1W SIP7 DC/DC Converter

LEA1W Series

Learn More

Description

The LEA1W series is a compact 1W DC-DC converter housed in a SIP-7 package, supporting wide nominal input voltages of 3.3V, 5V, 12V and 24V DC. It provides stable single outputs from 3.3V to 15V with efficiencies up to 84%, high isolation up to 1.5kVDC, and reliable operation from −40°C to +105°C. Designed to meet UL62368-1, IEC62368-1, and EN55032 standards, it is ideal for industrial control and Tele-comminication applications.

Features

- 1 Watt output power
- Compact SIP-7 package
- 1:1 input voltage range
- -40℃ to +105℃ operating temperature
- 1.5KVDC isolation
- Meet UL62368-1
- EMC-EN55032
- RoHS compliant

Applications

- Input voltage range from 3.3V to 24V
- Industry Control
- Telecommunicattions

Model Numbering

LEA 1W – 05 33 – D P

- P → Short Circuit Protection
- D → Output Voltage: (±) output voltage
- 33 → Output Voltage: 3.3V/5V/9V/12V/15V/±3.3V/±5V/±9V/±12V/±15V
- 05 → Input Voltage: 5V / 12V / 24V
- 1W → Wattage: 1 W
- LEA → Series Name

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Model Selection Guide

Part No.	Input Voltage	Output Voltage	Output Current @ Full Load	Efficiency (1) (Typ.)	Capacitor Load (2) (Max.)
LEA1W-3.33.3P	3.3 VDC±10%	3.3 VDC	303 mA	75%	1000µF
LEA1W-3.305P		5 VDC	200 mA	78%	1000µF
LEA1W-3.309P		9VDC	111mA	78%	470µF
LEA1W-3.312P		12 VDC	84 mA	77%	220µF
LEA1W-3.315P		15 VDC	67 mA	78%	220µF
LEA1W-3.33.3DP		±3.3VDC	±152mA	77%	±330µF
LEA1W-3.305DP		±5VDC	±100mA	78%	±330µF
LEA1W-3.3309DP		±9VDC	±56mA	79%	±220µF
LEA1W-3.312DP		±12VDC	±42mA	80%	±100µF
LEA1W-3.315DP		±15VDC	±34mA	78%	±100µF
LEA1W-053.3P	5 VDC±10%	3.3 VDC	303 mA	74%	1000µF
LEA1W-0505P		5 VDC	200 mA	79%	1000µF
LEA1W-0509P		9VDC	111mA	79%	470µF
LEA1W-0512P		12 VDC	84 mA	78%	220µF
LEA1W-0515P		15 VDC	67 mA	78%	220µF
LEA1W-053.3DP		±3.3VDC	±152mA	75%	±330µF
LEA1W-0505DP		±5VDC	±100mA	77%	±330µF
LEA1W-0509DP		±9VDC	±56mA	80%	±220µF
LEA1W-0512DP		±12VDC	±42mA	80%	±100µF
LEA1W-0515DP		±15VDC	±34mA	80%	±100µF
LEA1W-123.3P	12 VDC±10%	3.3 VDC	303 mA	79%	1000µF
LEA1W-1205P		5 VDC	200 mA	82%	1000µF
LEA1W-1209P		9VDC	111mA	84%	470µF
LEA1W-1212P		12 VDC	84 mA	80%	220µF
LEA1W-1215P		15 VDC	67 mA	81%	220µF
LEA1W-123.3DP		±3.3VDC	±152mA	80%	±330µF
LEA1W-1205DP		±5VDC	±100mA	76%	±330µF
LEA1W-1209DP		±9VDC	±56mA	84%	±220µF
LEA1W-1212DP		±12VDC	±42mA	80%	±100µF
LEA1W-1215DP		±15VDC	±34mA	81%	±100µF

LEA1W-243.3P	24 VDC±10%	3.3 VDC	303 mA	79%	1000μF
LEA1W-2405P		5 VDC	200 mA	82%	1000μF
LEA1W-2409P		9VDC	111mA	84%	470μF
LEA1W-2412P		12 VDC	84 mA	80%	220μF
LEA1W-2415P		15 VDC	67 mA	81%	220μF
LEA1W-243.3DP		±3.3VDC	±152mA	80%	±330μF
LEA1W-24305DP		±5VDC	±100mA	76%	±330μF
LEA1W-2409DP		±9VDC	±56mA	84%	±220μF
LEA1W-2412DP		±12VDC	±42mA	80%	±100μF
LEA1W-2415DP		±15VDC	±34mA	81%	±100μF

Notes

#1: The efficiency is test by nominal input and constant resistive load, the efficiency tolerance is ±3%.

