1W SIP4 DC/DC Converter

LGA1W Series

Learn More

Description

The LSM series is a compact 1W isolated DC-DC converter housed in a SIP-4 package, supporting wide nominal input voltages of 5V, 12V, and 24V DC. It provides stable single outputs from 3.3V to 18V with efficiencies up to 86%, high isolation up to 2kVDC, and reliable operation from −40°C to +95°C. Designed to meet UL62368-1, IEC62368-1, and EN55032 standards, it is ideal for industrial control, telecommunications and transportation applications.

Features

- 1 Watt output power in SIP4 package
- 1:1 input voltage range
- 1-2KVDC isolation`
- -40˚C to +95˚C operating temperature
- Approval UL62368-1/ IEC62368-1/
- EMC-EN55032/55024
- RoHS compliant

Applications

- Industry Control Application
- Tele-Communication

Model Numbering

LGA 1W – 05 33 H

- H → Isolation: H => 2KV
- 33 → Output Voltage: 3.3V / 5V / 12V
- 05 → Input Voltage: 5V / 12V / 24V
- 1W → Wattage: 1 W
- LGA → 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.)
				Min.	Typ.	
LGA1W-053.3	5 VDC	3.3 VDC	303 mA	73%	76%	1500µF
LGA1W-0505		5 VDC	200 mA	77%	80%	1500µF
LGA1W-0512		12 VDC	84 mA	77%	80%	470µF
LGA1W-0515		15 VDC	67 mA	82%	85%	220µF
LGA1W-123.3	12 VDC	3.3 VDC	303 mA	78%	81%	1500µF
LGA1W-1205		5 VDC	200 mA	81%	84%	1500µF
LGA1W-1212		12 VDC	84 mA	79%	82%	470µF
LGA1W-1215		15 VDC	67 mA	80%	83%	220µF
LGA1W-1218		18 VDC	56 mA	82%	85%	100µF
LGA1W-243.3	24 VDC	3.3 VDC	303 mA	77%	80%	1500µF
LGA1W-2405		5 VDC	200 mA	78%	81%	1500µF
LGA1W-2412		12 VDC	84 mA	79%	82%	470µF
LGA1W-2415		15 VDC	67 mA	83%	86%	220µF

Notes

#1: The efficiency is test by nominal input and max. full load at 25˚C, the efficiency tolerance is ±3%.

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

#3: Add “H” after P/N for isolation 2KVDC.

Electrical Specification

Model Number	LGA1W-☐☐
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% @ 3.3V/ 5V 15% @ 12/ 15 / 18V
Ripple & Noise	100 mVp-p @ 20MHz BW (@ nominal Vin)
Operating Frequency	50KHz @ 100% load at nominal Vin
Environment	
Operating Temperature	-40-+95 ˚C
Storage Temperature	-55-+125 ˚C
Max. Case Temperature	100˚C
Relative Humidity	5%-95% RH
Temperature Coefficient	-0.02 - +0.02%/˚C
Function	
Isolation Voltage	1 KVDC 1min. Input to Output 2 KVDC Add Suffix “H”
Isolation Resistance	10GΩ
Isolation Capacitance	20 pF
MTBF (MIL-HDBK-217F)	$13.1*10^6$ Hours (25˚C)
Vibration	MIL-STD-202G
Safety Approvals	UL62368-1/ IEC62368-1/ EN55032&35
Physical	
Case Material	UL94V-0 black plastic

Potting Material	Epoxy (UL94V-0)
Dimension	11.60 x 6.00 x 10.20 mm
Weight	1.4 g
Electromagnetic Compatibility	
Electromagnetic Interference	EN 55032 (Class A/B)
Electrostatic Discharge	IEC 61000-4-2, Air±8kV; Contact±6kV (Criteria A)
Radiated Susceptibility	IEC 61000-4-3, 10V/m (Criteria A)
Electrical Fast Transient	IEC 61000-4-4, ±0.5kV (Criteria A)
Surge Immunity	IEC 61000-4-5, ±0.5kV (Criteria A)
Conducted Susceptibility	IEC 61000-4-6, 10Vr.m.s (Criteria A)
Power Frequency Magnetic Field	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.

