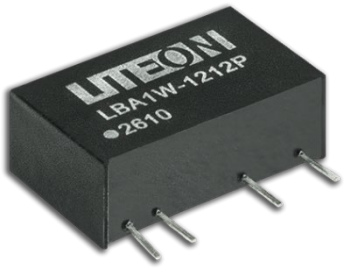
1W SIP7
Medical DC/DC Converter

LBA1W Series



Learn More

Description

The LBA1W series is a compact 1W isolated DC-DC converter housed in a SIP-7 package, supporting wide nominal input voltages of 5V, 12V, 15V and 24V DC. It provides stable single outputs from 3.3V to 15V with efficiencies up to 84%, high isolation up to 6kVDC, and reliable operation from −40°C to +100°C. Designed to meet UL62368-1, IEC62368-1, and EN60601-1 standards, it is ideal for industrial control, medical reuqipments and battery management system applications.

Features

- 1 Watt isolated output power
- Compact SIP-7 package
- 1:1 input voltage range
- -40˚C to +100˚C operating temperature
- 7mm clearance distance
- Reinforced insulation, rate for 300Vac working voltage
- Continuous short circuit protection
- Lead-free design, RoHS compliant
- 3-year product warranty

Applications

- Industry Control Application
- Electric power instrumentation
- High isolation requirpement
- Battery Mangement system

Model Numbering

LBA 1W – 05 12 – D

- D → Output Voltage: (±) output voltage
- 12 → Output Voltage: 3.3V/5V/12V/15V/±5/±12V/±15V
- 05 → Input Voltage: 5V / 12V / 15V / 24V
- 1W → Wattage: 1 W
- LBA → Series Name

Model Selection Guide

Part No.	Input Voltage	Output Voltage	Output Current @ Full Load	Efficiency (1)		Capacitor Load (2) (Max.)
				Min.	Typ.	
LBA1W-053.3	5 VDC±10%	3.3 VDC	303 mA	76.5%	73.5%	1000μF
LBA1W-0505		5 VDC	200 mA	76.5%	73.5%	1000μF
LBA1W-0512		12 VDC	84 mA	81.5%	78.5%	220μF
LBA1W-0515		15 VDC	67 mA	81.5%	78.5%	220μF
LBA1W-0505D		±5VDC	±100mA	77.0%	74.0%	330μF
LBA1W-0512D		±12VDC	±42mA	78.0%	75.0%	100μF
LBA1W-0515D		±15VDC	±34mA	83.0%	80.0%	100μF
LBA1W-123.3	12 VDC±10%	3.3 VDC	303 mA	76.5%	73.5%	1000μF
LBA1W-1205		5 VDC	200 mA	79.5%	76.5%	1000μF
LBA1W-1212		12 VDC	84 mA	82.0%	79.0%	220μF
LBA1W-1215		15 VDC	67 mA	84.0%	81.0%	220μF
LBA1W-1205D		±5VDC	±100mA	78.0%	75.0%	330μF
LBA1W-1212D		±12VDC	±42mA	80.0%	77.0%	100μF
LBA1W-1215D		±15VDC	±34mA	82.0%	79.0%	100μF
LBA1W-1505	15 VDC±10%	5 VDC	200mA	81.0%	78.0%	1000μF
LBA1W-243.3	24 VDC±10%	3.3 VDC	303 mA	75.0%	72.0%	1000μF
LBA1W-2405		5 VDC	200 mA	78.0%	75.0%	1000μF
LBA1W-2412		12 VDC	84 mA	80.0%	77.0%	220μF
LBA1W-2415		15 VDC	67 mA	81.0%	78.0%	220μF
LBA1W-2405D		±5VDC	±100mA	77.0%	74.0%	330μF
LBA1W-2412D		±12VDC	±42mA	80.0%	77.0%	100μF
LBA1W-2415D		±15VDC	±34mA	80.0%	77.0%	100μF

Notes

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

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

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

Electrical Specification

Model Number	LBA1W-☐☐
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% @ 3.3V/ 5V 10% @ 12/ 15 / 18V
Ripple & Noise	100 mVp-p @ 20MHz BW (@ Nominal Vin)
Operating Frequency	30KHz @ 100% load at Nominal Vin
Environment	
Operating Temperature	-40-+100 ˚C
Storage Temperature	-55-+125 ˚C
Max. Case Temperature	105˚C
Relative Humidity	5%-95% RH
Function	
Isolation Voltage	6 KVDC 1min. Input to Output
Isolation Resistance	10GΩ
Isolation Capacitance	10 pF
MTBF (MIL-HDBK-217F)	$15*10^6$ Hours (25˚C)
Short Circuit Protection	Continuous
Vibration	MIL-STD-202G
Safety Approvals	UL62368-1/ IEC62368-1/ EN60601-1

Physical	
Case Material	UL94V-0 black plastic
Potting Material	Silicone (UL94V-0)
Dimension	19.65 x 7.05 x 11.0 mm
Weight	2.8 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 61000-4-3, 3V/m (Criteria A)
Electrical Fast Transient	IEC 61000-4-4, ±2kV (Criteria A)
Surge Immunity	IEC 61000-4-5, ±1kV (Criteria A)
Conducted Immunity	IEC 61000-4-6, 3V/rms (Criteria A)
Magnetic Field Immunity	IEC 61000-4-8, 1A/m (Criteria A)

