1A SIP3
Non-Isolated DC/DC Converter

LAA1 Series

Learn More

Description

The LAA1 series is a compact 1A non-isolated DC-DC converter housed in a SIP-3 package, supporting wide nominal input voltages of 4.75V to 36V DC. It provides stable single outputs from 1.8V to 15V with efficiencies up to 94.5% and reliable operation from −40°C to +90°C. Designed to meet EN62368-1 standards, it is ideal for Regulator requirpments, MCU applications , telecom applications.

Features

- Switching regulator, non-isolated DC-DC converter
- Pin out compatible with LM78xx linear
- Efficiency up to 94.5%
- -40°C to +90°C Operating Temperature
- Continuous short circuit protection
- EN62368-1 safety approval

Applications

- Regulator Requirpments
- MCU Applications
- Telecom Applications

Model Numbering

LAA 1 – 1.8

- 1.8 → Output Voltage: 1.8V / 3.3V / 5V / 6.5V / 9V / 12V
- 1 → Output Current: 1A
- LAA → Series Name

No. 90, Jian 1st Rd., Zhonghe Dist., New Taipei City 23545, Taiwan

Model Selection Guide

Part No.	Input Voltage	Output Voltage	Output Current @ Full Load	Input Current @ No Load	Ripple & Noise (Max.)	Efficiency (3) (Typ.)		Capacitor Load (4) (Max.)
						Min. Vin	Max. Vin	
LAA1-1.8	4.75-36 VDC	1.8 VDC	1000 mA	10mA	50mVp-p (1)	84%	74%	470μF
LAA1-3.3	4.75-36 VDC	3.3 VDC	1000 mA	12mA	70mVp-p	89%	80.5%	470μF
LAA1-05	6.5-36 VDC	5.0 VDC	1000 mA	16mA	70mVp-p	92%	84%	470μF
LAA1-6.5	8-36 VDC	6.5 VDC	1000 mA	20mA	90mVp-p (2)	93.5%	87%	470μF
LAA1-09	11-36 VDC	9.0 VDC	1000 mA	23mA	120mVp-p	94%	90.5%	470μF
LAA1-12	15-36 VDC	12 VDC	1000 mA	25mA	120mVp-p	94.5%	91.5%	330μF

Notes

#1: If you use 26V input and the loading is less 5%, the R&N will be 100mVp-p (max.).

#2: With a 4.7μF/50V X7R MLCC, the R&N will be 60mVp-p (max.).

#3: The efficiency is test by max./ min. input voltage and full load @25℃, and ±2% tolerance.

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

#5: Special input and output voltage combinations available by request, please check our sales.

#6: All specifications valid at nominal input voltage, full load and 25℃ after warm-up time unless otherwise stated.

Electrical Specification

Model Number	LAA1-☐
Input	
Input Voltage Range	12VDC @ 1.8VDC output voltage
	24VDC @ Others output voltage
Output	
Voltage Accuracy	± 3% max.
Minimum Load	0 %
Line Regulation (LL to HL at full load)	± 0.2% to ± 0.4%
Load Regulation (10% to 100% full load)	± 0.4% to ± 0.6%
Operating Frequency	500KHz @ Vin=nominal Vout
Environment	
Operating Temperature	-40-+90 ˚C with Derating
Storage Temperature	-55-+125 ˚C
Max. Case Temperature	105˚C
Relative Humidity	5%-95% RH
Temperature Coefficient	0.015%/˚C
Vibration	MIL-STD-202G
Function	
Short-Circuit Protection	Continuous, automatic recovery
Mtbf (Mil-Hdbk-217f)	13300K Hours (25˚C)
Safety Approvals	EN62368-1
Physical	
Case Material	Non conductive black plastic
Cooling Method	Free air convention
Dimension	11.60 x 7.60 x 10.20 mm
Weight	1.9 g

