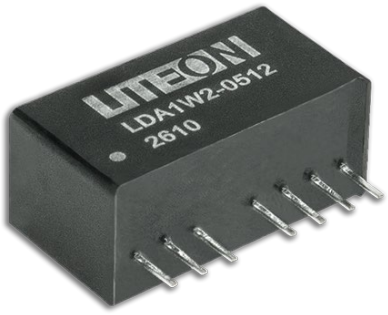
1W SIP8 DC/DC Converter

LDA1W Series



Learn More

Description

The LDA1W series is a compact 1W isolated DC-DC converter housed in a SIP-8 package, supporting wide nominal input voltages of 5Vand 24V DC. It provides stable single outputs from 3.3V to 15V with efficiencies up to 77.5%, high isolation up to 2kVDC, and reliable operation from −40°C to +100°C. Designed to meet EN62368-1 standards, it is ideal for industrial control, Telecom/ Datacom and measurement/ semiconductor euuipment applications.

Features

- 2:1 & 4:1 Wide input voltage range
- 2KVDC Isolated Voltage
- Efficiency up to 77.5%
- Operating temperature -40℃ to +100℃
- Continuous short circuit protection
- External ON/OFF control

Applications

- Industry Control System
- Telecom/ Datacom
- Measurement Equipment
- Semiconductor Equipment

Model Numbering

LDA 1W 4 – 05 33 D

- D → Output Voltage: (±) output voltage
- 33 → Output Voltage: 3.3V/5V/12V/15V/±12V/±15V
- 05 → Input Voltage: 5V / 24V
- 4 → Input Range: 2:1 (4.5-9 VDC) ; 4:1 (9-36 VDC)
- 1W → Wattage: 1 W
- LDA → 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	Efficiency (1)	Capacitor Load (2) (Max.)
LDA1W2-053.3	4.5-9 VDC Nom. 5VDC	3.3 VDC	303mA	77%	2200μF
LDA1W2-0505		5 VDC	200mA	77%	2200μF
LDA1W2-0512		12 VDC	84mA	77%	1000μF
LDA1W2-0515		15 VDC	67mA	77.5%	820μF
LDA1W2-0512D		±12VDC	±42mA	77%	±100μF
LDA1W2-0515D		±15VDC	±34mA	77.5%	±100μF
LDA1W4-243.3	9-36 VDC Nom. 24VDC	3.3 VDC	303mA	73%	560μF
LDA1W4-2405		5 VDC	200mA	74%	470μF
LDA1W4-2412		12 VDC	84mA	74%	150μF
LDA1W4-2415		15 VDC	67mA	74%	100μF
LDA1W4-2405D		±5VDC	±100mA	74%	±220μF
LDA1W4-2412D		±12VDC	±42mA	75%	±100μF
LDA1W4-2415D		±15VDC	±34mA	75%	±68μF

Notes

#1: The efficiency is test by nominal input and max. full load @ 25℃.

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

#3: All specifications valid at nominal input voltage, full load and 25℃ unless otherwise stated.

Electrical Specification

Model Number		LDA1W□-□□
Input		
Input Filter		Capacitor type (5 Vin)
Input Voltage Range	5Vin	4.5V-9VDC
	24Vin	9-35VDC
No-Load Input Current	5Vin	70mA
	24Vin	10mA
Start-Up Time		30ms (100% load at nominal Vin)
Start-Up Voltage (0%-100% load)	5Vin	4.5VDC
	24Vin	9VDC
Under Voltage Lockout (0%-100% load)	5Vin	2.7VDC
	24Vin	7.5VDC
Input Surge Voltage (0.1s Max)	5Vin	15VDC
	24Vin	50VDC
Remote ON/OFF	5Vin	DC-DC ON_Open ; DC-DC OFF_5V ≦ Vr < 10V
	24Vin	DC-DC ON_Open or 3.5-15VDC; DC-DC OFF Short or 0-1.2VDC Input current (remote off mode): 2mA
Output		
Voltage Accuracy	5Vin	± 1%
	24Vin	± 3%
Minimum Load		0%
Line Regulation (LL to HL 100% load)	5Vin	± 0.2% Single Output ± 0.2% Dual Output
	24Vin	± 0.5% Single Output ± 1.0% Dual Output
Load Regulation (10% to 100% Load)	5Vin	± 1.0% Single Output ± 1.0% Dual Output
	24Vin	± 1.0% Single Output ± 1.5% Dual Output

