

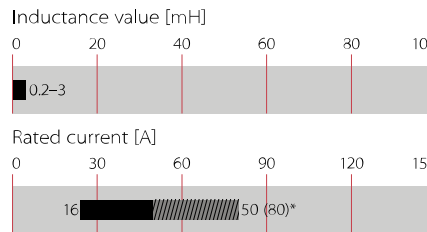
# Current-compensated Chokes



- Rated currents from 16 to 50 A
- Up to 600 VAC or 1000 VDC
- 2- and 3-wire configurations
- Horizontal and vertical PCB mounting types
- Ruggedized saturation and thermal behavior
- Open construction for forced and convection cooling
- Straightforward pin-out for easy PCB design



### Performance indicators



## Technical specifications

<b>Maximum continuous operating voltage</b>	600 VAC/1000 VDC
<b>Operating frequency</b>	DC to 400 Hz
<b>Rated currents</b>	16 to 50 A @ 60°C max. convection cooling
<b>High potential test voltage</b>	
<b>winding-to-winding</b>	2500 VAC, 60 sec, guaranteed, 2 sec factory test
<b>Temperature range (operation and storage)</b>	-40°C to +125°C (40/125/21) acc. IEC 60068-1
<b>Flammability corresponding to</b>	UL 94 V-0
<b>Cooling</b>	convection/forced cooling
<b>MTBF @ 40°C/230 V (Mil-HB-217F)</b>	>5,000,000 hours

## Approvals & Compliances

### ROHS

RB common-mode chokes are mainly used to filter EMI noise on AC power lines up to 600 VAC but they are as well applicable in DC power lines of photovoltaic installations or similar applications up to 1000 VDC. EMI noise of electronic equipment can go to the power lines and disturb the proper function of other devices like TV sets or radios. Thus noise generated by the equipment from switched power electronics or by high slew rates of controllers needs to be filtered. RB common-mode chokes are used to suppress EMI noise in PCB integrated filter designs with line bypass capacitors or in combination with single phase filters for extra low leakage filter designs.

## Features and benefits

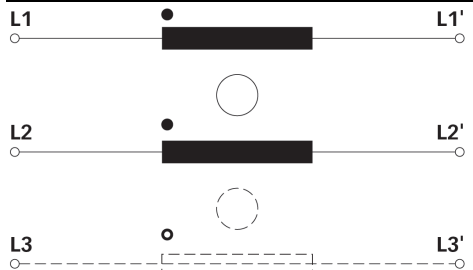
- Cost-effective PCB designs for up to 80 A with forced cooling \*
- Compact size and light weight
- Low magnetic leakage flux
- Excellent winding insulation
- Standardized foot print
- Broad range of inductance ratings
- Custom-specific versions on request
- Evaluation Board and PCB footprints available

\* See Application Note for forced cooling

## Typical applications

- AC and DC filtering for midsize power range drives, photovoltaic inverters, fast chargers, charging stations, UPS and switch mode power supplies
- Filter with low leakage current noise or improved immunity against grid disturbances
- Electronic devices, automation
- Converters

## Typical electrical schematic



### RB Series

Selection table	convection	*forced cooling	Inductance	Inductance	Resistance	**Choke	Ø Pin	Length	Weight	Eval.
	cooling nominal	3 m/s nominal	Ln @ 25°C	Ls @ 25°C	R @ 25°C		Pin	Pin		Board
	current @ 60°C	current @ 60°C	[mH/path]	[µH/path]	[mΩ/path]	[size]	D [mm]	L [mm]	[g]	No.
RB 6122-16-1M0	16	25	1.00	6.3	4.8	1	2.0 ±0.1	4.5 +0.5/-0	130	1
RB 6122-25-0M6	25	39	0.64	4.0	2.7	1	2.4 ±0.1	4.5 +0.5/-0	135	1
RB 6122-36-0M5	36	53	0.45	3.6	1.5	2	2.2 ±0.1	4.5 +0.5/-0	180	1
RB 6122-50-0M3	50	80	0.25	1.8	0.9	2	2.5 ±0.1	5.0 +0.5/-0	172	1
RB 6522-16-1M0	16	25	1.00	6.2	4.6	3	2.0 ±0.1	4.5 +0.5/-0	132	2
RB 6522-25-0M6	25	39	0.64	3.9	2.6	3	2.4 ±0.1	4.5 +0.5/-0	126	2
RB 6522-36-0M5	36	53	0.45	3.6	1.5	4	2.2 ±0.1	4.5 +0.5/-0	180	2
RB 6522-50-0M3	50	80	0.25	2.0	0.9	4	2.5 ±0.1	5.0 +0.5/-0	175	2
RB 8522-16-3M0	16	25	3.00	22.2	8.4	4	2.0 ±0.1	4.5 +0.5/-0	172	3
RB 8522-25-2M0	25	39	2.00	13.6	4.2	5	2.65 ±0.1	5.0 +0.5/-0	268	3
RB 8522-36-1M5	36	53	1.50	12.8	3.0	6	2.2 ±0.1	4.5 +0.5/-0	440	3
RB 8522-50-0M8	50	83	0.75	6.5	1.7	6	2.5 ±0.1	5.0 +0.5/-0	430	3
RB 6132-16-0M8	16	26.5	0.80	5.8	4.6	7	2.0 ±0.1	4.5 +0.5/-0	162	4
RB 6132-25-0M5	25	41	0.47	3.3	2.4	7	2.5 ±0.1	5.0 +0.5/-0	175	4
RB 6132-36-0M4	36	60	0.42	2.9	1.4	8	2.2 ±0.1	4.5 +0.5/-0	278	5
RB 6132-50-0M2	50	80	0.18	1.9	0.9	8	2.5 ±0.1	5.0 +0.5/-0	765	5
RB 6532-16-0M8	16	26.5	0.80	6.9	4.7	9	2.0 ±0.1	4.5 +0.5/-0	165	6
RB 6532-25-0M5	25	41	0.47	3.6	2.4	9	2.5 ±0.1	5.0 +0.5/-0	180	6
RB 6532-36-0M4	36	60	0.42	4.2	1.5	10	2.2 ±0.1	4.5 +0.5/-0	280	6
RB 6532-50-0M2	50	81	0.18	1.5	0.8	10	2.5 ±0.1	5.0 +0.5/-0	168	6
RB 8532-16-1M3	16	27	1.30	9.1	5.7	9	2.0 ±0.1	4.5 +0.5/-0	167	7
RB 8532-25-0M9	25	41	0.94	6.7	3.0	11	2.65 ±0.1	5.0 +0.5/-0	282	7
RB 8532-36-0M8	36	58	0.83	7.3	2.3	12	2.2 ±0.1	4.5 +0.5/-0	478	7
RB 8532-50-0M3	50	82	0.33	3.1	1.2	12	2.5 ±0.1	5.0 +0.5/-0	442	7

