



SERIES: VFM-XX

DESCRIPTION: DC EMI FILTER

FEATURES

- compact size
- suitable for use with a wide range of dc-dc converters
- reduces common and differential mode noise



MODEL	input voltage	input surge voltage ¹	input current	isolation voltage ²
	range (V dc)	nominal (V dc)	max. (A)	min. (V dc)
VFM-10A	0 ~ 75	100	10	1,500
VFM-15C	0 ~ 75	100	15	1,500
VFM-20A	0 ~ 75	100	20	1,500
VFM-25C	0 ~ 36	50	25	1,500

1) for 100 ms
2) input to ground, output to ground

GENERAL

parameter	conditions/description	min	nom	max	units
dimensions	VFM-10A: 2.00x1.00x0.46 inch 50.8x25.4x11.7 mm VFM-15C: 4.06x3.11x0.89 inch 103.2x79x22.7 mm VFM-20A: 2.00x1.60x0.50 inch 50.8x40.6x12.7 mm VFM-25C: 4.06x3.11x0.89 inch 103.2x79x22.7 mm				
case material	VFM-10A/20A: black plastic VFM-15C/25C: black coated steel				
isolation voltage	input to ground, output to ground	1,500			V dc
isolation resistance	input to ground, output to ground	10 ⁷			Ω
dc resistance	total for two legs		16		mΩ

ENVIRONMENTAL

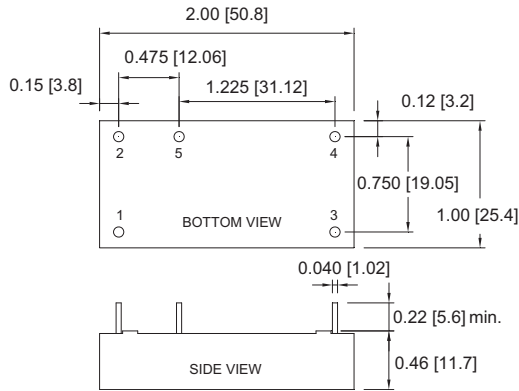
parameter	conditions/description	min	nom	max	units
cooling	natural convection				
operating temperature		-40		100	°C
case temperature				100	°C
storage temperature		-40		100	°C



SERIES: VFM-XX

DESCRIPTION: DC EMI FILTER

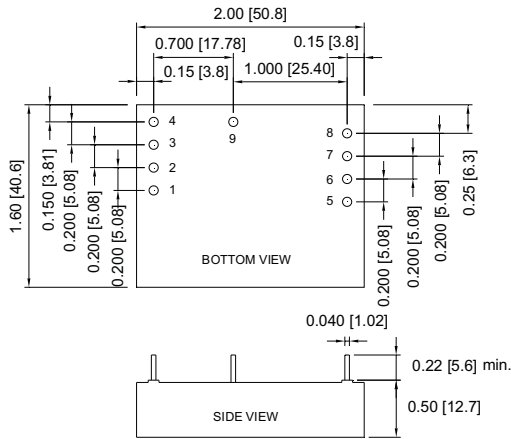
DRAWING (VFM-10A)



NOTE: Pin Size is $\varnothing 0.04$ inch ($\varnothing 1.02$ mm)
All Dimensions in inches (mm)
Tolerances: Inches: X.XX= ± 0.02 , X.XXX= ± 0.010
Millimeters: X.X= ± 0.5 , X.XX= ± 0.25

PIN CONNECTION	
Pin	Function
1	+V Input
2	-V Input
3	+V Output
4	-V Output
5	GND

DRAWING (VFM-20A)



DIMENSIONS:
NOTE: Pin Size is $\varnothing 0.04$ inch ($\varnothing 1.02$ mm)
All Dimensions in inches (mm)
Tolerances Inches: X.XX= ± 0.02 , X.XXX= ± 0.010
Millimeters: X.X= ± 0.5 , X.XX= ± 0.25