#2: The capacitive load is test by minimum input and constant resistive load.

Electrical Specification

Model Number	LEA1W-☐☐
Input	
Filter	Internal capacitors
Input Voltage Range	+10%
Output	
Voltage Accuracy	± 5% max.
Minimum Load	0%
Line Regulation	1.2% typ. @ 1% of Vin
Load Regulation (10% to 100% Load)	15% @ Vo=3.3V/ 5V 10% @ Vo=9/ 12 / 15V
Ripple & Noise	100 mVp-p @ 20MHz BW (@ nominal Vin)
Operating Frequency	50KHz @ 100% load at nominal Vin
Environment	
Operating Temperature	-40-+105 ˚C
Storage Temperature	-55-+125 ˚C
Max. Case Temperature	110˚C
Relative Humidity	5%-95% RH
Temperature Coefficient	± 0.02%
Function	
Isolation Voltage	1.5 KVDC 1min. Input to Output
Isolation Resistance	1 GΩ
Isolation Capacitance	20 pF
MTBF (MIL-HDBK-217F)	$17*10^6$ Hours (25˚C)
Short Circuit Protection	Continuous
Vibration	MIL-STD-202G
Safety Approvals	UL62368-1

Physical	
Case Material	UL94V-0 black plastic
Potting Material	Silicone (UL94V-0)
Dimension	19.65 x 6.00 x 10.20 mm
Weight	2.6 g
Electromagnetic Compatibility	
Electromagnetic Interference	EN 55032 (Class A/B)
Electrostatic Discharge	IEC 61000-4-2, Air±15kV; Contact±8kV (Criteria A)
Radiated Immunity	IEC 61000-4-4, (Criteria A)
Electrical Fast Transient	IEC 61000-4-4, ±1kV (Criteria A)
Surge Immunity	IEC 61000-4-5, ±0.5kV (Criteria A)
Conducted Immunity	IEC 61000-4-6, (Criteria A)
Magnetic Field Immunity	IEC 61000-4-8, (Criteria A)

Notes

#1: “EMC filtering suggestion” is as following:

#2: In this datasheet, all test methods are based on our corporate standards.

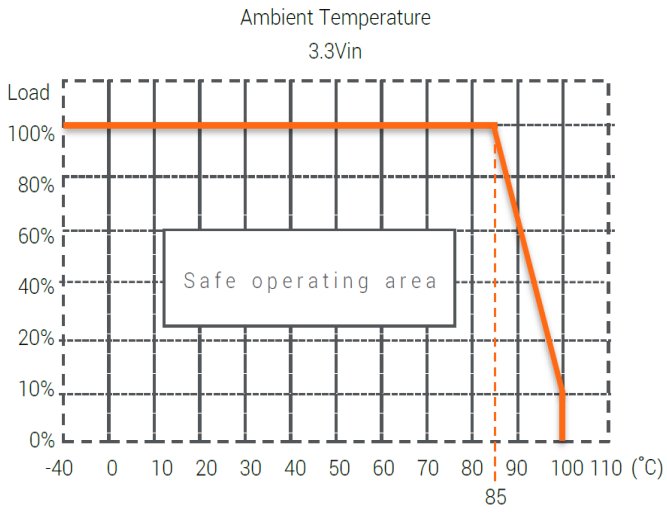
#3: The product information and specifications are subject to change without prior notice.

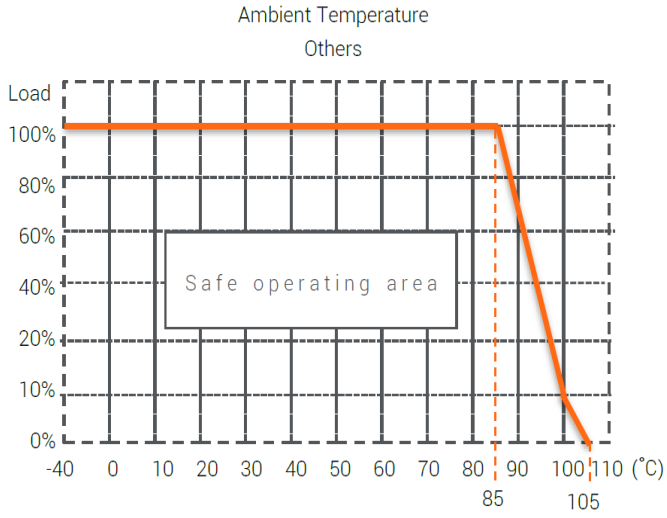
#4: All specifications valid at nominal input voltage, full load and 25˚C unless otherwise stated.