Notes

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

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

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

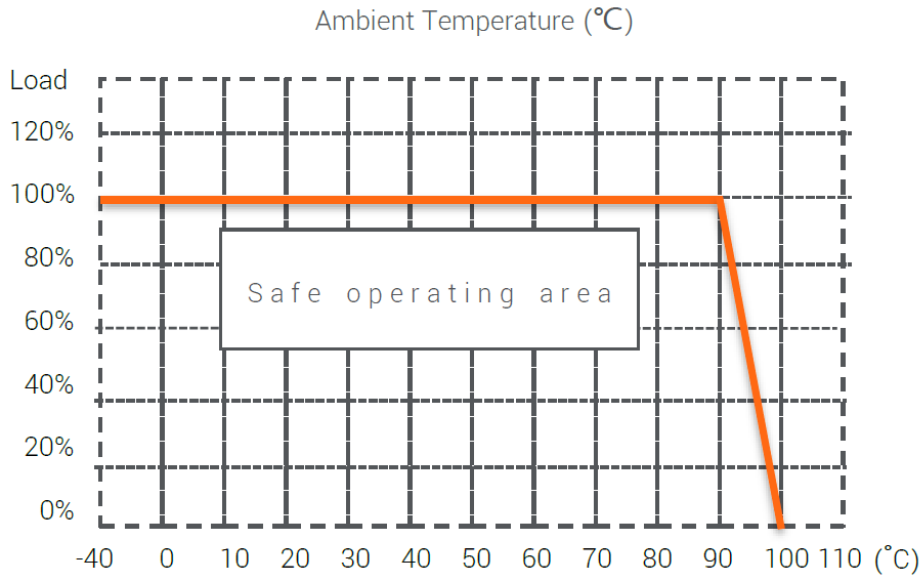
#4. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.

#5: Please contact our technical support for any specific requirement.

#6: Customers are allowed to test once in their production. Thereafter the test voltage and time must be reduced for any repeat testing.

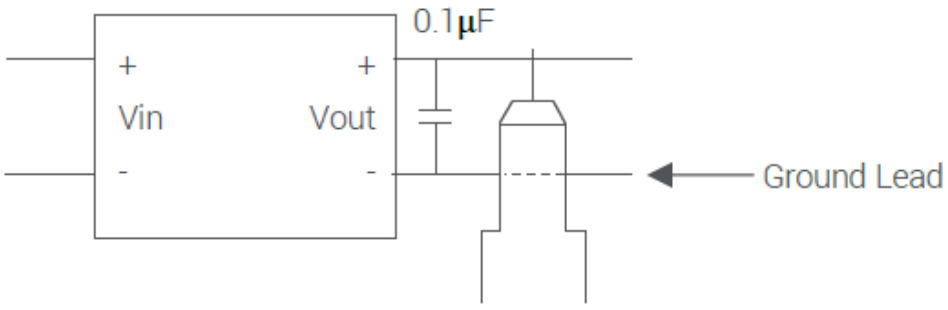
Mechanical Specification

Derating Curve



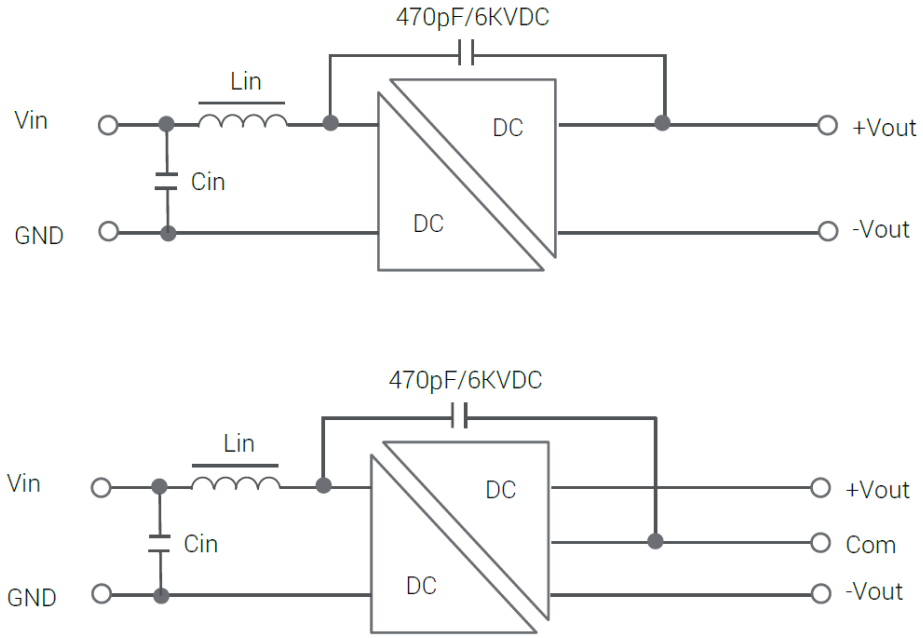
The derating curve was measured at nominal Vin in chamber with nature convection.

