

Size: 0.77in x 0.24in x 0.39in
(19.5mm x 6.0mm x 10.0mm)

FEATURES

- Wide Input Voltage Ranges
- 7Pin SIP Package
- Unregulated Output Types
- RoHS Compliant
- 1.5KVDC~3KVDC Isolation
- No Load Input Current as Low as 5mA
- Industry Standard Pinout
- Continuous Short Circuit Protection
- High Efficiency
- UL/cUL/IEC/EN 62368-1 Approved, CB Report

DESCRIPTION

The LACE1 series of DC/DC converters offers 1 watts of output power in a compact 0.77” x 0.24” x 0.39” 7 pin SIP package. This series consists of unregulated single and dual output models with several wide input voltage ranges available. Each model features an industry standard pinout, continuous short circuit protection, and high efficiency. This series is also RoHS compliant and has UL/cUL/IEC/EN 62368-1approvals.

MODEL SELECTION TABLE

Single Output Models

Model Number[1]	Input Voltage Range	Output Voltage	Output Current	Capacitive Load	Output Power	Efficiency
LACE1-03S03	3.3VDC	3.3VDC	303mA	2400µF	1W	76%
LACE1-03S05		5VDC	200mA	2400µF		82%
LACE1-03S09		9VDC	112mA	1000µF		83%
LACE1-03S12		12VDC	84mA	470µF		84%
LACE1-03S15		15VDC	67mA	330µF		84%
LACE1-03S24		24VDC	42mA	100µF		85%
LACE1-05S03	5VDC	3.3VDC	303mA	2400µF	1W	76%
LACE1-05S05		5VDC	200mA	2400µF		82%
LACE1-05S09		9VDC	112mA	1000µF		83%
LACE1-05S12		12VDC	84mA	470µF		84%
LACE1-05S15		15VDC	67mA	330µF		84%
LACE1-05S24		24VDC	42mA	100µF		85%
LACE1-09S03	9VDC	3.3VDC	303mA	2400µF	1W	76%
LACE1-09S05		5VDC	200mA	2400µF		82%
LACE1-09S09		9VDC	112mA	1000µF		83%
LACE1-09S12		12VDC	84mA	470µF		84%
LACE1-09S15		15VDC	67mA	330µF		84%
LACE1-09S24		24VDC	42mA	100µF		85%
LACE1-12S03	12VDC	3.3VDC	303mA	2400µF	1W	78%
LACE1-12S05		5VDC	200mA	2400µF		82%
LACE1-12S09		9VDC	112mA	1000µF		85%
LACE1-12S12		12VDC	84mA	680µF		85%
LACE1-12S15		15VDC	67mA	330µF		87%
LACE1-12S24		24VDC	42mA	220µF		85%
LACE1-15S03	15VDC	3.3VDC	303mA	2400µF	1W	78%
LACE1-15S05		5VDC	200mA	2400µF		82%
LACE1-15S09		9VDC	112mA	820µF		85%
LACE1-15S12		12VDC	84mA	470µF		85%
LACE1-15S15		15VDC	67mA	220µF		87%
LACE1-15S24		24VDC	42mA	100µF		85%
LACE1-24S03	24VDC	3.3VDC	303mA	2400µF	1W	78%
LACE1-24S05		5VDC	200mA	2400µF		82%
LACE1-24S09		9VDC	112mA	820µF		85%
LACE1-24S12		12VDC	84mA	470µF		85%
LACE1-24S15		15VDC	67mA	220µF		87%
LACE1-24S24		24VDC	42mA	100µF		85%

