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### Description

The LAA2 series is a compact 2A 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 96% and reliable operation from -40°C to +85°C. Designed to meet EN62368-1 standards, it is ideal for Regulator requirements, MCU applications, telecom applications.

### Features

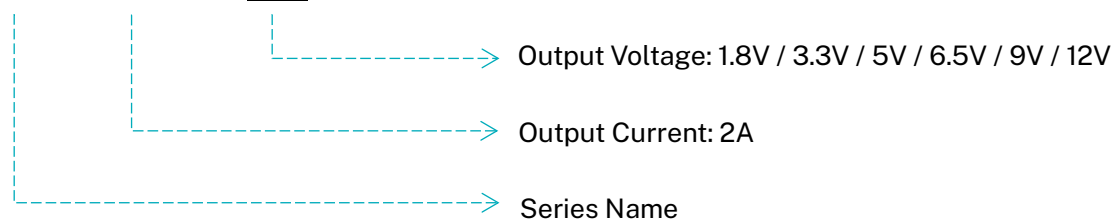
- Switching regulator, non-isolated DC-DC converter
- Pin out compatible with LM78xx linear
- Efficiency up to 96%
- -40°C to +85°C Operating Temperature
- Continuous short circuit protection
- EN62368-1 safety approval

### Applications

- Regulator Requirements
- MCU Applications
- Telecom Applications
- High Efficiency Required

### Model Numbering

LAA 2 - 1.8



## Model Selection Guide

Part No.	Input Voltage	Output Voltage	Output Current @ Full Load	Input Current @ No Load	Ripple & Noise (Max.)	Efficiency <sup>(3)</sup> (Typ.)		Capacitor Load <sup>(4)</sup> (Max.)
						Min. Vin	Max. Vin	
LAA2-1.8	4.75-36 VDC	1.8 VDC	2000 mA	2mA	50mVp-p <sup>(1)</sup>	90.5%	78%	3300μF
LAA2-2.5	4.75-36 VDC	3.3 VDC	2000 mA	2mA	50mVp-p	91%	82.5%	2300μF
LAA2-3.3	4.75-36 VDC	5.0 VDC	2000 mA	2mA	50mVp-p	93%	86%	1800μF
LAA2-05	6.5-36 VDC	6.5 VDC	2000 mA	2mA	75mVp-p	94%	89%	820μF
LAA2-09	11-36 VDC	9.0 VDC	2000 mA	2mA	75mVp-p	95%	92%	620μF
LAA2-12	15-36 VDC	12 VDC	2000 mA	2mA	75mVp-p	96%	93.5%	470μF
LAA2-15	18-36 VDC	9.0 VDC	2000 mA	2mA	75mVp-p	96%	94.5%	470μF

## Notes

#1: The output current can use 2.5A with < 1 second.

#2: Ripple & Noise measured with a 0.1μF MLCC across output (low ESR) @ full load.

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

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

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

## Electrical Specification

<b>Model Number</b>	LAA2-□
<b>Input</b>	
Input Voltage	24VDC
<b>Output</b>	
Voltage Accuracy	± 2% max.
Minimum Load	0 %
Line Regulation	± 0.5% to ± 1% @ LL to HL at full load
Load Regulation (10% to 100% Full Load)	± 1%
Operating Frequency	460KHz @ 100% load at Nominal Vin=24V
Internal Power Dissipation	0.5-1.06W @ Vo=2.5V
<b>Environment</b>	
Operating Temperature	-40-+85 °C with Derating
Storage Temperature	-55-+125 °C
Max. Case Temperature	110°C
Relative Humidity	5%-95% RH
Temperature Coefficient	0.05%/°C
Vibration	MIL-STD-202G
<b>Function</b>	
Short-Circuit Protection	Continuous, Automatic Recovery
Mtbf (MIL-HDBK-217F)	1500k Hours (25°C)
Safety Approvals	En62368-1
<b>Physical</b>	
Case Material	Plastic case (UL94V-0)
Cooling Method	Free air convection
Potting Material	Silicon (UL94V-0)
Dimension	17.50 x 11.5 x 8.5 mm
Weight	4 g

Electromagnetic Compatibility	
Electromagnetic Interference	EN 55032 (Class A/B) <sup>(1)</sup>
Electrostatic Discharge	IEC 61000-4-2, Air $\pm$ 8kV; Contact $\pm$ 6kV (Criteria A)
Radiated Immunity	IEC 61000-4-3, 10V/m (Criteria A)
Electrical Fast Transient <sup>(1)</sup>	IEC 61000-4-4, $\pm$ 2kV (Criteria A)
Surge Immunity <sup>(1)</sup>	IEC 61000-4-5, $\pm$ 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

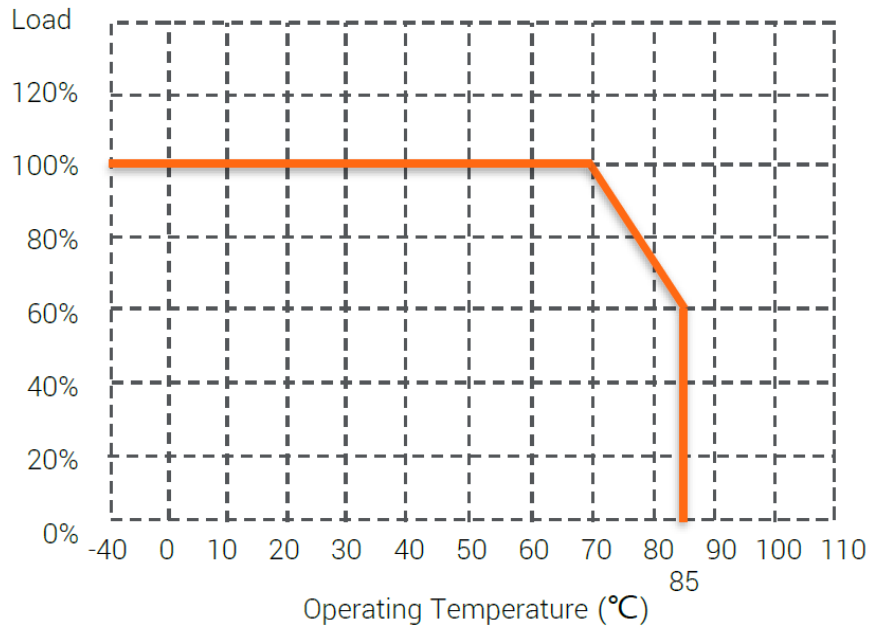
#1: Please check EMI application Circuit.