Ripple & Noise Measure Method



Measured with 20MHz bandwidth and 0.1μF ceramic capacitor

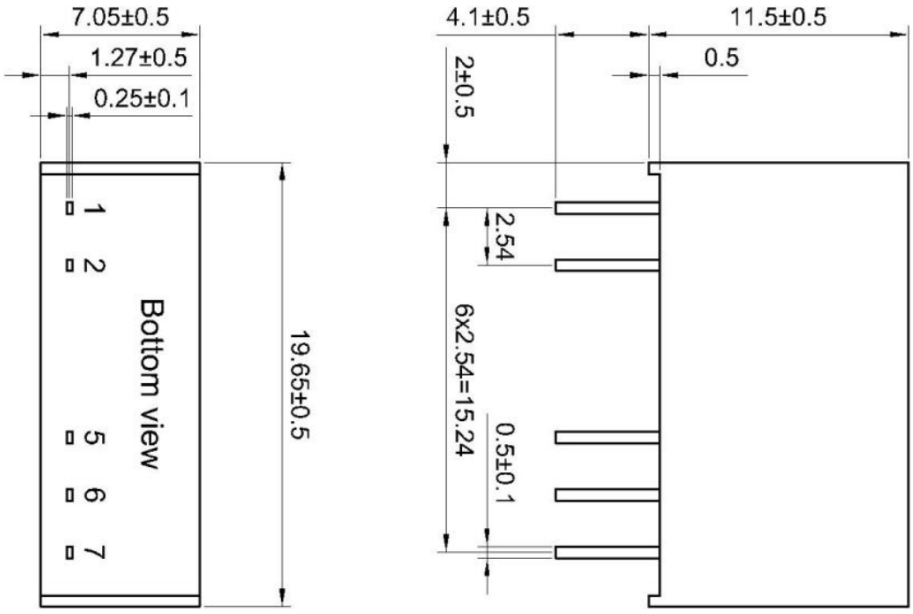
EMI Filtering-Suggestion for Class B



The External Filter for meet EN55032 Class B.

Part No.	Input Voltage	Inductance / Capacitance (Lin / Cin)
LBA1W	5V	47 µH / 10 µF
	12V	47 µH / 10 µF
	15V	47 µH / 10 µF
	24V	100 µH / 4.7 µF

Mechanical Dimension & Pinning



Unit: mm

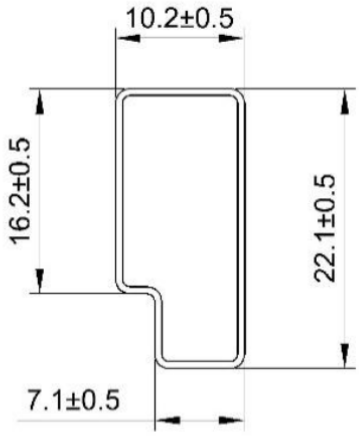
Tolerance : X.X ±0.5 mm

X.XX ±0.25 mm

Pin	Single	Dual
1	+Vin	+Vin
2	–Vin	–Vin
5	–Vout	–Vout
6	No Pin	COM
7	+Vout	+Vout

Package

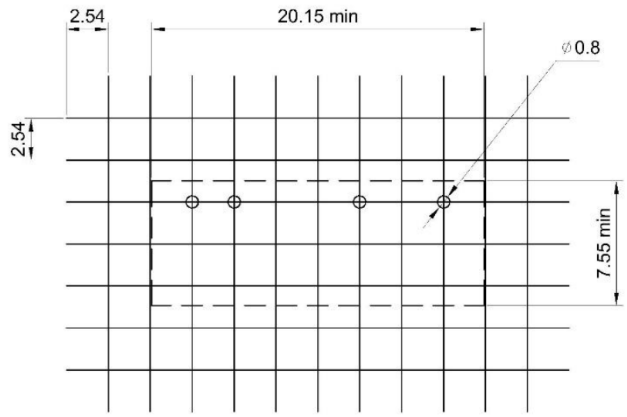
Anti-static liquid tube



UNIT:mm
1 Tube = 24 pcs
Length:520±2mm

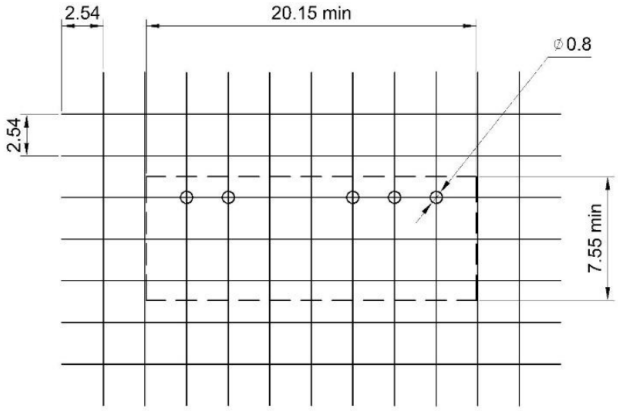
Recommended Footprint

Single



Footprint (Top view)

Dual



Footprint (Top view)