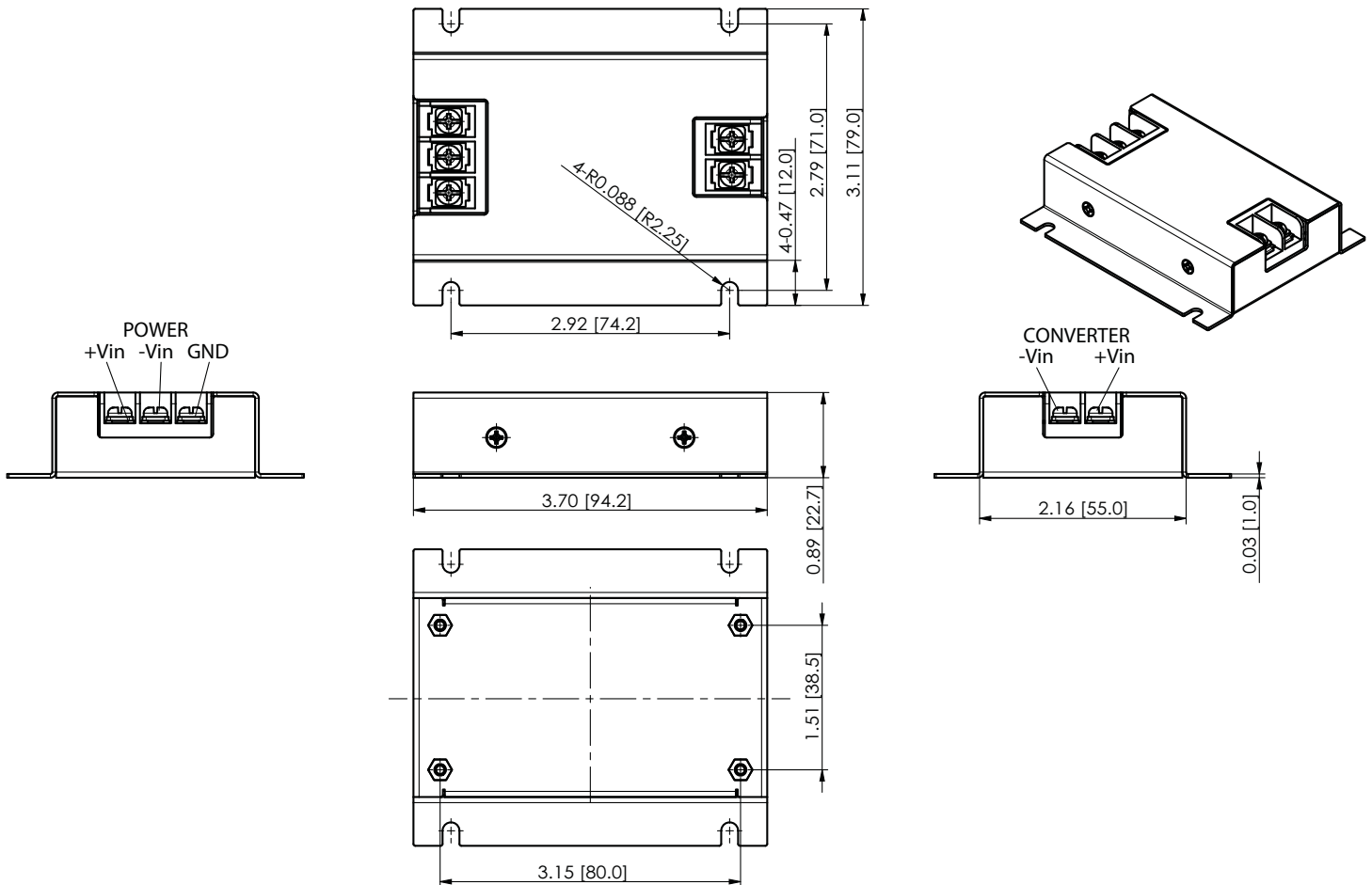
PIN CONNECTION	
Pin	Function
1,2	+V Input
3,4	-V Input
5,6	+V Output
7,8	-V Output
9	GND



SERIES: VFM-XX

DESCRIPTION: DC EMI FILTER

DRAWING (VFM-15C/25C)

