

# voltbricks

DATASHEET

## VFC Series

EMI filter modules



### 1. Product details

The VFC series of EMI filters is designed to reduce electromagnetic interference in input and output circuits of DC-DC converters. The VFC is a multisectional passive modular LC filter with throughput current up to 6 A. The filter is housed in a metallic low profile case with polymer potting that provides a reliable protection against harsh environmental conditions such as vibration, moisture and salt mist. The wide operating temperature range (-55...+105 °C) allows to use these filters in different equipment of different climatic categories.

Both PCB and wiring mounting methods are suitable. Designed to be used along with VDMC converters providing the compliance with MIL-STD-461-F CE102.

#### 1.1. Designed to meet

- MIL-STD-461-F CE102

### 1.2. Features

- For application with VDMC converters
- Designed to meet MIL-STD-461F CE102
- Up to 6 A output current
- 9-40 VDC input range with transient deviation 8-50 VDC for 1 sec.
- Minimum noise rejection 50 dB at 0,15-30 MHz range
- Case operating temperature range -55...+105 °C
- 1/16 Brick package

### 1.3. Additional information

#### 1.3.1. Product details on the manufacturer's website

<https://voltbricks.com/product/components/>



#### 1.3.2. Order registration

+65 6950 0011; [sales@voltbricks.com](mailto:sales@voltbricks.com)

#### 1.3.3. Technical support

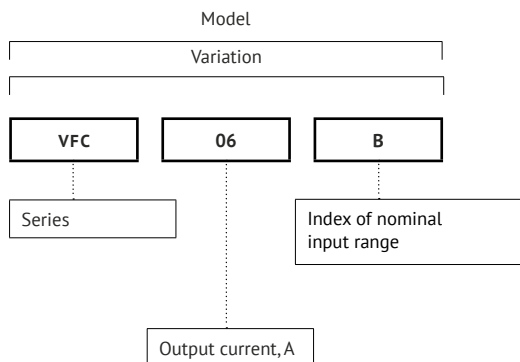
[support@voltbricks.com](mailto:support@voltbricks.com)

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## 3. Part number

For more information please contact Global operations team: +65 6950 0011 [sales@voltbricks.com](mailto:sales@voltbricks.com)



## 4. Characteristics

Models	Output current, A	Index of nominal input range	Dimensions <sup>[1]</sup> , mm	Weight, kg
VFC	6	B	33,4×30,8×10,3	0,025

[1] Without pinouts.

## 5. Filter specification

All specifications are valid for normal climatic conditions,  $V_{IN, NOM}$ ,  $I_{OUT, NOM}$ , unless otherwise stated. It is important to note that the information herein is not full.

### 5.1. General specifications

Parameter	Conditions	Value
Case temperature	Operating and storage	-55...+105 °C
Ambient temperature	Operating and storage	-55...+100 °C
Isolation voltage	+input/case, -input/case, +output/case, -output/case	~2250 VAC
Isolation resistance @ =500 VDC	+input/case, -input/case, +output/case, -output/case	1 GOhm min for normal climatic conditions 10 MOhm min for high humidity 100 MOhm min for high/low operating temperature
MTBF	$V_{IN}=V_{IN,NOM}, I_{OUT}=0,7 \times I_{MAX}$	2 400 000 h
Warranty		5 years
Maximum throughput current		6 A
Insertion loss	from 0,15 to 0,3 MHz	≥55 dB
	from 0,3 to 0,1 MHz	≥60 dB
	from 1 to 10 MHz	≥55 dB
	from 10 to 30 MHz	≥50 dB
Voltage loss	current 6 A	≤2% $V_{IN,NOM}$
Thermal impedance	Case-ambient	14 C°/W
Sine vibration	Frequency range, Hz Acceleration amplitude, m/s <sup>2</sup> (g) Vibration amplitude, mm	10...2000 Hz 200 (20) m/s <sup>2</sup> (g) 0,3 mm
Single impact	Peak shock acceleration, m/s <sup>2</sup> (g) Duration of action, m/s	1000 (100) m/s <sup>2</sup> (g) 0,5-2 m/s
Compliance	For VFC06+VDMC25/VDMC50 application	MIL-STD-461 CE102

### 5.2. Input specifications

Index of nominal input voltage	V
Nominal input voltage, VDC	28
Input voltage range, V	9...40
Transient deviation (1s), VDC	8...50

\*Allowed to apply voltage from 0 to minimum number of relevant input range without exceeding max current.

### 5.3. Physical specifications

Parameter	Value
Dimensions	max 33,4x23,2x10,3 mm without pins
Weight	max 25 g
Case material	aluminium
Coating	microarc oxidation coating
Potting material	silicone
Pin material	fluoride bronze with SnPb coating
Soldering temperature	260 °C @ 5 s

## 6. Topological layout

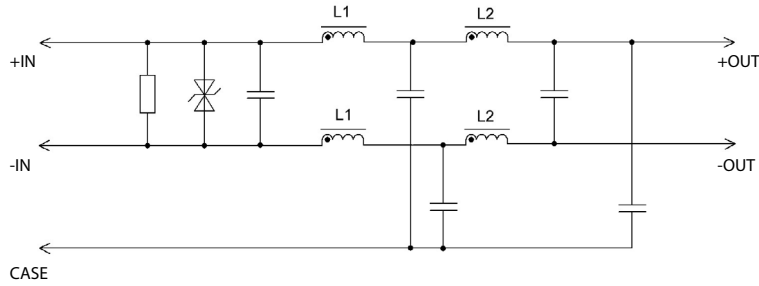


Figure 1. VFC layout.

