: 0.14oz (3.9g)
- Pin Material: Alloy 42
- Case Material: non-conductive black plastic
(flammability to UL94V-0 rated)
- All dimensions are for reference only

DESIGN CONSIDERATIONS

Peak-to-Peak Output Noise Measurement Test

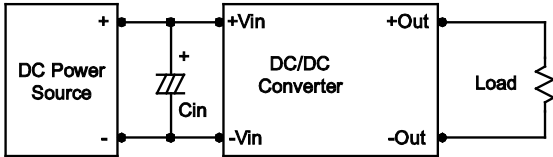
Use a 0.33 μ F ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 50mm and 75mm from the DC/DC converter.



TEST SETUP

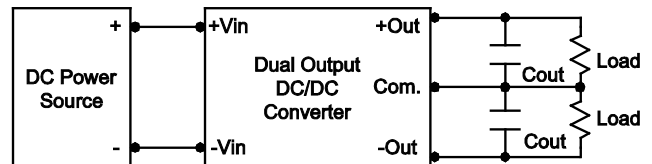
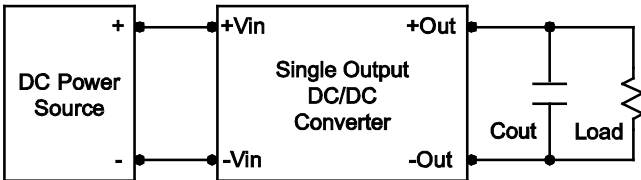
Input Source Impedance

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 Ω at 100 KHz) capacitor of 2.2 μ F for the 5V input devices and a 1.0 μ F for the 12V input devices.



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 1.5 μ F capacitors at the output.

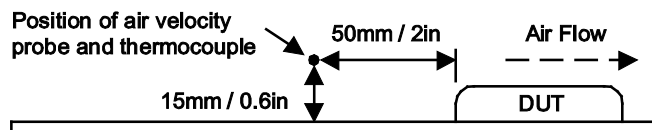


Maximum Capacitive Load

The LANE-6KV series has a limitation of maximum connected capacitance on the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the start-up time. For optimum performance we recommend 220 μ F maximum capacitive load for dual outputs and 680 μ F capacitive load for single outputs. The maximum capacitance can be found in the Model Selection Table.

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 a test setup.



COMPANY INFORMATION

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