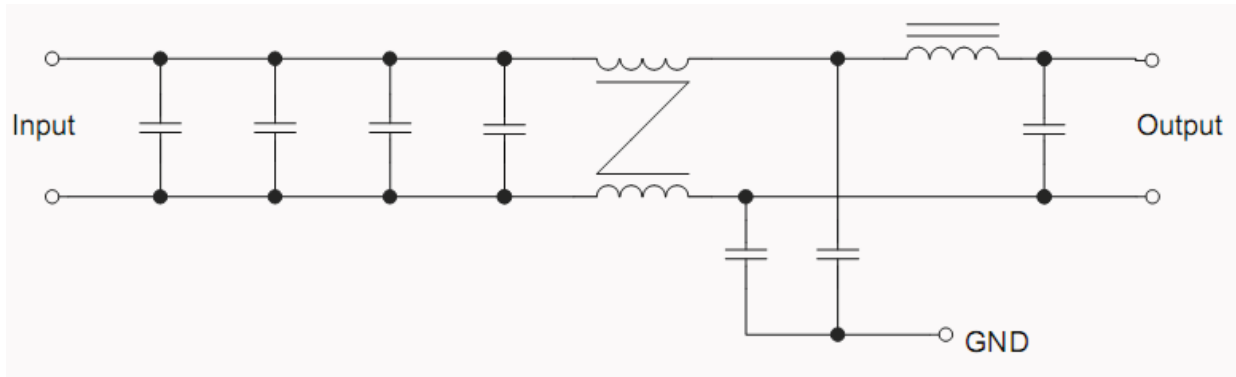




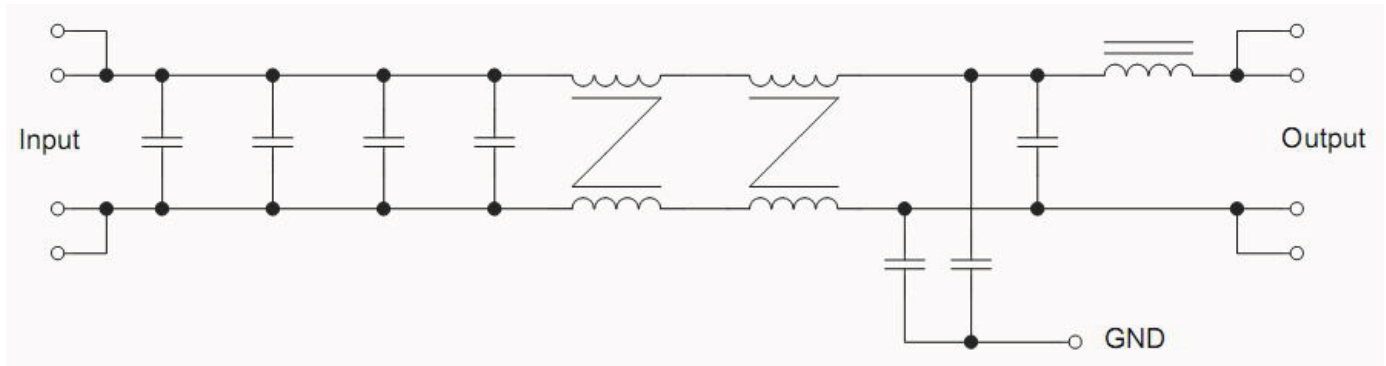
SERIES: VFM-XX

DESCRIPTION: DC EMI FILTER

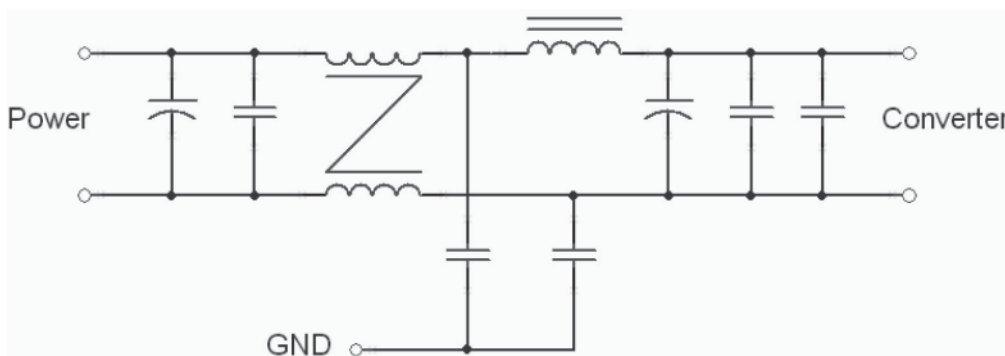
VFM-10A INTERNAL SCHEMATIC



VFM-20A INTERNAL SCHEMATIC



VFM-15C/25C INTERNAL SCHEMATIC