#5: All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.

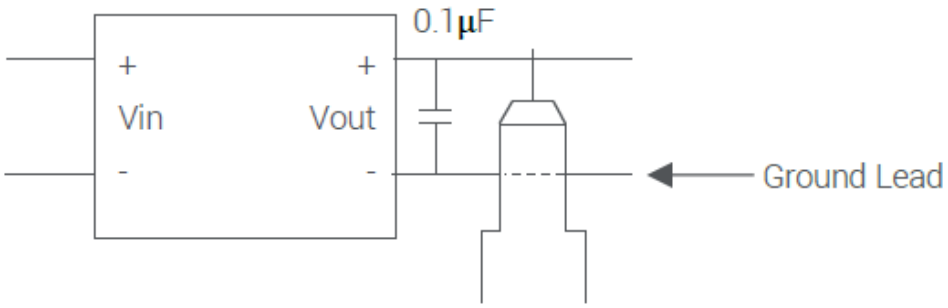
Mechanical Specification

Derating Curve





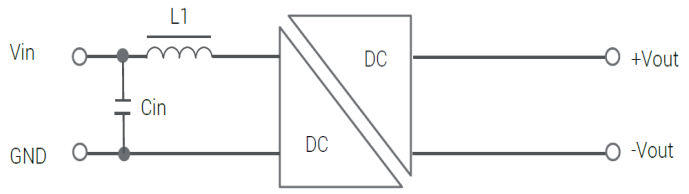
Ripple & Noise Measure Method



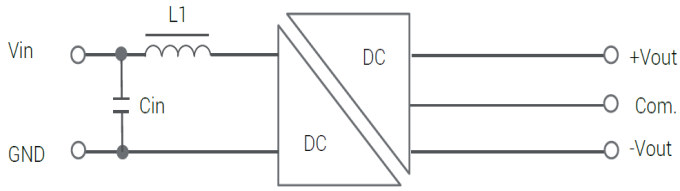
Measured with 20MHz bandwidth and 0.1μF ceramic capacitor

EMI Filtering-Suggestion for Class B

Vin= 3.3, 5VDC

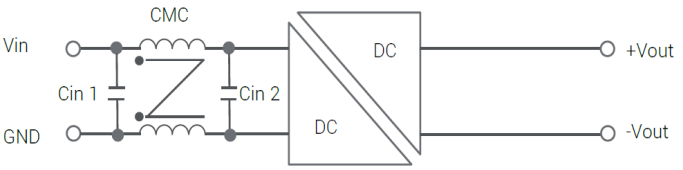


Part No.	Input Voltage	L1 / Cin
LEA1W	3.3V	47 µH / 10 µF
	5V	47 µH / 10 µF

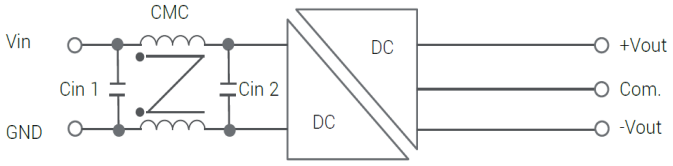


Part No.	Input Voltage	L1 / Cin
LEA1W-D	3.3V	47 µH / 10 µF
	5V	47 µH / 10 µF

Vin= 12, 24VDC



Part No.	Input Voltage	L1 / Cin
LEA1W	12V	10 µF / 0.3 mH / 10 µF
	24 V 5 Vout	10 µF / 0.3 mH / 10 µF
	24 V others	10 µF / 0.1 mH / 10 µF

