



FC-C01D EMC Filter

This model applies to analog circuit which is noise-sensitive. Put FC-C01D on to the input of DC/DC module can ensure the module meet the EMC request of TB/T3021-2001, EN55015, RIA12 standard.

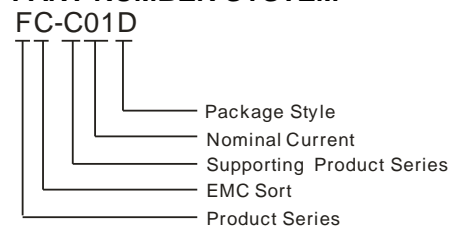
FC-C01D used with the MORNSUN DC/DC module, DC/DC module's max. Input voltage must less than FC-C01D's max. Voltage, DC/DC module's power must less than FC-C01D's Max. output power.

RoHS

FEATURES

1. Compact size
2. Cost-effective
3. Meet IEC/EN61000-4 series standard and CISPR22/EN55022
4. Meet railway industry RIA 12, IEC 571, EN50155, TB/T3021-2001 standard
5. Input reverse polarity protection
6. Efficiency up to 95%

PART NUMBER SYSTEM



SELECTION GUIDE

Model	Input Voltage Range (VDC)	Max. output power(W)	Weight (g)
FC-C01D	60-160	15	40

INPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Input Voltage	Operating temperature range	60	110	160	VDC
No-load Current	110VDC @ No-load	--	--	1	mA
Transient Input Voltage	RIA 12 Transient 20ms	--	--	385	V/ms
	RIA 12 Transient 1s	--	--	165	V/s
Input Voltage Limit (p-p)	EN 55015 (5/50 μ s, 5 Ω or 100 Ω)	--	--	1.800	V
	EN 55015 (0,05/0,1 μ s, 100 Ω)	--	--	8.400	
	RIA 12 (10/100 μ s, 5 Ω)	--	--	960	

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Efficiency	110VDC @0.14A	--	95	--	%
Max. Output Voltage Limit	Operating temperature range	--	165	--	VDC

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	--	85	°C
Storage Temperature		-55	--	125	
Temp. rise at full load	110VDC @0.14A	--	15	--	
MTBF	MIL-HDBK-217F@40°C	--	1, 200, 000	--	hours
Case Material		Plastic(UL94-V0)			

SAFE & EMC

Item	Test Conditions	Test Procedure

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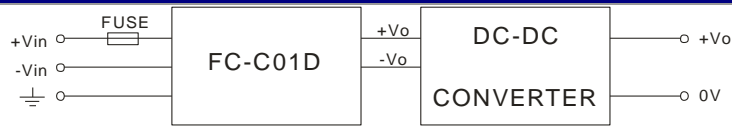
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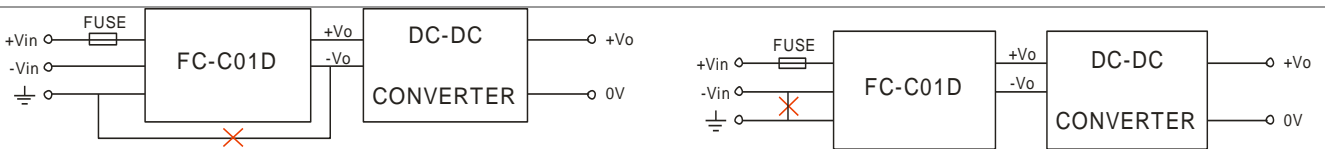
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Shake		10 cycles in each axis Test time in each axis: 3 minute Frequency: 10-60Hz amplitude: 0.7mm Frequency: 60-2000Hz acceleration: 10g	IEC 68-2-6
Impact		3 shocks in each axis Peak acceleration: 100g Duration: 6ms	IEC 68-2-27
EMI	CE	150KHz-30MHz Class B (With MORNSUN's Module)	CISPR22 , EN55022, GB9254
	RE	30MHz-1GHz Class B (With MORNSUN's Module)	CISPR22 , EN55022, GB9254
EMS	ESD	Air $\pm 8KV$ Contact $\pm 6KV$ perf. Criteria B	IEC/EN61000-4-2, GB/T17626.2
	RS	10V/m perf. Criteria A (With MORNSUN's Module)	IEC/EN61000-4-3, GB/T17626.3
	EFT	$\pm 4KV$ (2.5KHz, 5KHz, 100KHz, 1MKHz) perf. Criteria B	IEC/EN61000-4-4, GB/T17626.4 EN50155, RIA12, TB/T3021-2001
	Surge	$\pm 2KV$ (1.2 μs /50 μs 2 Ω) / $\pm 4KV$ (1.2 μs /50 μs 12 Ω) perf. Criteria B	IEC/EN61000-4-5, GB/T17626.5 EN50155, RIA12, TB/T3021-2001
	CS	10V perf. Criteria A (With MORNSUN's Module)	IEC/EN61000-4-6, GB/T17626.6