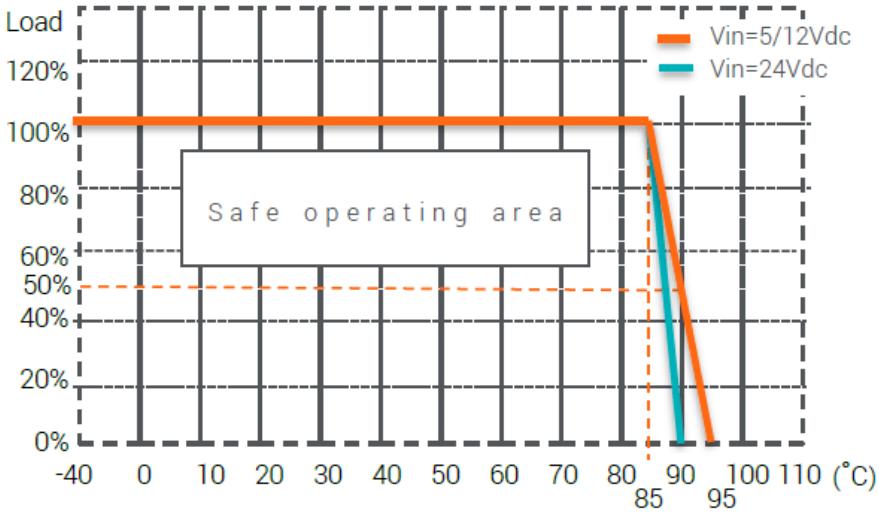
#3: “EMC filtering suggestion” is as following.

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

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

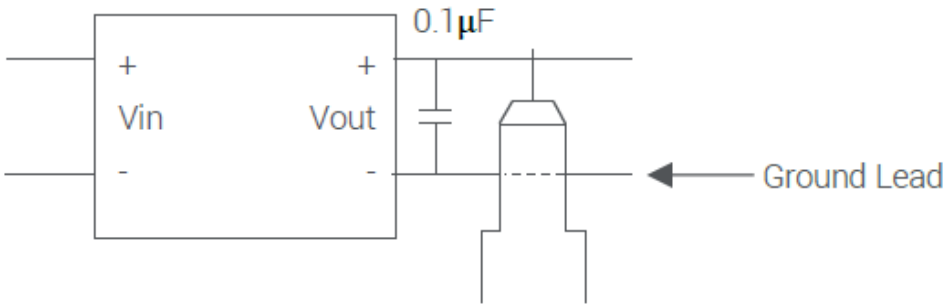
Mechanical Specification

Derating Curve



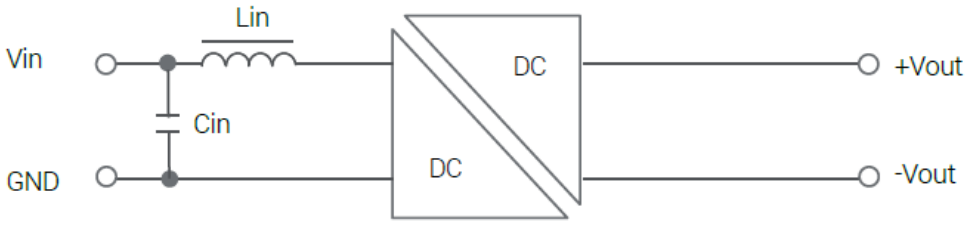
Ambient Temperature with natural convection

Ripple & Noise Measure Method



Measured with 20MHz bandwidth and 0.1μF ceramic capacitor

EMI Filtering-Suggestion for Class A

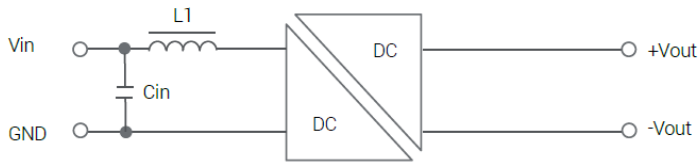


*The external filter for EN55032 Class A.