Cross Regulation		± 5% (Asymmetrical load 25%/100%)
Ripple & Noise	5Vin	60 mVp-p
	24Vin	100 mVp-p
Operating Frequency	5Vin	100KHz
	24Vin	300KHz
Environment		
Operating Temperature		-40-+100 ˚C with derating
Storage Temperature		-55-+125 ˚C
Max. Case Temperature		105˚C
Relative Humidity		5%-95% RH
MTBF (MIL-HDBK-217F)	5Vin	4300 KHours (25˚C)
	24Vin	4000 KHours (25˚C)
Function		
Isolation Voltage		2 KVDC 1min. Input to Output
Isolation Resistance		1000 MΩ
Isolation Capacitance		50 pF
Short Circuit Protection		Continuous, automatic recovery
Over Load Protection		180%
Safety Approvals		EN62368-1
Physical		
Case Material		Non-conductive plastic
Potting Material		Silicone
Dimension		22.3 x 10.0 x 11.3 mm
Weight		4.5 g
Cooling method		Free air convection
Vibration		MIL-STD-202G
Electromagnetic Compatibility		
Electromagnetic Interference		EN 55032 (Class A/B) with external filter
Radiated Immunity[2]		IEC 61000-4-3, 10 V/m

Electrostatic Discharge(2)	IEC 61000-4-2, Air±8kV; Contact±6kV (Criteria A)
Electrical Fast Transient(2)	IEC 61000-4-4, ±1kV (Criteria A) for 5Vin IEC 61000-4-4, ±2kV (Criteria A) for 24Vin
Surge Immunity(2)	IEC 61000-4-5, ±1kV (Criteria A) for 5Vin IEC 61000-4-5, ±2kV (Criteria A) for 24Vin
Conducted Immunity(2)	IEC 61000-4-6, 10V/rms (Criteria A)
Magnetic Field Immunity(2)	IEC 61000-4-8, 100A/m continuous, 1000A/m 1 second (Criteria A)

Notes

#1: 5Vin measured with 20MHZ BW at Vin range 0%~100% load with 1μF MLCC. Light load ripple & noise is no more than 150mVpp. 24Vin measured with 20MHZ BW at Vin range 0%~100% load with 22μF+0.1μF MLCC. Light load ripple & noise is no more than 150mVpp.

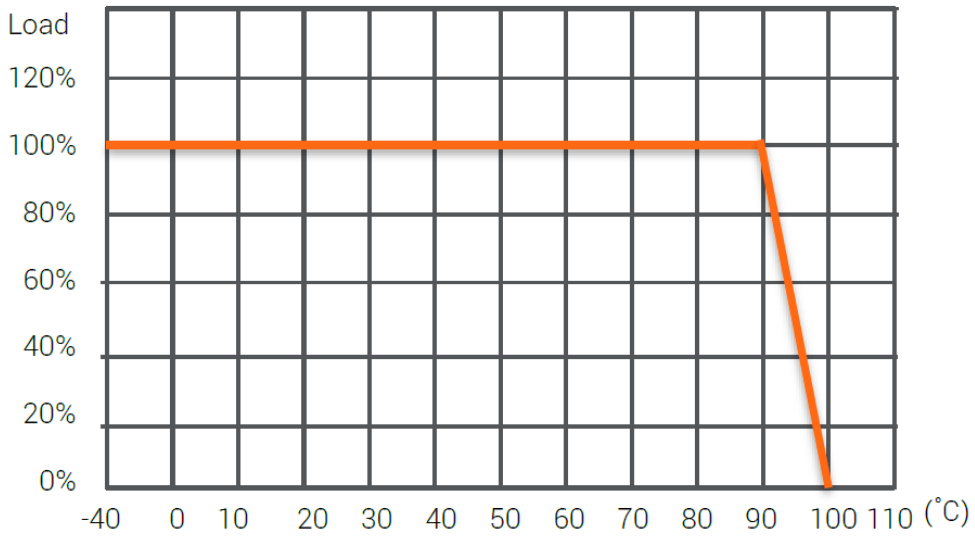
#2: 5Vin: External input capacitor required 470μF/25V. 24Vin: External input capacitor required 1000μF/50V.

