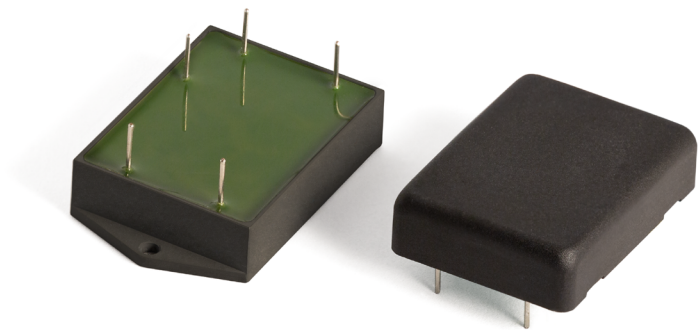


VFA Series

Electromagnetic interference filters



1. Description

VFA filters are designed to reduce electromagnetic interference in power supply units input and output. Filters throughput current reaches up to 20 A. VFA filters are packaged in low-profile metal cases. The ultra-wide operating temperature range allows to use these filters in different environments. Both PCB and wiring mounting are available due to plug-in terminals. Optimized for Voltbricks DC/DC converters.

1.1. Additional information

1.1.1. Description on the manufacturer's website

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



1.1.2. Sales

+65 6950 0011

sales@voltbricks.com

1.1.3. Technical support

support@voltbricks.com

2. Features

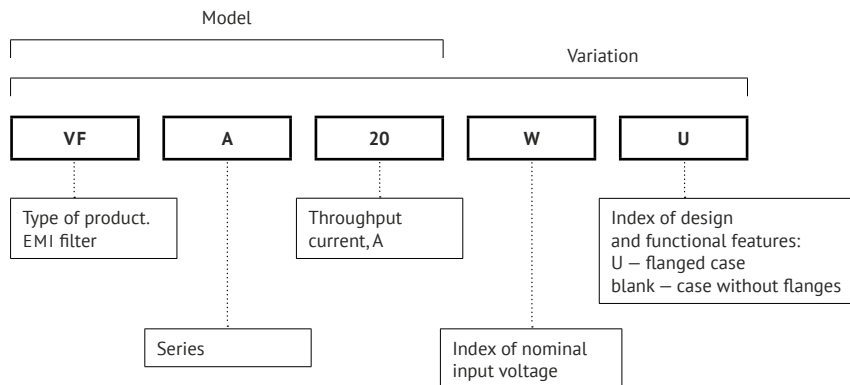
- Warranty 5 years
- For 12, 24, 110 and 230 VDC inputs
- Noise rejection up to 20–40 dB for 15–30 MHz frequency range
- Case operating temperature range –60...+125 °C
- Two types of cases
- Low-profile design 10 mm

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4. Part number

For more information please contact our Global Operations Team: +65 6950 0011



4.1. Model range

Series	Throughput current, A	Index of nominal input voltage	Index of design and functional features	Dimensions ^[1] , mm	Weight, kg
VFA	2,5	B, W	—	30,2×20,2×10,2	0,025
		B, W	U	40×20,2×10,2	0,03
	5	B, W	—	40,2×30,2×10,2	0,03
		B, W	U	50×30,2×10,2	0,035
	10	B, W	—	47,7×33,2×10,2	0,035
		B, W	U	57,5×33,2×10,2	0,04
	20	B, W	—	57,7×40,2×10,2	0,045
		B, W	U	67,5×40,2×10,2	0,055
	2	M	U	84,5×52,7×12,85	0,1
	4,5	N	U	84,5×52,7×12,85	0,1