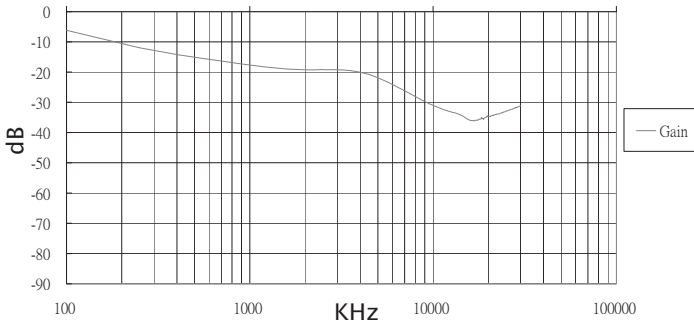


SERIES: VFM-XX

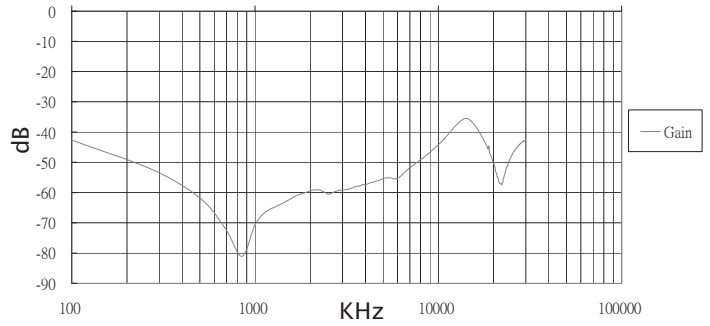
DESCRIPTION: DC EMI FILTER

INSERTION LOSS (VFM-10A)

COMMON MODE

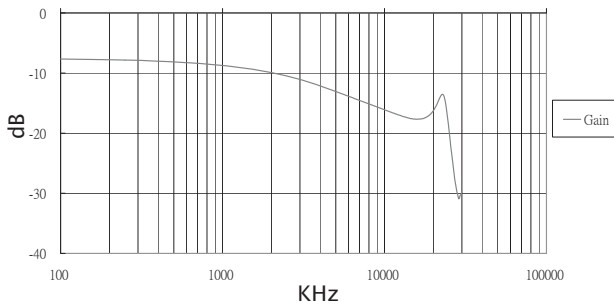


DIFFERENTIAL MODE

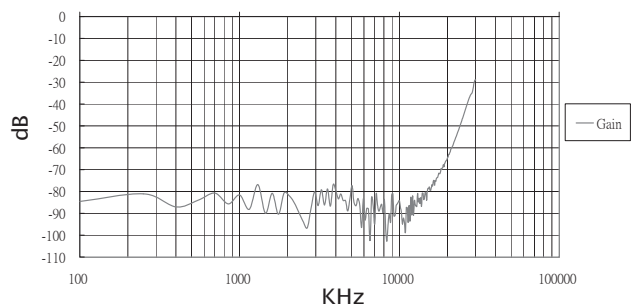


INSERTION LOSS (VFM-15C)