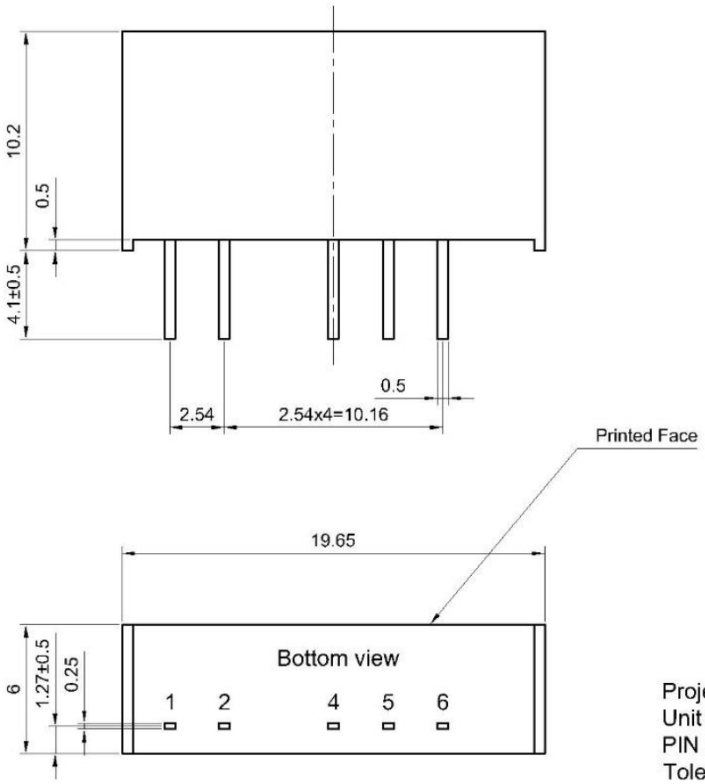


Part No.	Input Voltage	L1 / Cin
LEA1W-D	12V	10 µF / 0.3 mH / 10 µF
	24 V ±5 Vout	10 µF / 0.3 mH / 10 µF
	24 V others	10 µF / 0.1 mH / 10 µF

CMC core=MA055 T6-3-1.5P (AL=1140nH/N^2)±30%
100uH= 0.26Φ*9T，300uH= 0.15Φ*16T

*The external filter for meet EN55032 class B.

Mechanical Dimension & Pinning

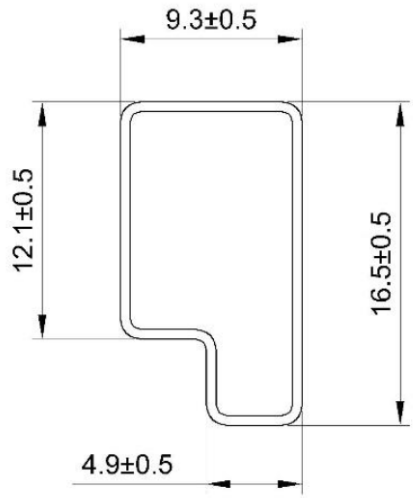


Projection : Third angle projection
Unit : mm
PIN setion tolerance : ±0.1
Tolerance unmarked : ±0.25

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

Package

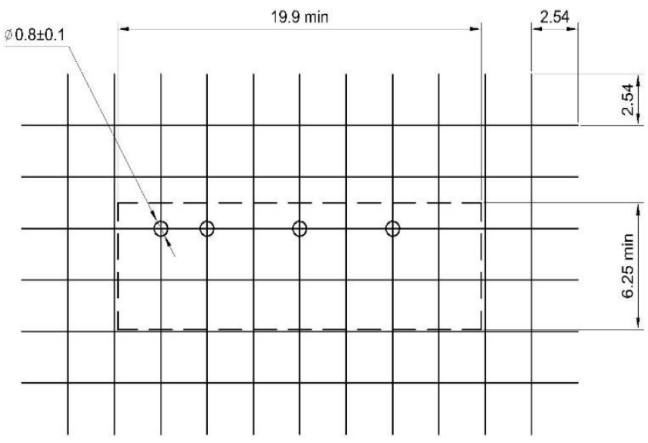
Anti-static liquid tube



UNIT:mm
1 Tube = 25 pcs
Length:520±2mm

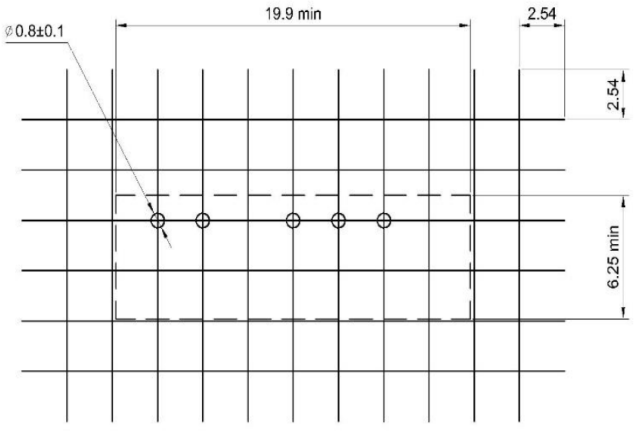
Recommended Footprint

Single



Footprint (Top view)

Dual



Footprint (Top view)