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

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

Mechanical Specification

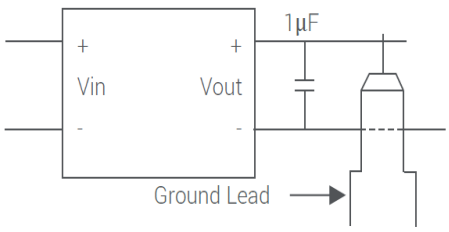
Derating Curve



Ambient temperature with natural convection

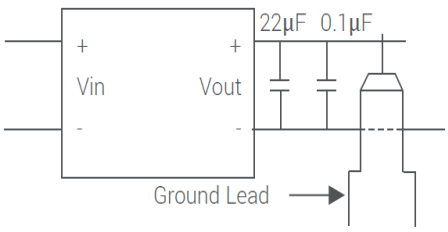
Ripple & Noise Measure Method

5Vin



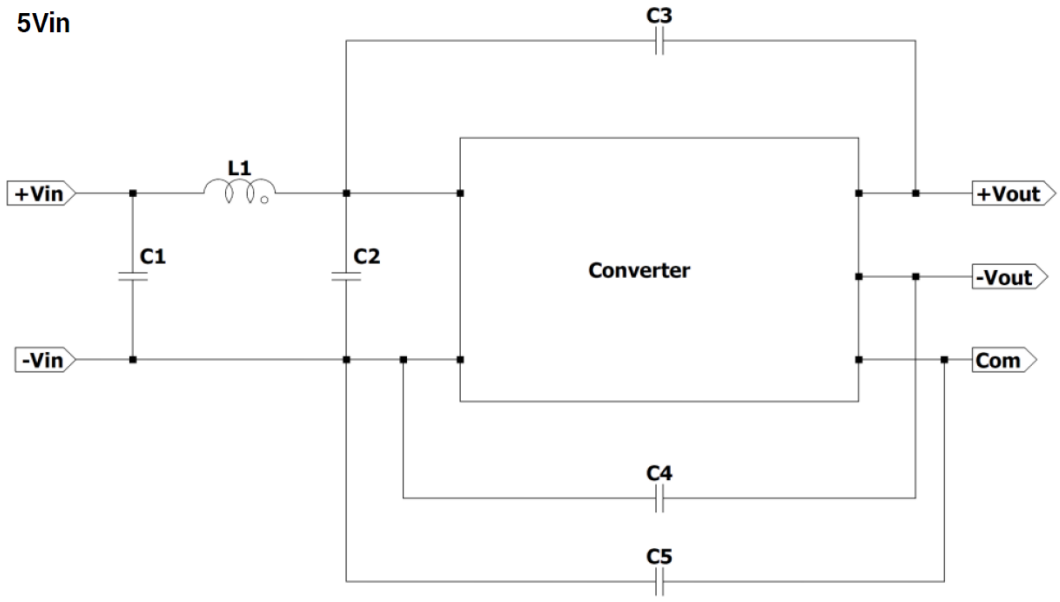
Measured with 20MHz bandwidth and 1µF ceramic capacitor.

24Vin



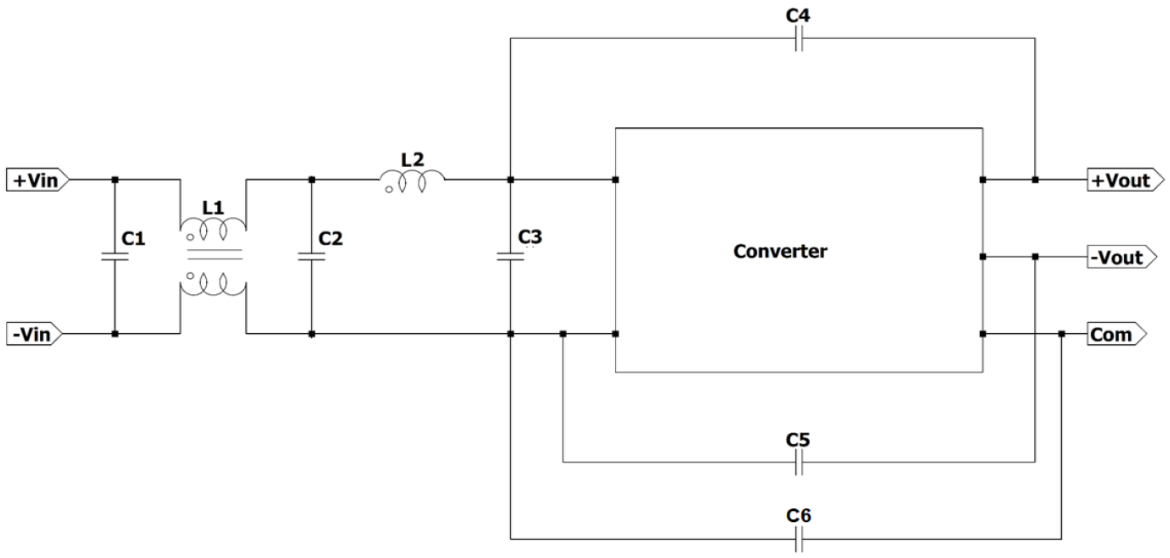
Measured with 20MHz bandwidth and 22µF + 0.1µF ceramic capacitor.