MODEL SELECTION TABLE

Dual Output Models

Model Number[1]	Input Voltage Range	Output Voltage	Output Current	Capacitive Load	Output Power	Efficiency
LACE1-03D03	3.3VDC	±3.3VDC	±151mA	±1200µF	1W	76%
LACE1-03D05		±5VDC	±100mA	±1200µF		82%
LACE1-03D09		±9VDC	±56mA	±470µF		83%
LACE1-03D12		±12VDC	±42mA	±220µF		84%
LACE1-03D15		±15VDC	±34mA	±220µF		84%
LACE1-03D24		±24VDC	±21mA	±47µF		85%
LACE1-05D03	5VDC	±3.3VDC	±151mA	±1200µF	1W	76%
LACE1-05D05		±5VDC	±100mA	±1200µF		82%
LACE1-05D09		±9VDC	±56mA	±470µF		83%
LACE1-05D12		±12VDC	±42mA	±220µF		84%
LACE1-05D15		±15VDC	±34mA	±220µF		84%
LACE1-05D24		±24VDC	±21mA	±47µF		85%
LACE1-09D03	9VDC	±3.3VDC	±151mA	±1200µF	1W	76%
LACE1-09D05		±5VDC	±100mA	±1200µF		82%
LACE1-09D09		±9VDC	±56mA	±470µF		83%
LACE1-09D12		±12VDC	±42mA	±220µF		84%
LACE1-09D15		±15VDC	±34mA	±220µF		84%
LACE1-09D24		±24VDC	±21mA	±47µF		85%
LACE1-12D03	12VDC	±3.3VDC	±151mA	±1200µF	1W	78%
LACE1-12D05		±5VDC	±100mA	±1200µF		82%
LACE1-12D09		±9VDC	±56mA	±680µF		85%
LACE1-12D12		±12VDC	±42mA	±330µF		85%
LACE1-12D15		±15VDC	±34mA	±220µF		87%
LACE1-12D24		±24VDC	±21mA	±100µF		85%
LACE1-15D03	15VDC	±3.3VDC	±151mA	±1200µF	1W	78%
LACE1-15D05		±5VDC	±100mA	±1200µF		82%
LACE1-15D09		±9VDC	±56mA	±680µF		85%
LACE1-15D12		±12VDC	±42mA	±330µF		85%
LACE1-15D15		±15VDC	±34mA	±220µF		87%
LACE1-15D24		±24VDC	±21mA	±100µF		85%
LACE1-24D03	24VDC	±3.3VDC	±151mA	±1200µF	1W	78%
LACE1-24D05		±5VDC	±100mA	±1200µF		82%
LACE1-24D09		±9VDC	±56mA	±680µF		85%
LACE1-24D12		±12VDC	±42mA	±330µF		85%
LACE1-24D15		±15VDC	±34mA	±220µF		87%
LACE1-24D24		±24VDC	±21mA	±100µF		85%

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Rated 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 Tolerance	Vo, Io Nom @Vin: 3.3V, 5V, 9V			±10		%
	Vo, Io Nom @Vin: 12V, 15V, 24V			±20		
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% FL	3.3V		15	20	%
		5V		10	15	
		9V		8	10	
		12V		7	10	
		15V		6	10	
		24V		5	10	
Output Power				See Table		
Output Current				See Table		
Ripple & Noise	BW=DC to 20MHz	Vo: 3.3V, 5V, 9V, 12V, 15V		30	75	mVp-p
		Vo: 24V		50	100	
PROTECTION						
Short Circuit Protection				Continuous		
ENVIRONMENTAL SPECIFICATIONS						
Operating Temperature			-40		+105	ºC
Storage Temperature			-55		+125	ºC
Humidity	Non Condensing				95	%
Cooling				Free Air Convection		
MTBF	MIL-HDBK-217F @25ºC		3,500,000			Hours

SPECIFICATIONS

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

SPECIFICATION	TEST CONDITIONS			Min	Typ	Max	Unit
GENERAL SPECIFICATIONS							
Efficiency					See Table		
Switching Frequency	Full Load, Nominal Input, 3.3Vin, 5Vin				215/370		KHz
	Full Load, Nominal Input, Other Vin				250		
Isolation Resistance	500VDC			1000			MΩ
Isolation Capacitance	Input-Output, 100KHz/0.1V				20		pF
PHYSICAL SPECIFICATIONS							
Weight					0.07oz (2.1g)		
Dimensions (L x W x H)					0.77in x 0.24in x 0.39in (19.5mm x 6.0mm x 10.0mm)		
Case Material					DAP		
SAFETY							
Safety Standards[2]					UL/cUL/IEC/EN 62368-1 CB Report		
EMI		CE	CISPR32/EN55032		Class B[3]		
		RE	CISPR32/EN55032		Class B[3]		
EMS	ESD	IEC/EN61000-4-2	Air ±8kV, Contact ±6kV				Perf. Criteria B

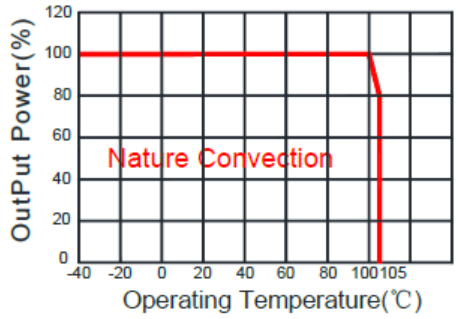
NOTES

1. No suffix is standard isolation (1.5KVDC), add “H3” to indicate for 3KVDC isolation.
2. This product is Listed to applicable standards and requirements by UL.
3. See Fig. 1 for recommended circuit.

