EMC Filter





FEATURES

- Compact size
- Design to suppress the AC power surge to achieve primary protection
- Ensure the power supply module to meet the requirement of CISPR22/ EN55022 Class B
- Cost-effective
- Low Temperature rise
- Mounting: PCB mounting, Chassis mounting with Screw Terminals, DIN-Rail mounting

RoHS

This model applies to analog circuit which is noise-sensitive. Put FC-L01D on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 ±2KV (2Ω internal resistance)/±4KV (12Ω internal resistance). Put FC-L01D2 on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 ±4KV (2Ω internal resistance)/±6KV (12Ω internal resistance) and EMI requirement of CISPR22 /EN 55022 Class B.

EMC filter used with the MORNSUN AC/DC module, AC/DC module's max. Input voltage must less than EMC filter's max. Voltage, AC/DC module's max. Input current must less than EMC filter's nominal current.

Selection Guide

Model	Input Voltage Range (VAC)	Nominal Current (A)(max)
FC-L01D	85-305	0.5
FC-L01D2	85-305	0.5

Note: series with suffix "A2" are chassis mounting, with suffix "A4" are DIN-Rail mounting, for example FC-L01DA4.

General Specifications

Item	Test Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	--	85	°C
Storage Temperature		-55	--	125	
Casing Temperature Rise	220VAC @0.05A	--	--	5	
	220VAC @0.25A	--	--	20	
	220VAC @0.5A	--	--	30	
Test Voltage (L/PE, N/PE)	Tested for 1 minute and leakage current: 1 mA	--	2	--	KVAC

General Specifications

Casing Material		Black flame-retardant heat-proof epoxy resin (UL94-V0)	
Package Dimensions	FC-L01D	Horizontal package	48.50X36.00X20.50 mm
		A2 wiring package	96.10X54.00X29.00 mm
		A4 rail package	96.10X54.00X33.60 mm
	FC-L01D2	Horizontal package	62.00X45.00X22.50 mm
		A2 wiring package	96.10X54.00X31.00 mm
		A4 rail package	96.10X54.00X35.60 mm
Weight	FC-L01D	Horizontal package/A2 wiring package/ A4 rail package	50g/100g/140g(Typ.)
	FC-L01D2		85g/135g/175g(Typ.)

Frequency Attenuation Specifications

Item	Test Conditions		Min.	Typ.	Max.	Unit
The attenuation coefficient of frequency	150KHz—1GHz	FC-L01D	--	20	--	dB
		FC-L01D2	--	30	--	

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Devise Standard

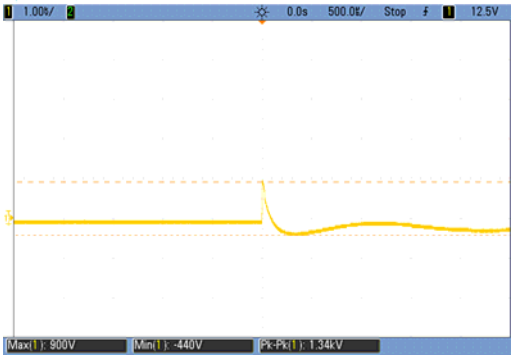
Put FC-L01D on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 ±2KV (2Ω internal resistance)/±4KV (12Ω internal resistance). Put FC-L01D2 on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 ±4KV (2Ω internal resistance)/±6KV (12Ω internal resistance) and EMI requirement of CISPR22 /EN 55022 Class B.

EMC Specifications

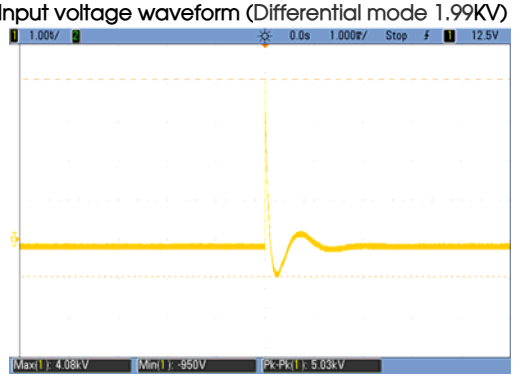
①FC-L01D Surge Test Result



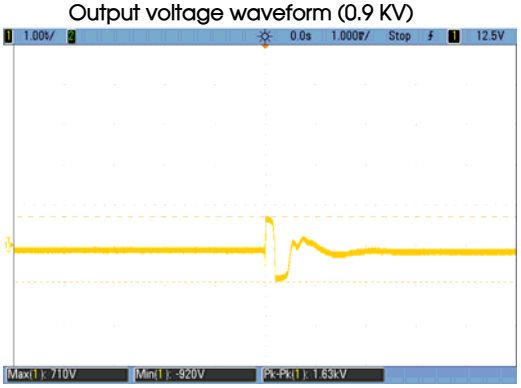
Input voltage waveform (Differential mode 1.99KV)