5. Specifications

All specifications are valid for normal climatic conditions (ambient temp. 15...35 °C; relative humidity 45...80 %; air pressure $8,6 \times 10^4 \dots 10,6 \times 10^4$ Pa), $U_{IN,NOM}$, $I_{OUT,NOM}$, 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	–60...+125 °C
Ambient temperature	operating and storage	–60...+120 °C
Isolation voltage	+input/case, –input/case, +output/case, –output/case	500 VAC (index of nominal input voltage B, W) 1500 VAC (index of nominal input voltage N, M)
Isolation resistance @ 500 VDC	+input/case, –input/case, +output/case, –output/case	20 MOhm min
MTBF	$U_{IN}=U_{IN,NOM}$, $I_{OUT}=0,7 \times I_{MAX}$, $T_{CASE} \leq 0,7 \times T_{CASE,MAX}$	1 737 907 hrs
	$U_{IN}=U_{IN,NOM}$, $I_{OUT}=0,5 \times I_{MAX}$, $T_{CASE} \leq 0,5 \times T_{CASE,MAX}$	2 132 886 hrs
Warranty		5 years

[1] Without pins.

5.2. Input voltage specifications

Index of nominal input voltage	B	W	N	M
Nominal input voltage, VDC	12	24	110	230
Input voltage range, VDC	9...36	18...75	82...154	175...350
Transient deviation (1 s), VDC	9...40	18...84	82...170	175...400

5.3. Output specifications

Parameter	Conditions	Value
Maximum throughput current		20 A
Insertion loss	from 0,15 to 0,3 MHz	≥20 dB
	from 0,3 to 1 MHz	≥25 dB
	from 1 to 10 MHz	≥40 dB
	from 10 to 30 MHz	≥35 dB
Voltage loss		≤3% $U_{IN,NOM}$

5.4. Protections

These parameters are stated just for your information and not applicable for long term operating, output overcurrent, out-of-range case temperature.

Parameter	Conditions	Value
Vibration proof		10...2000 Hz, 200 (20) m/s ² (g), 0,3 mm
Dust proof		yes
Salt fog resistant		yes
Moisture proof	98 % at $T_{AMB} = 35\text{ }^{\circ}\text{C}$	yes

5.5. Physical specifications

Mounting on metal plate is required for shielding. Plate should have all-around galvanic connection.

Parameter	Conditions	Value
Case material		aluminium
Coating		microarc oxidation
Potting		epoxy
Pin material		bronze
Soldering temperature		260 °C @ 5 s

6. Connection diagram

6.1. Layout

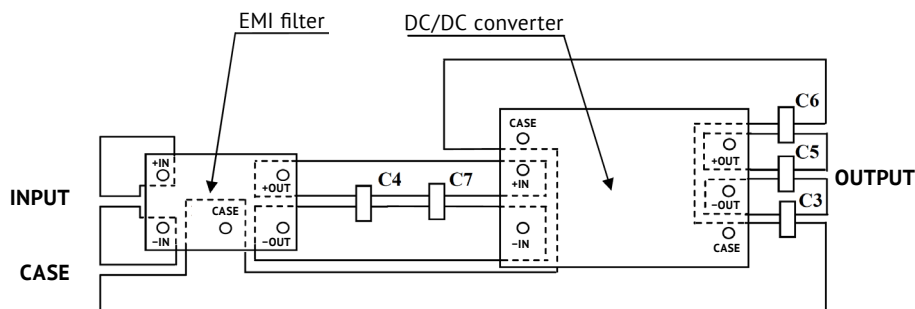


Figure 1. VFA layout.

6.2. DC/DC converter and EMI filter connection diagram

6.2.1. For «B» and «W» inputs

C1, C2 – ceramic capacitor 100...4700 pF.

C3, C4 – according to DC/DC converter requirements.

C5, C6 – ceramic capacitor 2200...4700 pF.

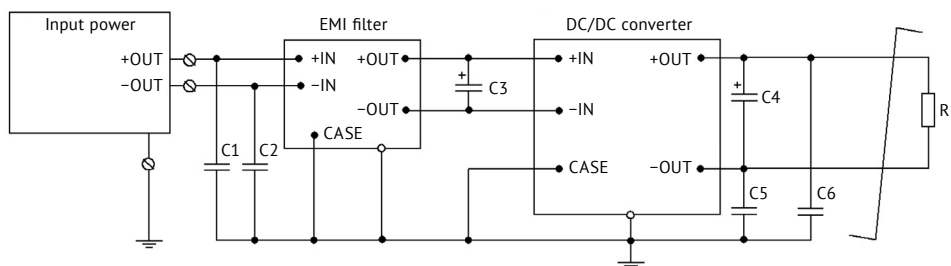


Figure 2. Connection diagram for «B» and «W» inputs.