Electromagnetic Compatibility	
Electromagnetic Interference	EN 55032 (Class A/B)
Electrostatic Discharge	IEC 61000-4-2, Air±8kV; Contact±6kV (Criteria A)
Radiated Immunity	IEC 61000-4-3, 10V/m (Criteria A)
Electrical Fast Transient [1]	IEC 61000-4-4, ±2kV (Criteria A)
Surge Immunity [1]	IEC 61000-4-5, ±2kV (Criteria A)
Conducted Immunity	IEC 61000-4-6, 10V/rms (Criteria A)
Magnetic Field Immunity	IEC 61000-4-8, 10A/m (Criteria A)

Notes

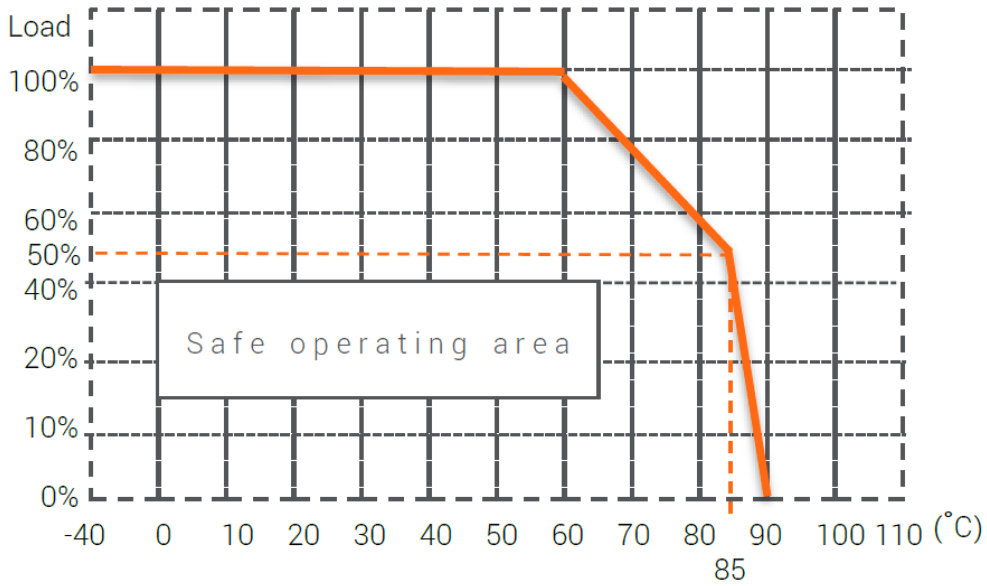
#1: External input capacitor required 1500uF / 50V

#2: All specifications valid at 24V input, full load and 25℃ after warm-up time unless otherwise stated.