Part No.	Input Voltage	Inductance / Capacitance (Lin/Cin)
LGA1W	5V	22 µH / 4.7 µF
	12V	22 µH / 4.7 µF
	24V	22 µH / 4.7 µF

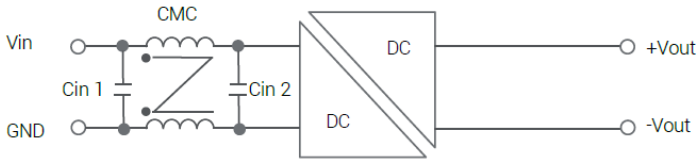
EMI Filtering-Suggestion for Class B

Vin= 5VDC



Part No.	Input Voltage	L1 / Cin
LGA1W	5V	47 µH / 10 µF

Vin= 12, 24VDC

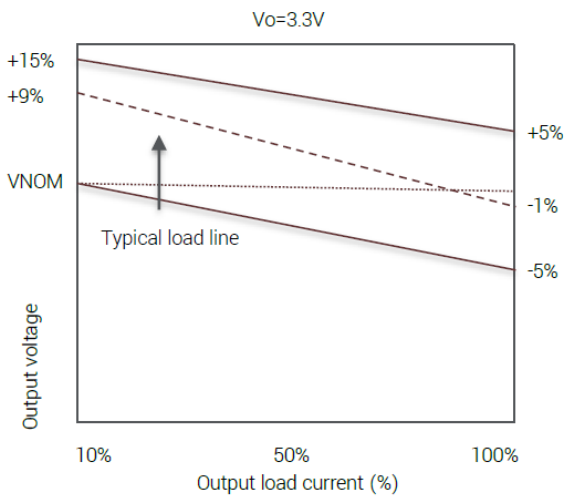


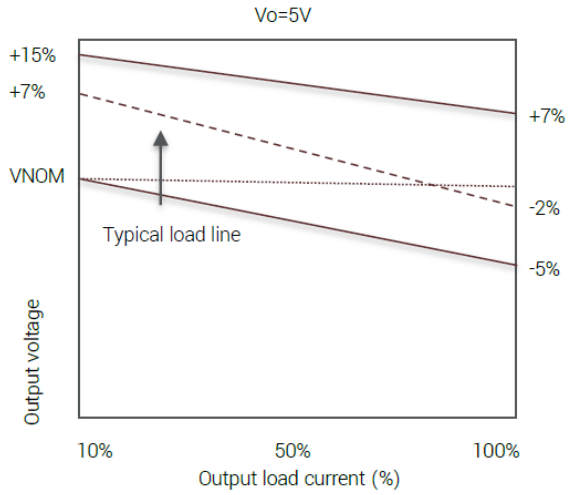
Part No.	Input Voltage	L1 / Cin
LGA1W	5V	10 µF / 0.3mH / 10 µF
	24V 5Vout	10 µF / 0.3mH / 10 µF
	24V others	10 µF / 0.1mH / 10 µF

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

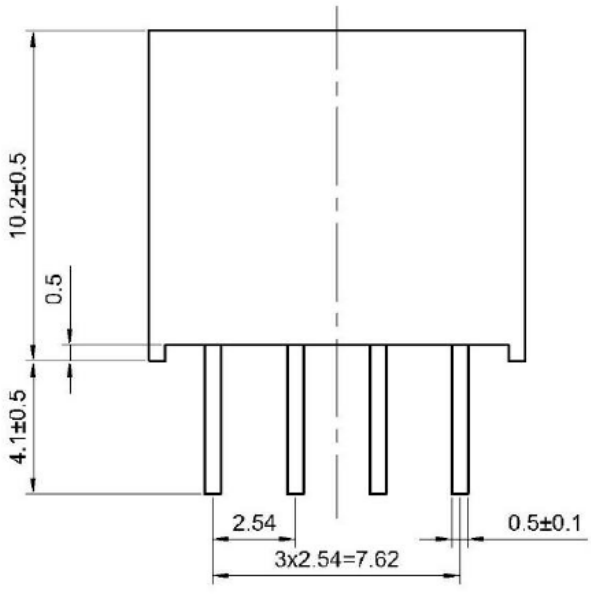
* The external filter for EN55032 Class B.