TYPICAL APPLY CIRCUIT



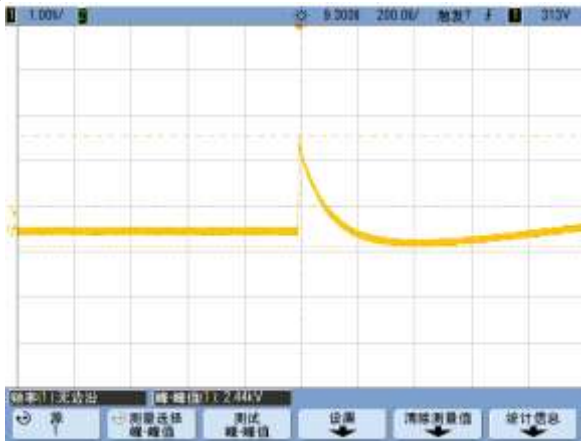
FUSE: Due to the difference of the power module input current, the fuse of the recommended values, please refer to the Technical Manual for the power module.



Note: These applications is not supported for this model.

EMC SPECIFICATIONS

① Surge Test Result



Input voltage waveform (Differential mode 2.44kV)



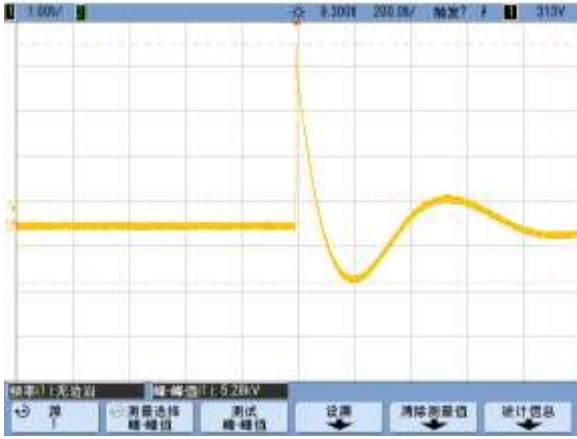
Output voltage waveform (Differential mode 192V)

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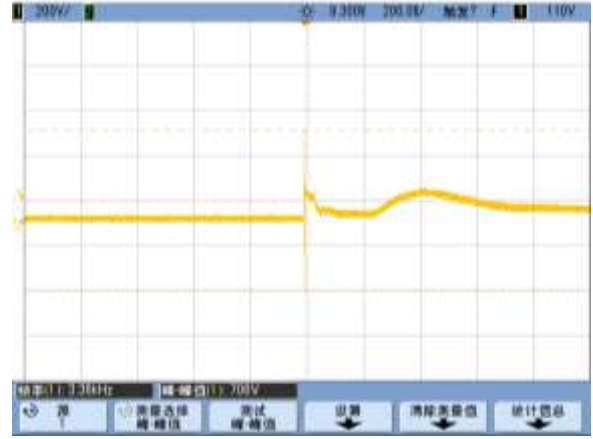
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Input voltage waveform (Common mode 5.28KV)



Output voltage waveform(Common mode 706V)

② Power supply over-Voltage Test Result (385V/20ms Over-Voltage waveform)



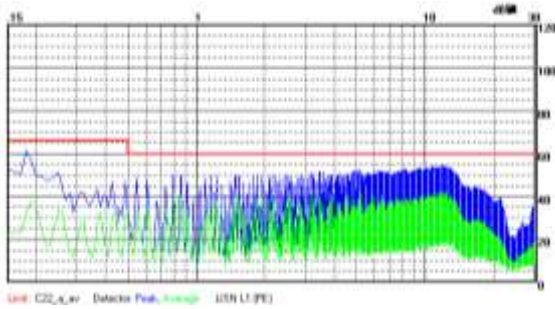
Input voltage waveform (385V/20ms)