COMMON MODE

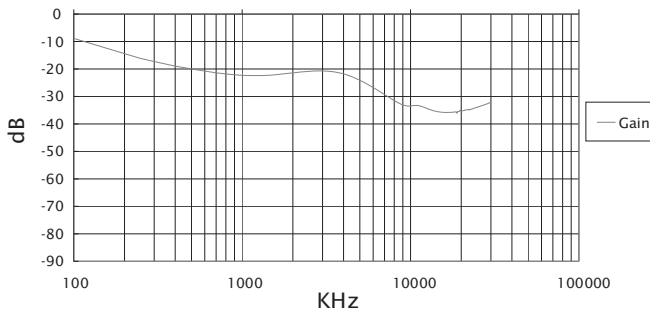


DIFFERENTIAL MODE

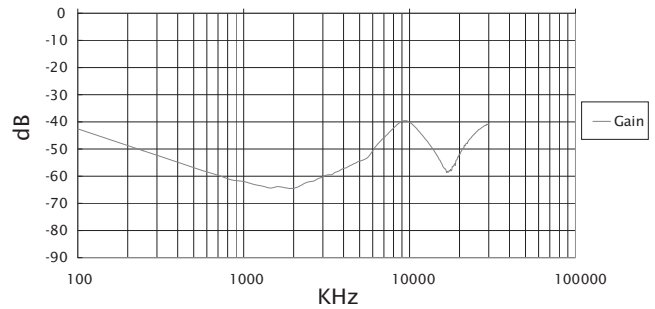


INSERTION LOSS (VFM-20A)

COMMON MODE



DIFFERENTIAL MODE



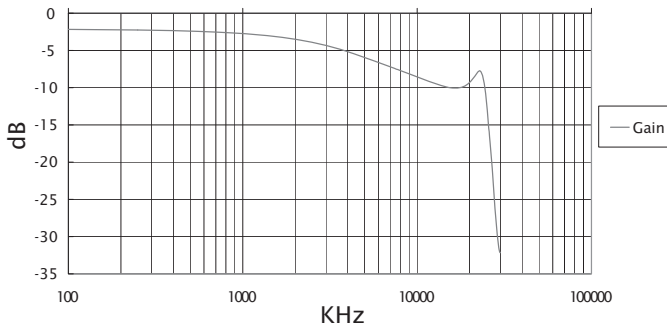


SERIES: VFM-XX

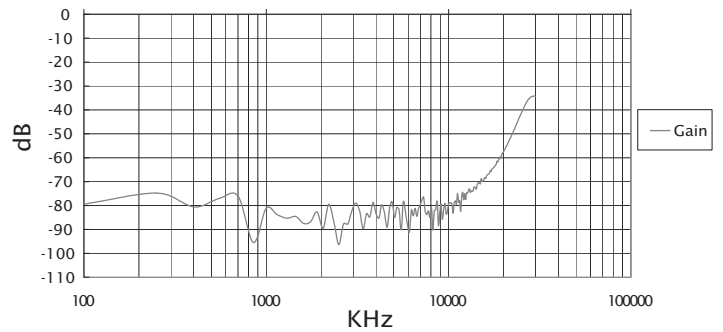
DESCRIPTION: DC EMI FILTER

INSERTION LOSS (VFM-25C)

COMMON MODE



DIFFERENTIAL MODE

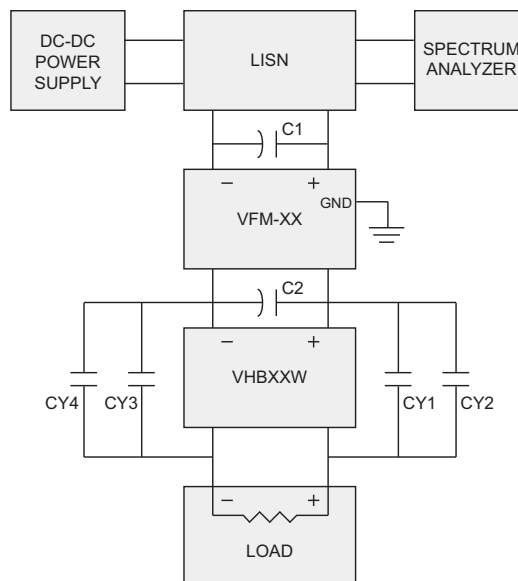


APPLICATION NOTES

The following application note shows EN55022 class B conducted emissions tests for the VFM-XX series EMI filters in series with a VHK or VHB series DC/DC converter and a purely resistive load. This information is for example only. Actual results may vary.