6.2.2. For «M» and «N» inputs

C1, C2 – ceramic capacitor 100...4700 pF.

C3 – CL21 capacitor of GB7335 standard 0,01...0,15 μ F.

C4, C5 – according to DC/DC converter requirements.

C6, C7 – ceramic capacitor 2200...4700 pF.

R1 – heat resistor 4,7 Ohm (with negative temperature coefficient).

R2 – resistor 1 Ohm 0,125 W.

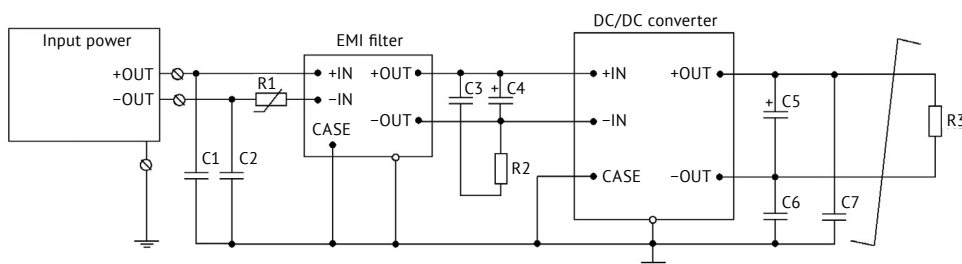


Figure 3. Connection diagram for «N» and «M» inputs.

7. Connection diagram

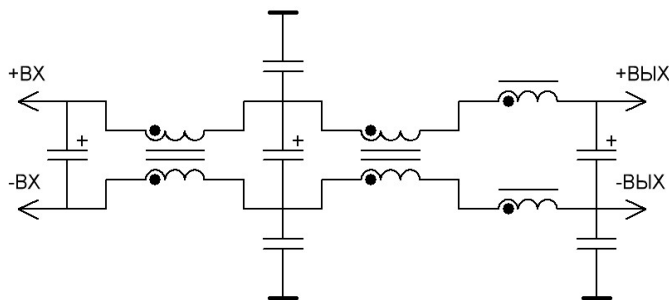


Figure 4. VFA typical connection diagram.

8. Outline dimensions

Pin #	1	2	3	4	5
Function	+IN	-IN	CASE	+OUT	-OUT

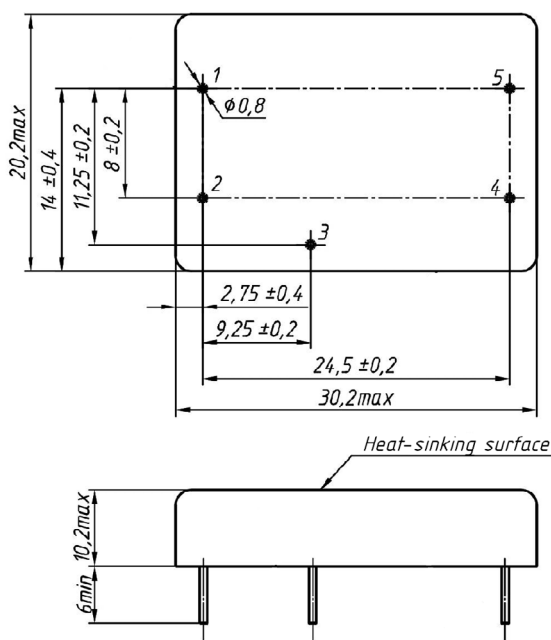


Figure 5. VFA2,5 version.