### 6.1. DC/DC converter and EMI filter connection diagram and PCB layout example

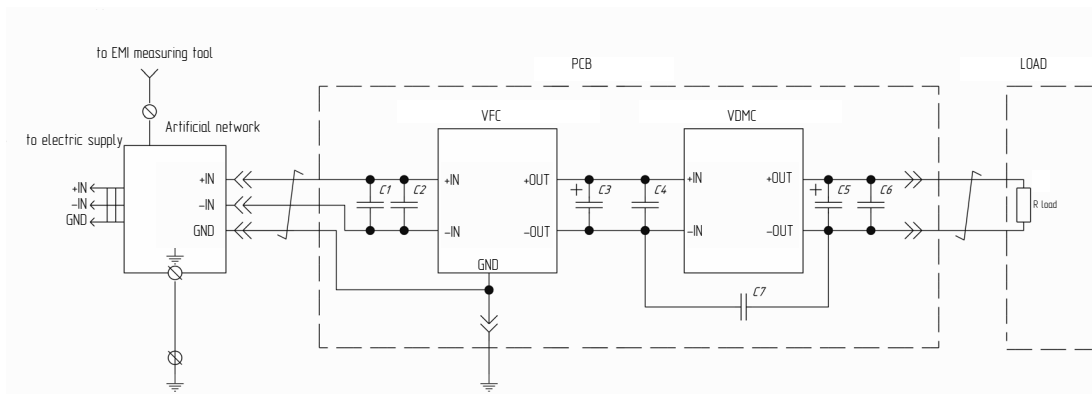


Figure 2. Connection diagram for «B» input range.

C1, C2, C3, C4, C5, C6 – according to DC/DC converter requirements. Values are given in VDMC DC/DC converter datasheet.

C7 – capacitor pF K10-47-1000...4700 pF.

### 6.2. Example of PCB layout

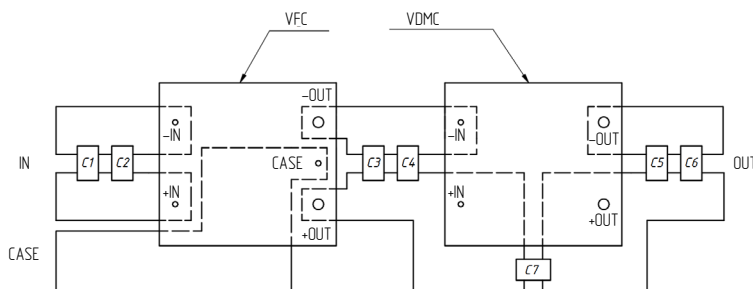


Figure 3. Example of PCB layout.

The converters have CASE pin for case grounding. CASE pin must be soldered to metal plate. Case grounding is obligatory. It can be also performed through VEC connection with case flanges.

## 7. Outline dimensions

Pin	1	3	4	6	8
Function	+IN	-IN	-OUT	CASE	+OUT

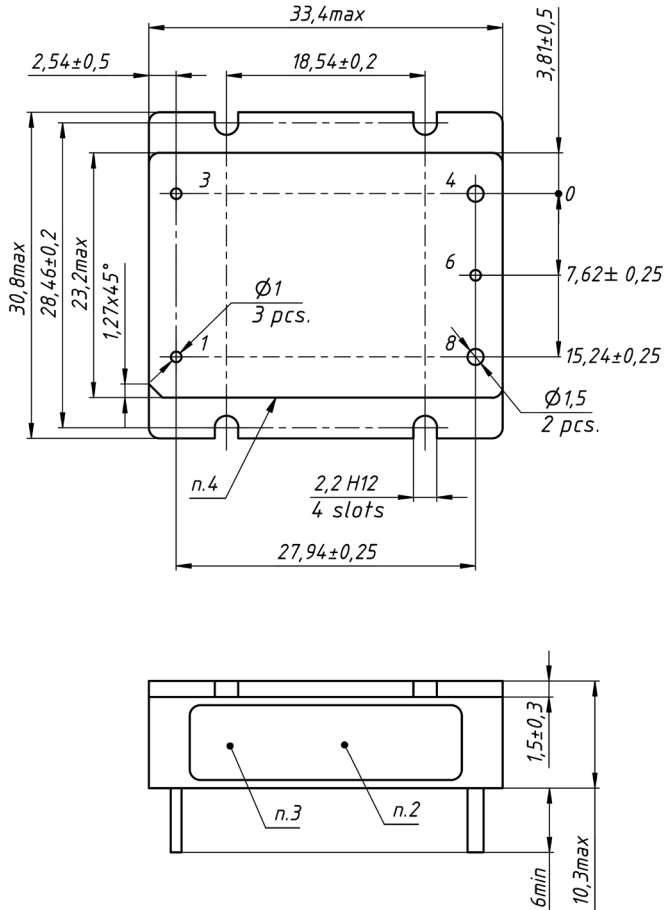


Figure 4. VFC06 outline drawing.

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Manufacturer of reliable DC/DC converters and power supply systems

This datasheet is valid for the following units: VFC06B