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

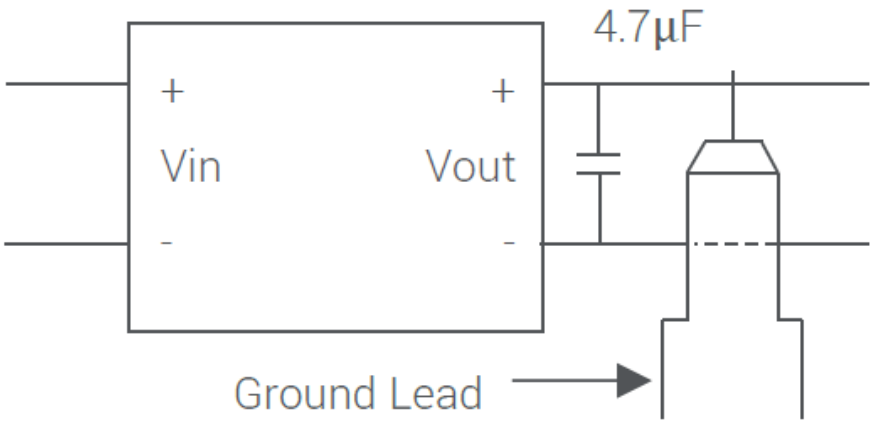
Mechanical Specification

Derating Curve

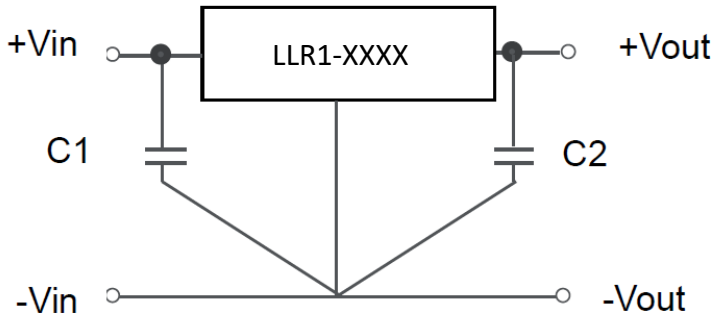


Ambient temperature with natural convection

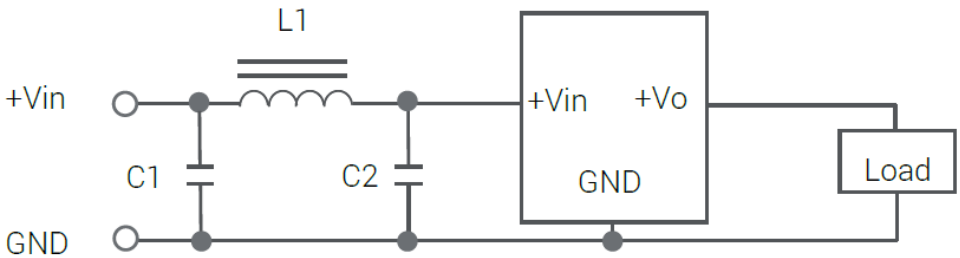
Ripple & Noise Measure Method



Standard Application Circuit

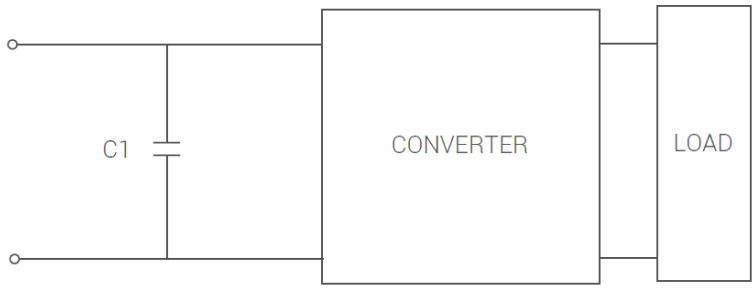


EMI Filtering-Suggestion



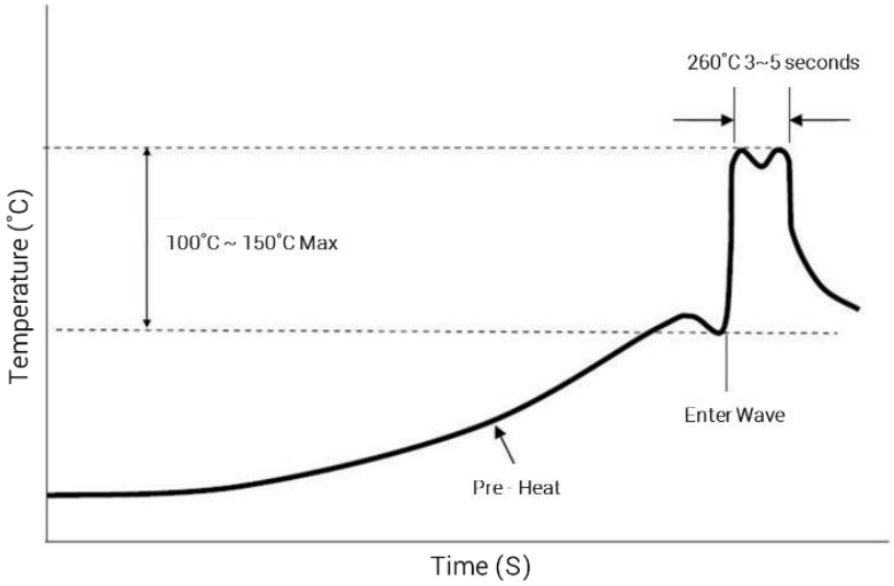
Class	C1	L1	C2
Class A	1206 4.7 µF 50V MLCC	4.7 µH	x
Class B	1206 4.7 µF 50V MLCC ×2	10 µH	1206 4.7 µF 50V MLCC