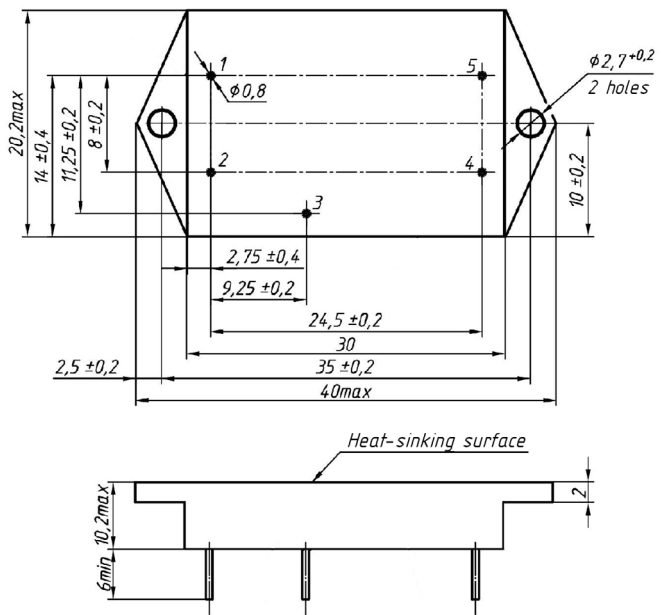


Figure 6. VFA2,5U version.

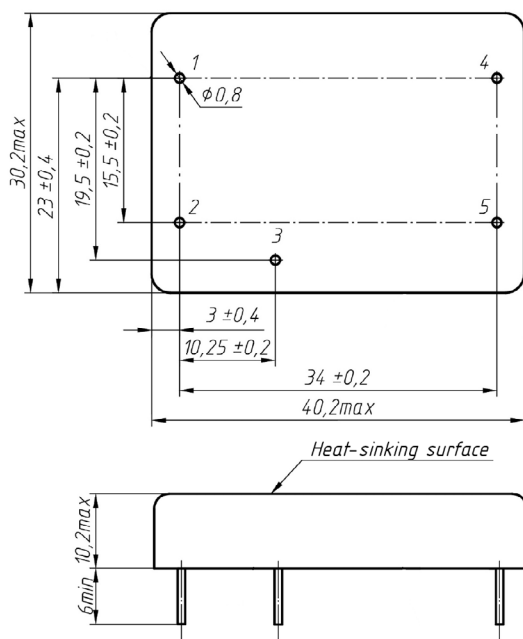


Figure 7. VFA5 version.

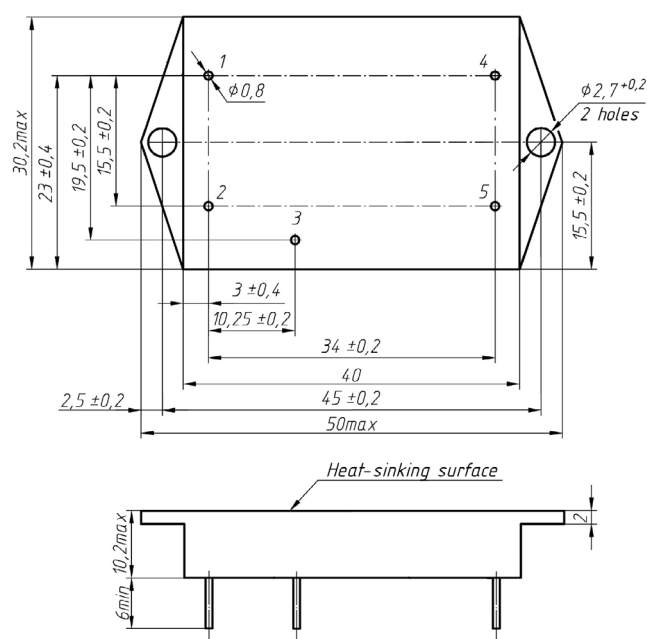


Figure 8. VFA5U version.