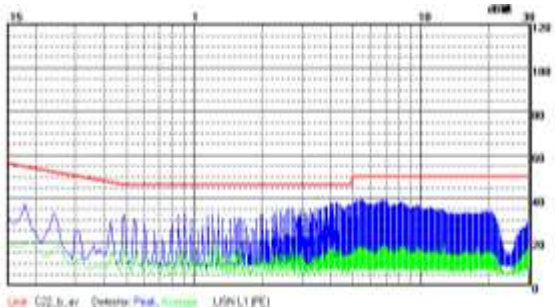
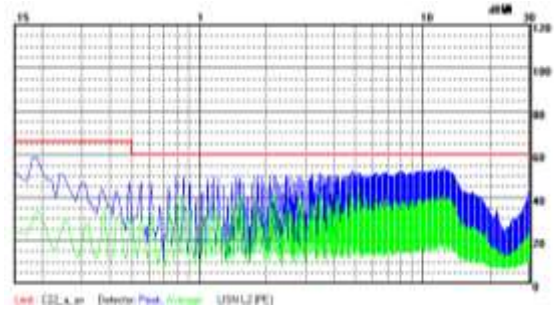
Output voltage waveform(161V/20ms)

Note: Above result was tested on FC-C01D open.

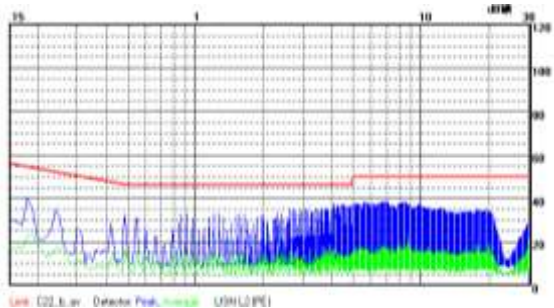
③ EMI TEST WAVEFORM



Power supply front-end without FC-C01D L1 (left), L2(right)line CE meet CISPR22/EN 55022 Class A



Power supply front-end with FC-C01D L1(left), L2(right) line CE meet CISPR22/EN 55022 Class B

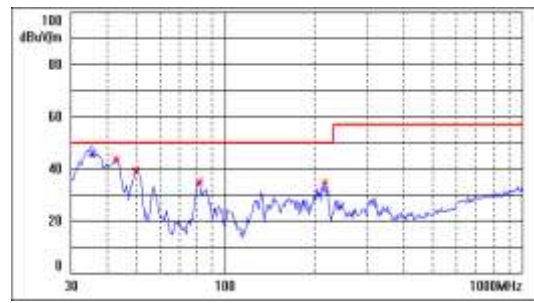
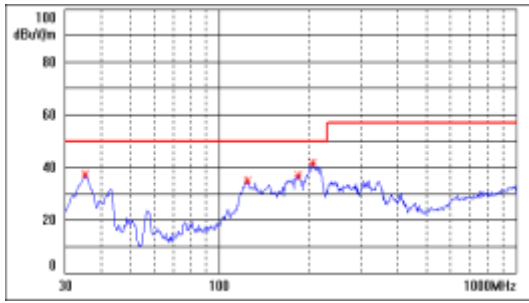


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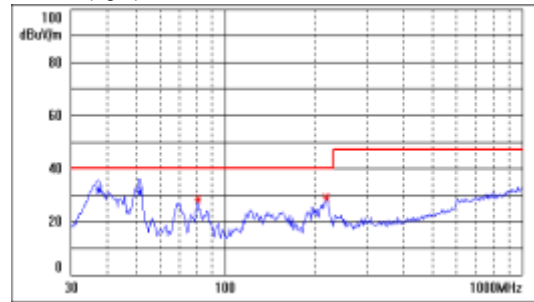
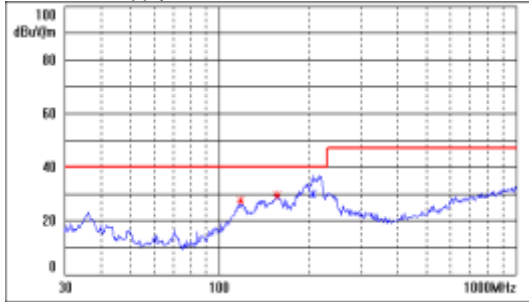
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Power supply front-end without FC-C01D Horizontal (left), Vertical(right) RE meet CISPR22/EN 55022 Class A