EFT & Surge External Input Capacitor Required



C1
1500 µF / 50V

SIP Information



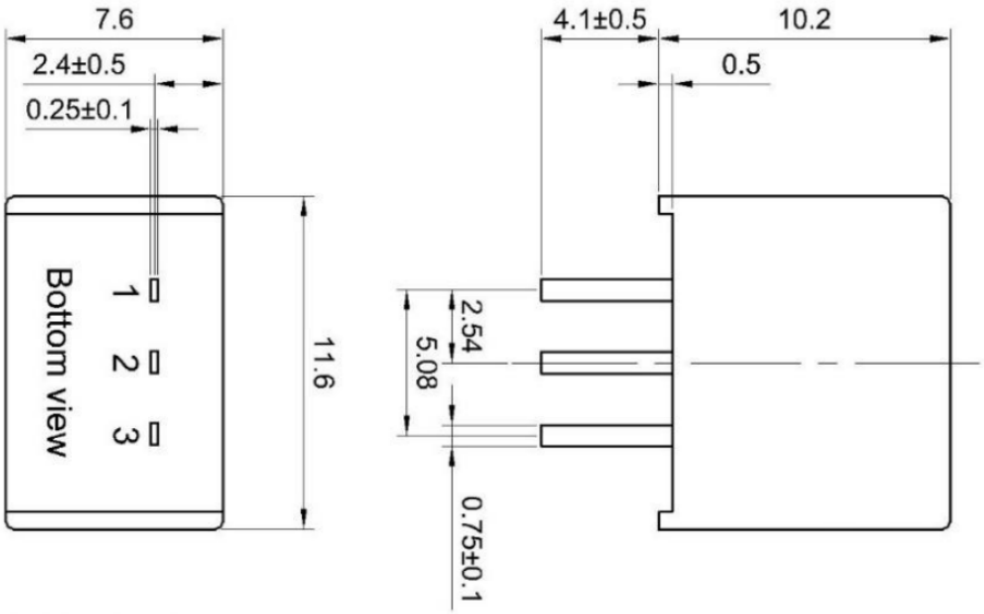
Storage & Handling

The shelf life will be a minimum of 12 months, when stored at the following conditions:
< 40°C, < 90% relative humidity.

Wave Soldering Profile

The wave solder profile is measured on lead temperature. And, need keep the solder parts internal temperature less than about 210°C. For the period of solder dwell time should be 3–5 seconds, and should not over than 10 seconds.

Mechanical Dimension & Pinning

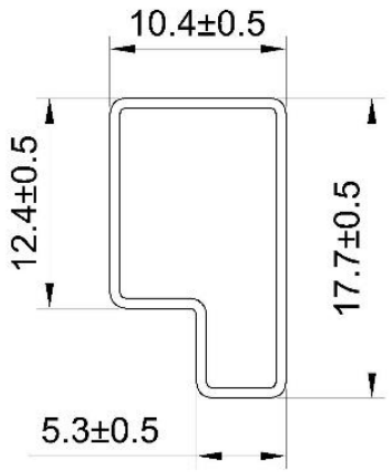


Projection : Third angle projection
Unit : mm
Tolerance : ±0.25mm

Pin	Single
1	+Vin
2	GND
3	+Vout

Package

Anti-static liquid tube



UNIT:mm
1 Tube = 42 pcs
Length : 520±2mm

Recommended Footprint