EMI Filtering-Suggestion for Class A/B



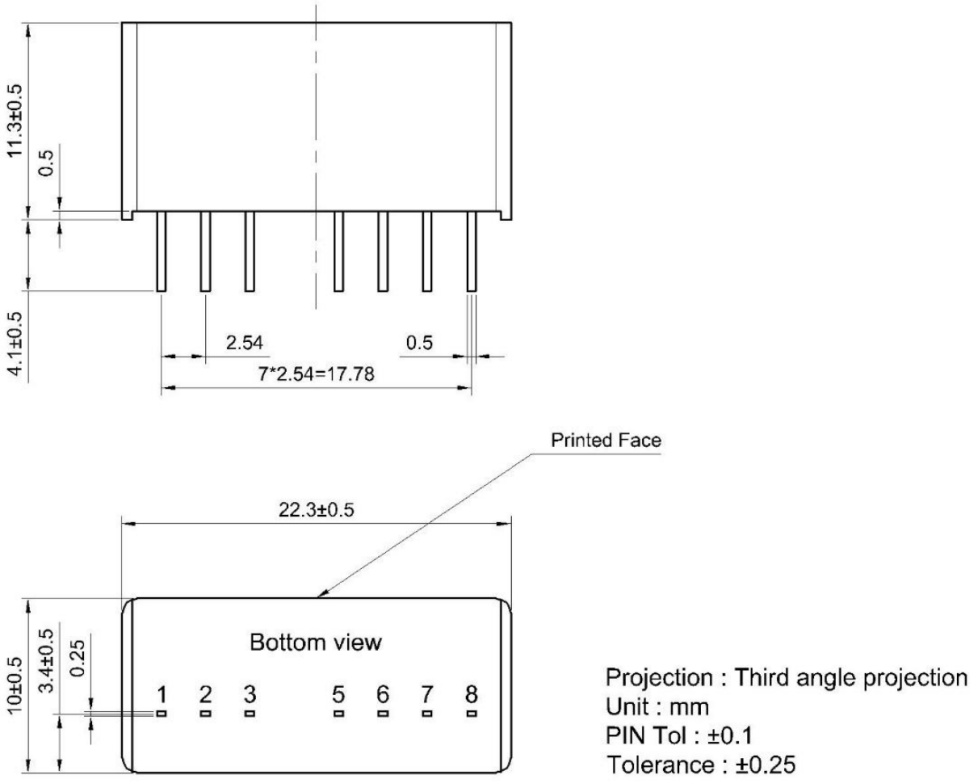
Model	Class A/B	C1	C2	C3	C4	C5	L1
Single Output	Class-A	2.2 µF	NA	220 pF	220 pF	NA	4.7 µH
Dual Output		2.2 µF	NA	220 pF	220 pF	220 pF	4.7 µH
Single Output	Class-B	2.2 µF	10 µF	470 pF	470 pF	NA	4.7 µH
Dual Output		2.2 µF	10 µF	470 pF	470 pF	470 pF	4.7 µH

24Vin



Model	Class A/B	C1	L1	C2	L2	C3	C4	C5	C6
Single Output	Class-A	NA	Short	4.7 µF *2 pcs	4.7 µH	4.7 µF *2 pcs	1000 pF	1000 pF	NA
Dual Output		NA	Short	4.7 µF *2 pcs	4.7 µH	4.7 µF *2 pcs	1000 pF	1000 pF	1000 pF
Single Output	Class-B	4.7 µF *2 pcs	K10×20T 600 µH	4.7 µF *2 pcs	Short	NA	1000 pF	1000 pF	NA
Dual Output		4.7 µF *2 pcs	K10×20T 600 µH	4.7 µF *2 pcs	Short	NA	1000 pF	1000 pF	1000 pF

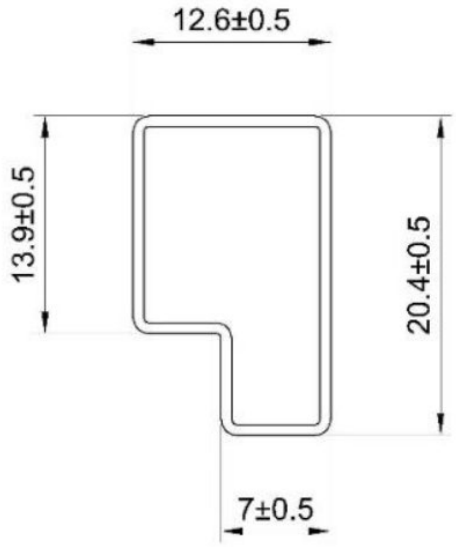
Mechanical Dimension & Pinning



Pin	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
3	CTRL	CTRL
5	NC	NC
6	+Vout	+Vout
7	–Vout	COM
8	NC	–Vout

Package

Anti-static liquid tube



UNIT : mm
1 Tube = 22 pcs
Length : 520±2

Recommended Footprint