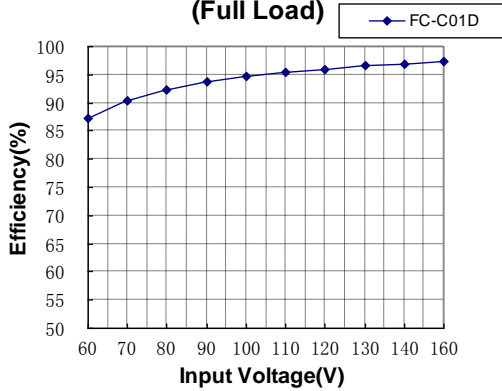


Power supply front-end with FC-C01D Horizontal (left), Vertical(right) RE meet CISPR22/EN 55022 Class B

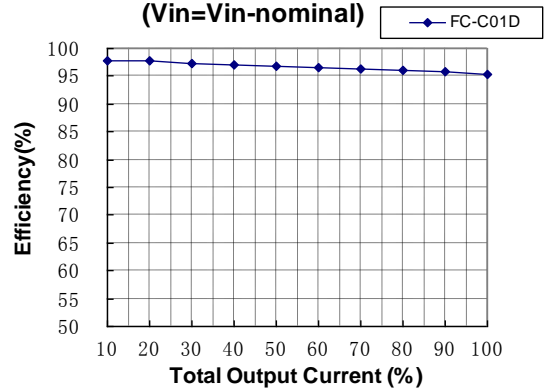
Note: Above result was tested on VRB1D12D-10WR2.

PRODUCT TYPICAL CURVE

Efficiency VS Input Voltage curve (Full Load)



Efficiency VS Output Load curve (Vin=Vin-nominal)



OUTLINE DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

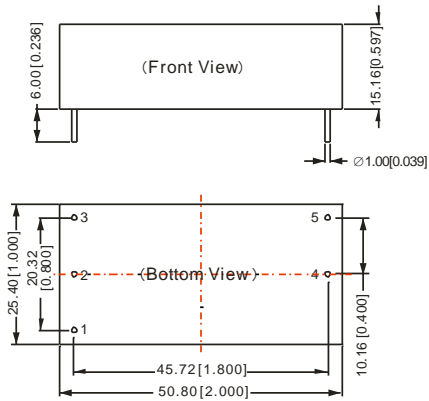
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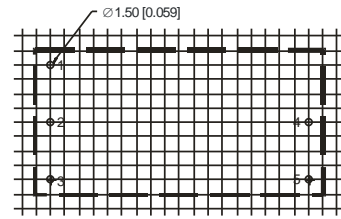
MECHANICAL DIMENSIONS



FOOTPRINT DETAILS	
Pin	Function
1	$\frac{\square}{\square}$
2	-Vin
3	+Vin
4	-Vo
5	+Vo

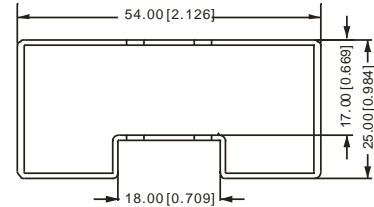
Note:
 Unit: mm[inch]
 Pin diameter tolerances: ± 0.10 mm [± 0.004 inch]
 General tolerances: ± 0.50 mm [± 0.020 inch]

RECOMMENDED FOOTPRINT



Note: grid 2.54*2.54mm

TUBE OUTLINE DIMENSIONS



Note:
 Unit: mm[inch]
 General tolerances: ± 0.50 mm [± 0.020 inch]
 L=530mm[20.866inch] Devices per tube quantity: 19pcs
 L=220mm[8.661inch] Devices per tube quantity: 7pcs
 Short tube inner package dimensions: L*W*H= 255*170*80mm
 Short tube outer package dimensions(with six inner package boxes):
 L*W*H= 375*280*270mm
 Long tube inner package dimensions: L*W*H= 580*200*100mm
 Long tube outer package dimensions(with two inner package boxes):
 L*W*H= 600*215*220mm
 Long tube outer package dimensions(with three inner package boxes):
 L*W*H= 600*215*325mm

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