Output voltage waveform (0.9 KV)



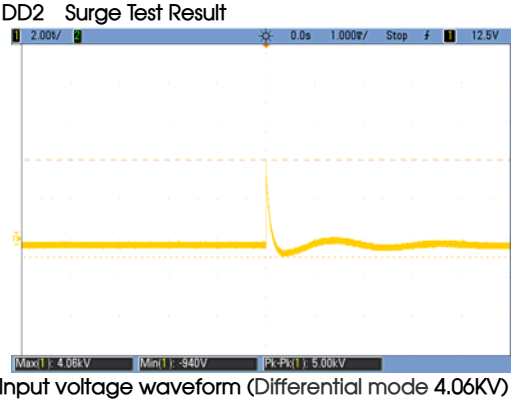
Input voltage waveform (Common mode 4.084.62KV)



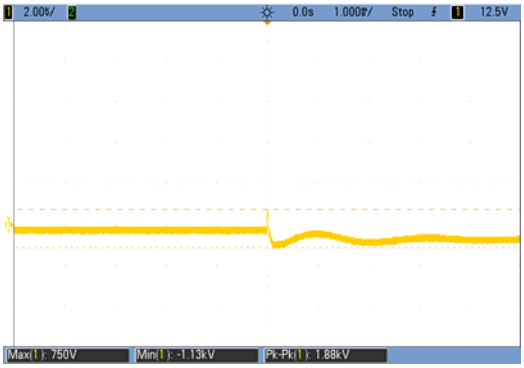
Output voltage waveform(0.71 KV)

Note: Above result was tested on FC-L01D open.

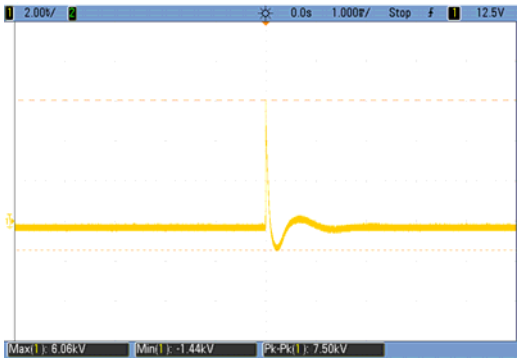
②FC-L01DD2 Surge Test Result



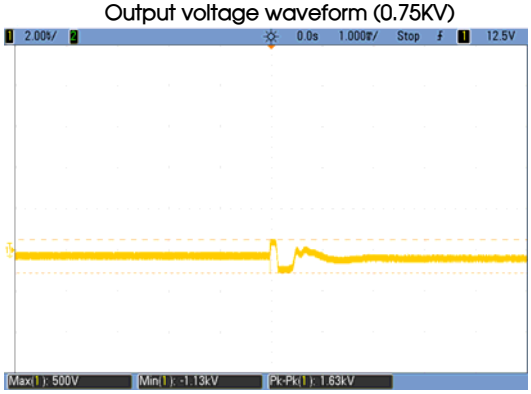
Input voltage waveform (Differential mode 4.06KV)



Output voltage waveform (0.75KV)



Input voltage waveform (Common mode 6.06KV)



Output voltage waveform(0.5KV)

Note: Above result was tested on FC-L01D2 open.

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Design Reference

1. Inside schematic

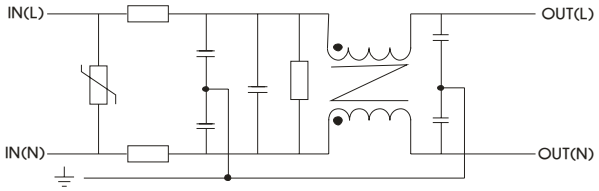


Fig.1 FC-L01D

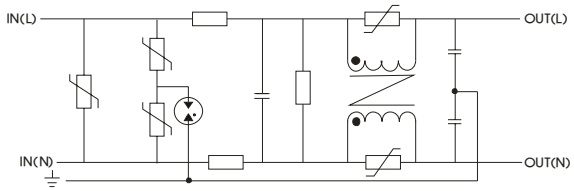
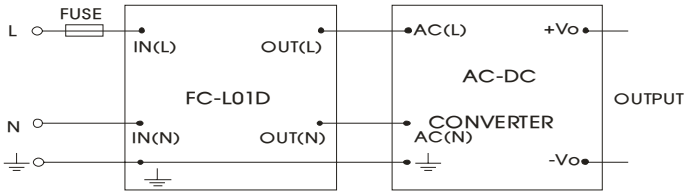


Fig. 2 FC-L01D2

2. Typical application



FUSE: Due to the difference of the power module input current, the fuse of the recommended values, please refer to the Technical Manual for the power module.