1) EMI Filtering - Connection Diagram

Filter Model (VFM-XX)	DC-DC Converter Model (VHXXXW)	C1	C2	CY1	CY2	CY3	CY4
VFM-10A	VHB50W-Q24-S5	47 μ F/100 V KY	...	...	...	...	...
	VHB50W-Q48-S5	47 μ F/100 V KY	...	...	...	...	...
VFM-15C	VHK200W	...	...	...	...	...	...
VFM-20A	VHB150W-Q24-S5	47 μ F/100 V KY	220 μ F/100 V KY	1000 pF / 2 KV	...	1000 pF / 2 KV	560 pF/2 KV
	VHB150W-Q48-S5	...	220 μ F/100 V KY	1000 pF / 2 KV	...	1000 pF / 2 KV	560 pF/2 KV
VFM-25C	VHK200W	...	...	...	...	...	...



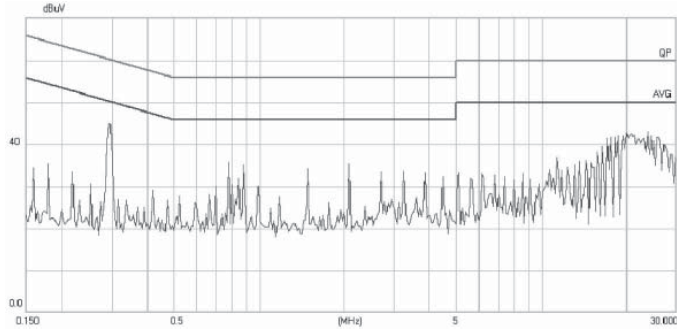


SERIES: VFM-XX

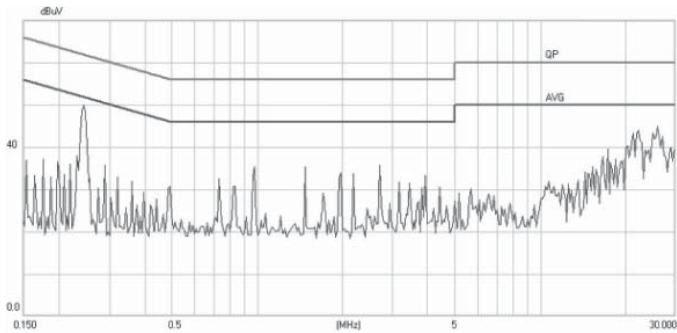
DESCRIPTION: DC EMI FILTER

2) Conducted Emission Measurement

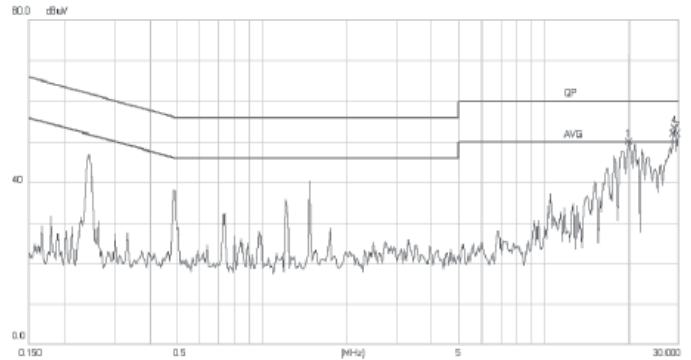
Filter Model: VFM-10A
DC-DC Converter Model: VHB50W-Q24-S5
Input Voltage: 12 V dc



Filter Model: VFM-20A
DC-DC Converter Model: VHB150W-Q24-S5
Input Voltage: 12 V dc



Filter Model: VFM-15C
DC-DC Converter Model: VHK200W-Q48-S12
Input Voltage: 48 V dc



Filter Model: VFM-25C
DC-DC Converter Model: VHK200W-Q24-S12
Input Voltage: 24 V dc