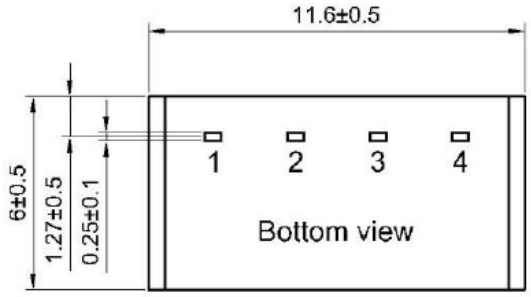
Tolerance Envelope





Mechanical Dimension & Pinning



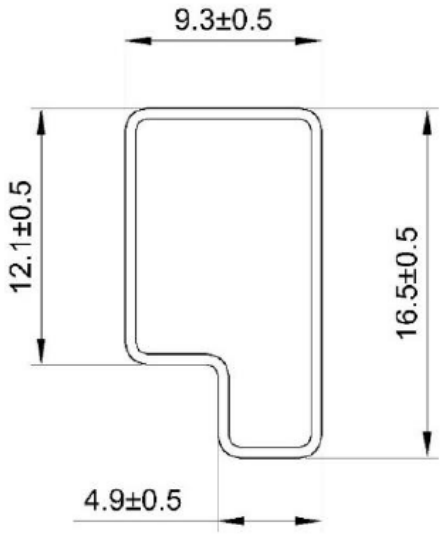


Pin	Single
1	-Vin
2	+Vin
3	-Vout
4	+Vout

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

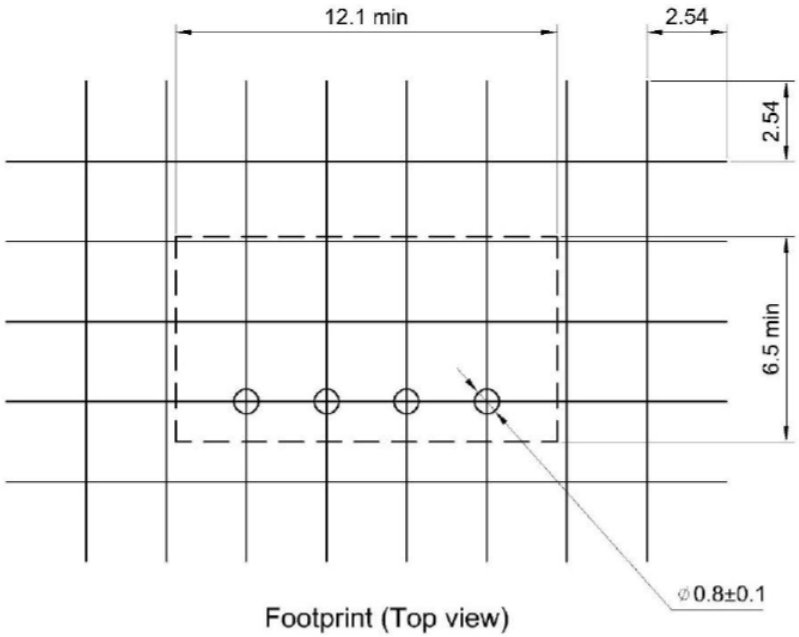
Package

Anti-static liquid tube



UNIT:mm
1 Tube = 41 pcs
Length:520±2mm

Recommended Footprint



Footprint (Top view)