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

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

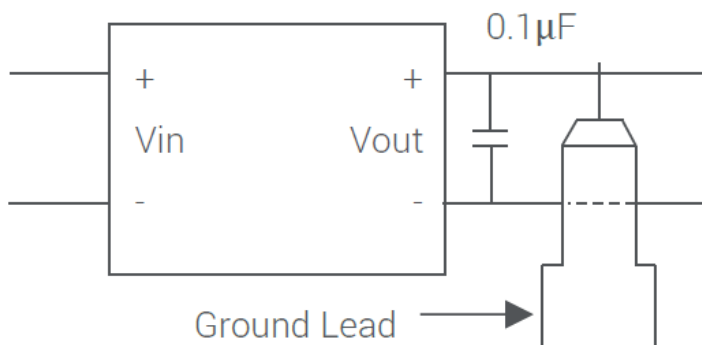
**Mechanical Specification**

**Derating Curve**



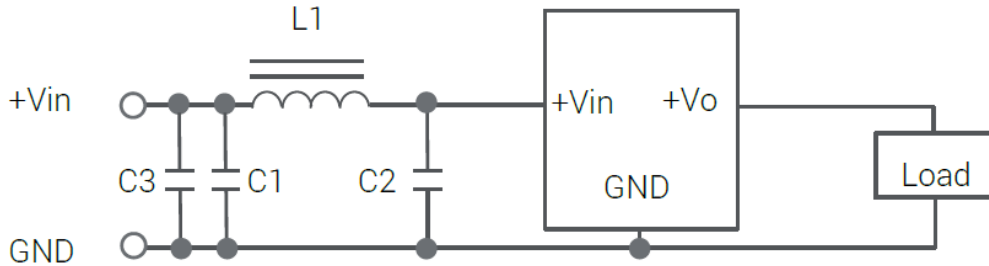
The derating curve was measured in chamber with natural convection.

**Ripple & Noise Measure Method**



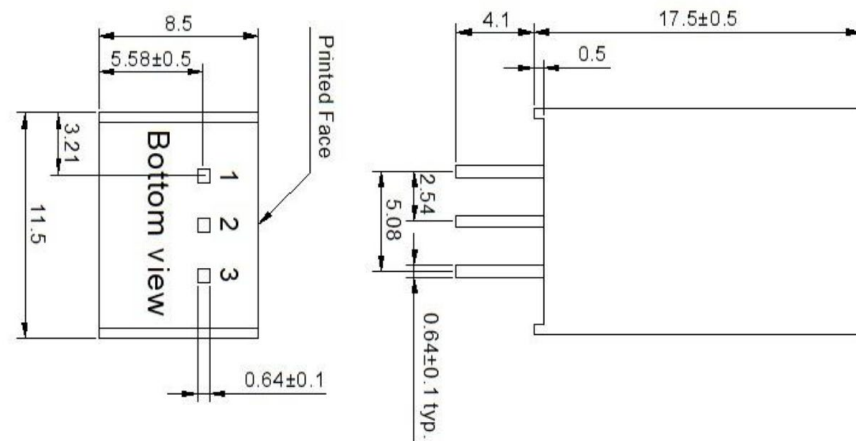
Measured with 20MHz bandwidth and 0.1µF ceramic capacitor.

#### EMI Filtering-Suggestion for EN55032



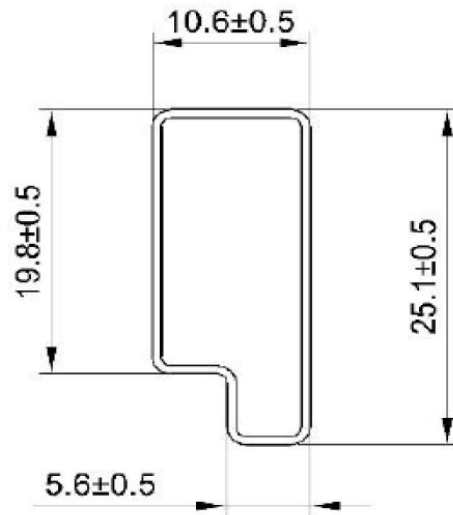
Class	C1	C2	C3	L1
Class A	4.7 $\mu$ F MLCC	1 $\mu$ F MLCC	-	3.3 $\mu$ H / GSTD6030PE-3RRM
Class B	4.7 $\mu$ F MLCC	1 $\mu$ F MLCC	-	10 $\mu$ H / MPCA-0530-100-M
Surge & EFT	-	-	1500 $\mu$ F / 100V E-Cap	-

#### Mechanical Dimension & Pinning



Unit : mm  
Tolerance :  $\pm 0.25$ mm

Pin	Single
1	+Vin
2	GND
3	+Vout

**Package****Anti-static liquid tube**

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