Pin #	1	2	3	4	5
Function	+IN	-IN	CASE	+OUT	-OUT

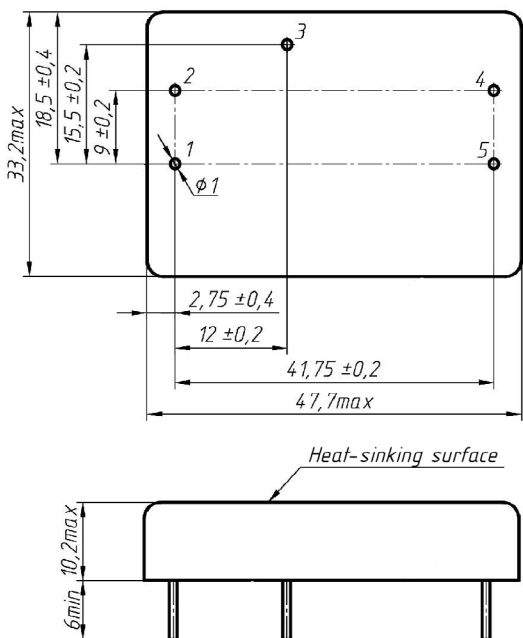


Figure 9. VFA10 version.

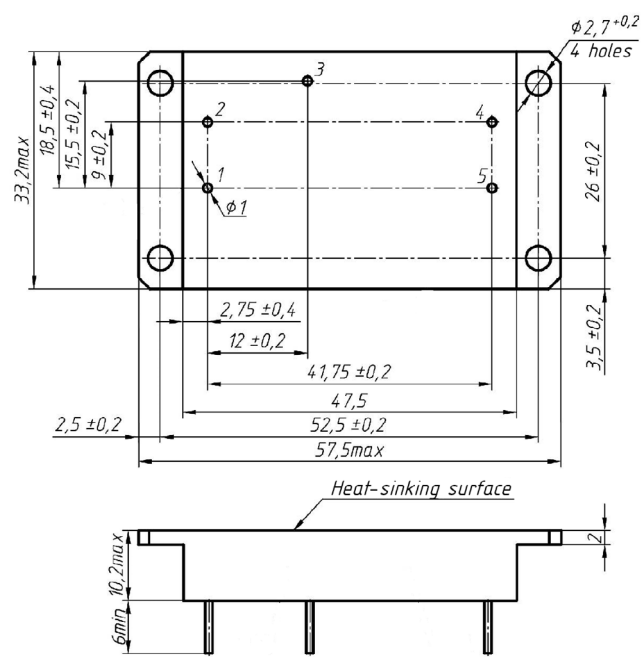


Figure 10. VFA10U version.

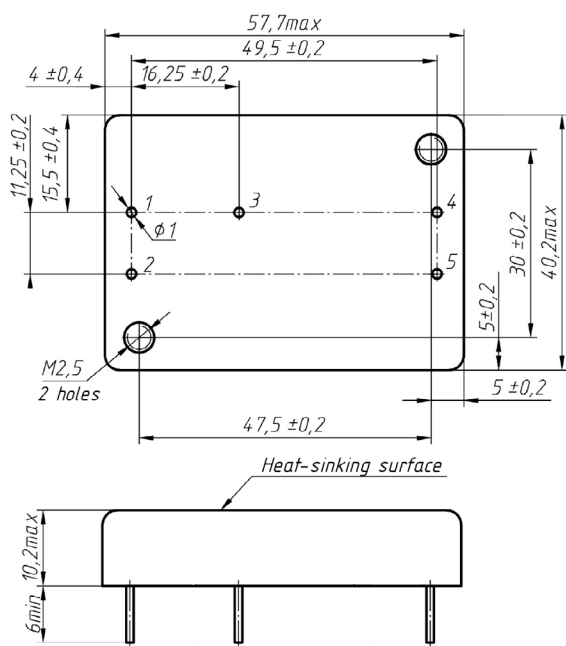


Figure 11. VFA20 version.