3. Supporting the product model

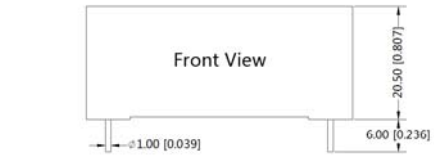
Model	EMI(Without External Circuit)	EMI(With EMC filter)	Surge(Without External Circuit)	Surge(With FC-L01D)	Surge(With FC-L01D2)
LD03-10BXX Series	CISPR22/EN55022 CLASS A	CISPR22/EN55022 CLASS B	--	IEC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	--
LD05-20BXX Series	CISPR22/EN55022 CLASS A	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±1KV perf. Criteria B	IEC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LD10-20BXX Series	CISPR22/EN55022 CLASS A	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±1KV perf. Criteria B	IEC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LD10-20BXXMU Series	CISPR22/EN55022 CLASS A	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±1KV perf. Criteria B	EC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LD12-20BXX Series	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±2KV perf. Criteria B	--	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LD20-10BXX Series	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±2KV/±4KV perf. Criteria B	--	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LHXX-10XXX Series	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±1KV/±2KV perf. Criteria B	IEC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LBXX-10XXX Series	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN61000-4-5 ±1KV/±2KV perf. Criteria B	IEC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	IEC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LI 24 Series	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±1KV/±2KV perf. Criteria B	IEC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	EC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LS01 Series	--	CISPR22/EN55022 CLASS B	--	EC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	--
LS03 Series	--	CISPR22/EN55022 CLASS B	--	EC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	--
LS03-R2 Series	--	CISPR22/EN55022 CLASS B	--	EC/EN61000-4-5 ±2KV/±4KV perf. Criteria B	--

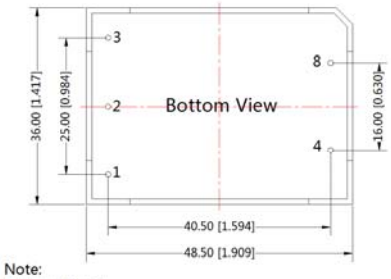
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Model	EMI(Without External Circuit)	EMI(With EMC filter)	Surge(Without External Circuit)	Surge(With FC-L01D)	Surge(With FC-L01D2)
Dedicated Power Converter For Power System LH(E) Series	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±2KV/±4KV perf. Criteria B	--	EC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
Dedicated Power Converter For Power System LH(ER2) Series	CISPR22/EN55022 CLASS A	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±2KV/±4KV perf. Criteria B	--	EC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LM30-00J0512-03E	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 ±2KV/±4KV perf. Criteria B	--	EC/EN61000-4-5 ±4KV/±6KV perf. Criteria B
LO10-00B24E	CISPR22/EN55022 CLASS B	CISPR22/EN55022 CLASS B	IEC/EN 61000-4-5 2KV/4KV perf. Criteria B	--	EC/EN61000-4-5 ±4KV/±6KV perf. Criteria B

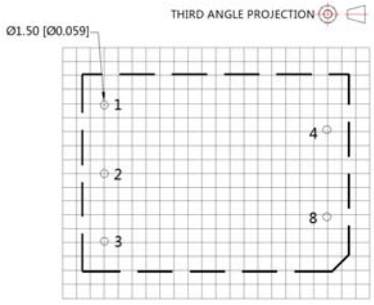
4. For more information Please find the application notes on www.mornsun-power.com

FC-L01D Dimensions and Recommended Layout





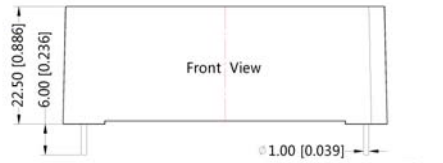
Note:
Unit:mm[inch]
Pin diameter tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]