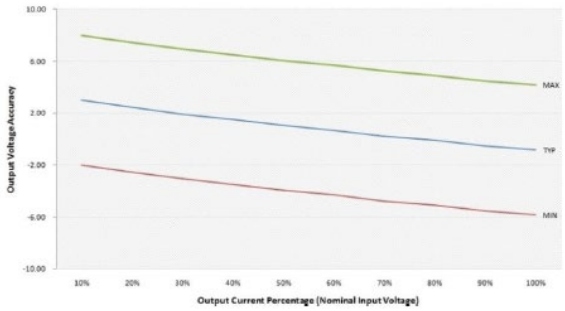
**Due to advances in technology, specifications subject to change without notice.*

CHARACTERISTIC CURVES

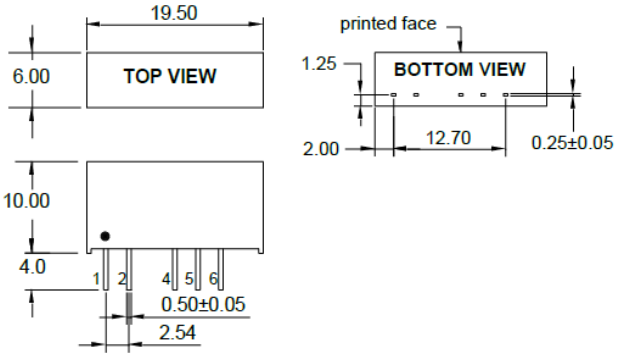
Temperature Derating Graph



Tolerance Envelope Graph



MECHANICAL DRAWINGS

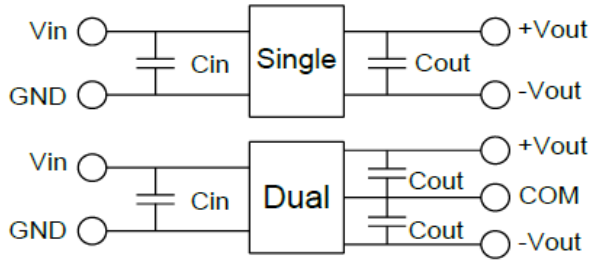


Pin Connection

PIN	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	No Pin	Com
6	+Vout	+Vout

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

RECOMMENDED TEST CIRCUIT



Vin	Cin	Single Vout	Cout	DualVout	Cout
3.3Vdc	4.7μF/25V	3.3Vdc	10μF/16V	±3.3Vdc	±4.7μF/16V
5Vdc	4.7μF/25V	5Vdc	10μF/16V	±5Vdc	±4.7μF/16V
9Vdc	4.7μF/25V	9Vdc	2.2μF/16V	±9Vdc	±1μF/16V
12Vdc	2.2μF/25V	12Vdc	2.2μF/25V	±12Vdc	±1μF/25V
15Vdc	2.2μF/25V	15Vdc	1μF/25V	±15Vdc	±1μF/25V
24Vdc	1μF/50V	24Vdc	1μF/50V	±24Vdc	±1μF/50V

EMC (CLASS B) COMPLIANCE CIRCUIT

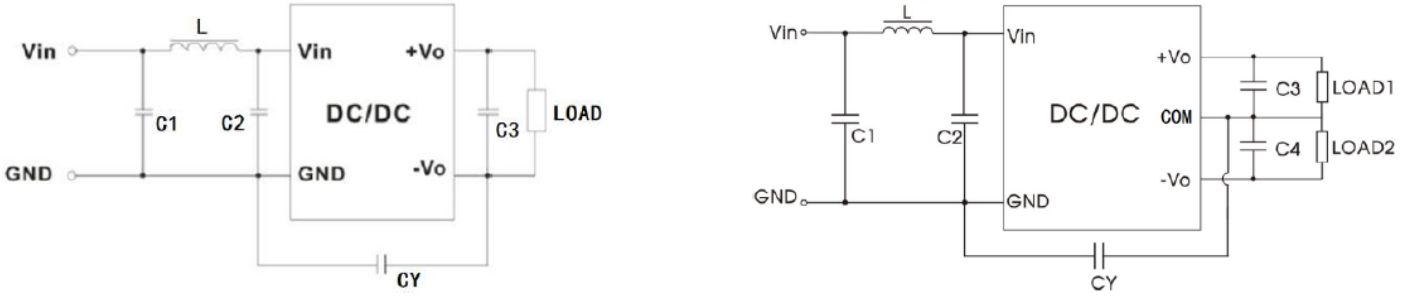


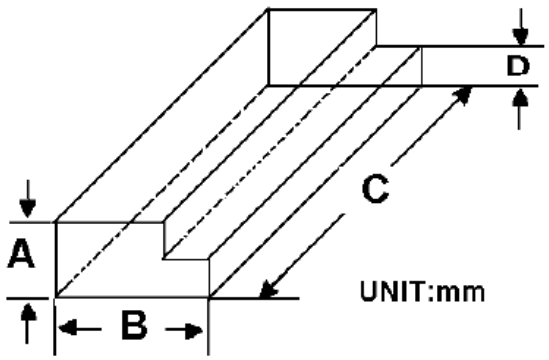
Fig. 1

EMC Recommended Circuit Value Table

EMI	C1	4.7μF/50V
	C2	4.7μF/50V
	CY	1nF/4kV
	C3, C4	Recommended Test Circuit
	L	6.8μH

PACKAGING

Tube: 25 pcs



Size (mm)

A	B	C	D
9.5	16.5	52	5.0

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 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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