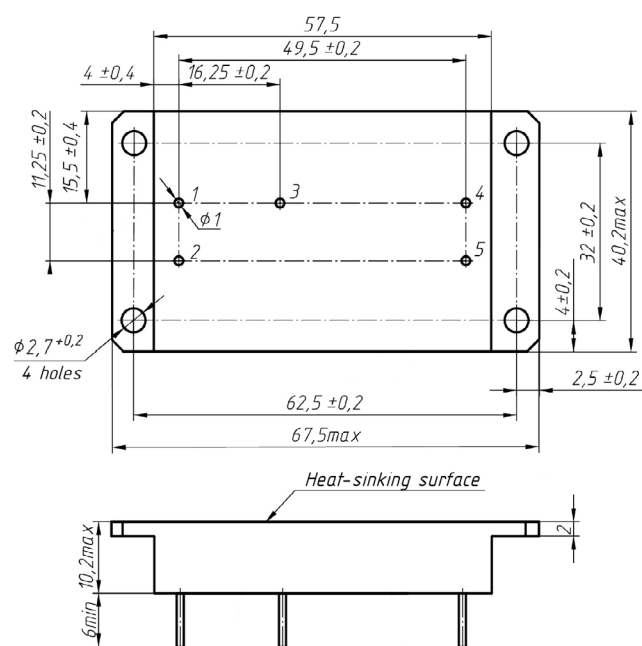


Figure 12. VFA20U version.

Pin #	1,2	3,4	5	6,7	8,9
Function	+IN	-IN	CASE	-OUT	+OUT

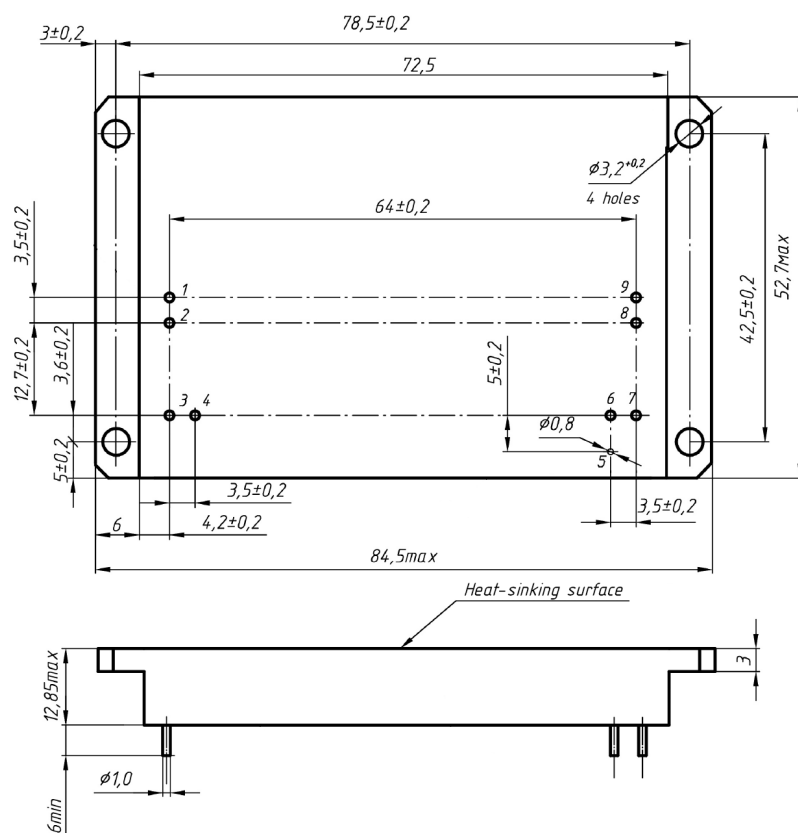


Figure 13. VFA2U, VFA4,5U version.

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Manufacturer of reliable DC/DC converters and power
supply systems

This datasheet is valid for the following units: VFA2,5B; VFA2,5BU; VFA5B; VFA5BU; VFA10B; VFA10BU; VFA20B; VFA20BU; VFA2,5W; VFA2,5WU; VFA5W; VFA5WU; VFA10W; VFA10WU; VFA20W; VFA20WU; VFA2MU; VFA4,5NU.