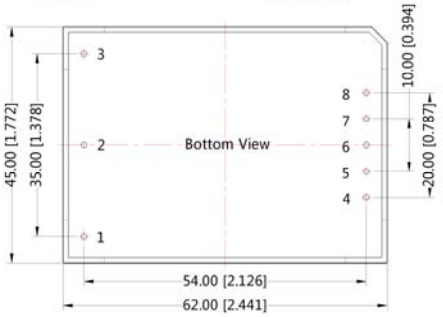


Note : Grid 2.54*2.54mm

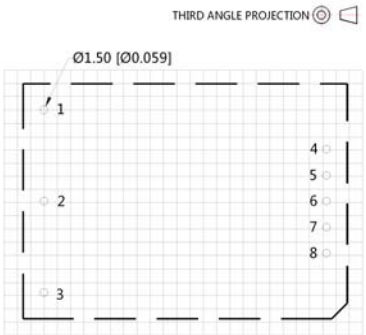
Pin-Out	
Pin	Function
1	⏚
2	IN(N)
3	IN(L)
4	OUT(N)
8	OUT(L)

FC-L01D2 Dimensions and Recommended Layout





Note:
Unit:mm[inch]
Pin diameter tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]



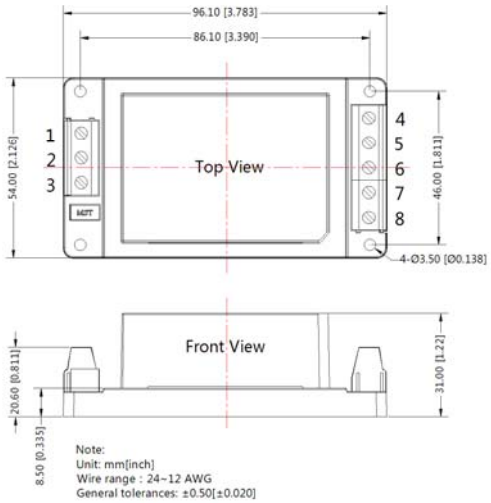
Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	⏚
2	IN(N)
3	IN(L)
4	OUT(N)
5, 6, 7	NC
8	OUT(L)

NC: No Connection

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FC-L01DA2 & FC-L01D2A2 Dimensions



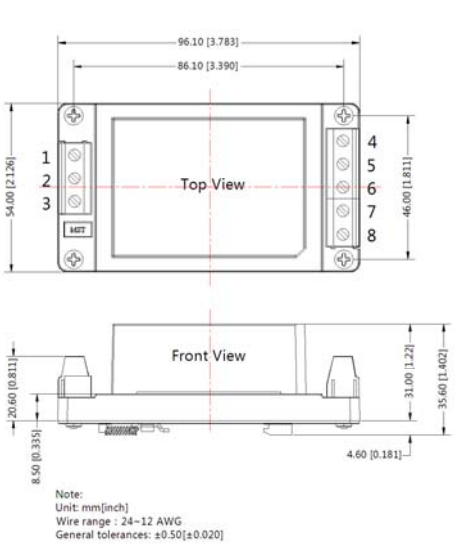
Note:
Unit: mm[inch]
Wire range : 24~12 AWG
General tolerances: ±0.50[±0.020]

Pin	FC-L01DA2	FC-L01D2A2
1	⏚	⏚
2	IN(N)	IN(N)
3	IN(L)	IN(L)
4	OUT (N)	OUT (N)
5	NC	NC
6	NC	NC
7	NC	NC
8	OUT (L)	OUT (L)

*The figure above is related to FC-L01D2A2 series, the height of other series is different.

OUTLINE AND DIMENSIONS	
MODEL	DIMENSIONS
FC-L01DA2	96.1*54*29.0mm
FC-L01D2A2	96.1*54*31.0mm

FC-L01DA4 & FC-L01D2A4 Dimensions



Note:
Unit: mm[inch]
Wire range : 24~12 AWG
General tolerances: ±0.50[±0.020]

Pin	FC-L01DA4	FC-L01D2A4
1	⏚	⏚
2	IN(N)	IN(N)
3	IN(L)	IN(L)
4	OUT (N)	OUT (N)
5	NC	NC
6	NC	NC
7	NC	NC
8	OUT (L)	OUT (L)

*The figure above is related to FC-L01D2A4 series, the height of other series is different.

OUTLINE AND DIMENSIONS	
MODEL	DIMENSIONS
FC-L01DA4	96.1*54*33.6mm
FC-L01D2A4	96.1*54*35.6mm

Note:

1. Packing Information please refer to 'Product Packing Information'. The Packing bag number of Horizontal package : 58220007 (FC-L01D)/58220006(FC-L01D2), the Packing bag number of A2S/ A4S package:58220010;
2. Unless otherwise specified, data in this data sheet should be tested under the conditions of Ta=25°C, humidity<75%;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technicians for specific information;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

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