Test conditions:

Measuring frequency: 1 kHz; 500 µA >0.16 mH <1.6 mH; 50 µA >1.6 mH <160 mH

Inductance tolerance: +50%, -30%

Resistance tolerance: ±15% @ 25°C

Electrical characteristics @ 25°C: ±2°C

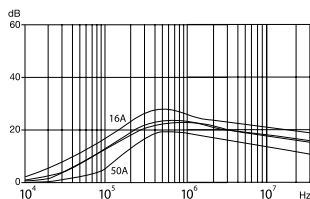
\* typical current for forced cooling with 3 m/s. Due to the possible turbulences and degradation of the air stream within an equipment please consider thermal validation.

\*\* Due to manufacturing processes and to cover current ampacity of chokes with high current rating, the number of parallel wires does vary between different sizes.

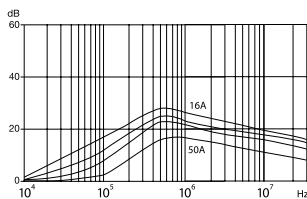
### Typical choke attenuation/resonance frequency characteristics

Per CISPR 17; 50 Ω/50 Ω asym

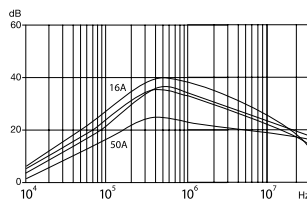
RB 6122, RB 6522



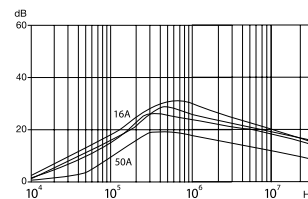
RB 6132, RB 6532



RB 8522



RB 8532



### Product selector

RB xxxx-xx-xmx

- Inductance value (e.g. 9M6 = 9.6 mH)
- Nominal input current [A] (convection cooling)
- Terminal type (2 for PCB pin)
- 2 = 2-wire choke
- 3 = 3-wire choke
- 1 = Horizontal
- 5 = Vertical
- 8 = high inductance series
- 6 = low inductance series

Schaffner standard ring-core choke series RB

### Thermal Derating

If higher ambient temperatures than the specified apply, the nominal current needs to be reduced according to the graph below.

Temperature (°C)	x IN (A)
-20	1.0
0	1.0
20	1.0
40	1.0
60	1.0
80	0.8
100	0.4
120	0.0

Examples:

RB 8532-16-1M3: Vertical 3-wire high inductance choke with PCB pins, for 16 A, with 1.3 mH

RB 6122-50-0M3: Horizontal 2-wire low inductance choke with PCB pins, for 50 A, with 0.3 mH

### Mechanical data: 1-phase / DC chokes

All dimensions in mm; 1 inch = 25.4 mm

Tolerances according: ISO 2768-m/EN 22768-m

Windings of chokes are within max. component dimensions. Windings are illustrated simplified.

#### Size 1 (RB 6122)

MAX COMPONENT VOLUME

2.41 ± 0.20

R25.67

28.07

20.32 ± 0.30

15.24 ± 0.30

5.08 ± 0.20

25.4 ± 0.30

43.31

45.72 ± 0.40

53.3

12.83

51.34

Max.51.64

2XØ3.4±8.5  
For self tapping screw M4

MAX COMPONENT VOLUME

Max.53.6

4.5 +0.50 -0.00

Max.41.8

4xØ2 ± 0.10

#### Size 2 (RB 6122)

MAX COMPONENT VOLUME

3.94 ± 0.20

R28.9

35.43

25.4 ± 0.30

20.32 ± 0.30

5.08 ± 0.20

30.48 ± 0.30

49.4

53.34 ± 0.40

61

10.03

57.8

Max.58.1

2XØ3.4±8.5  
For self tapping screw M4

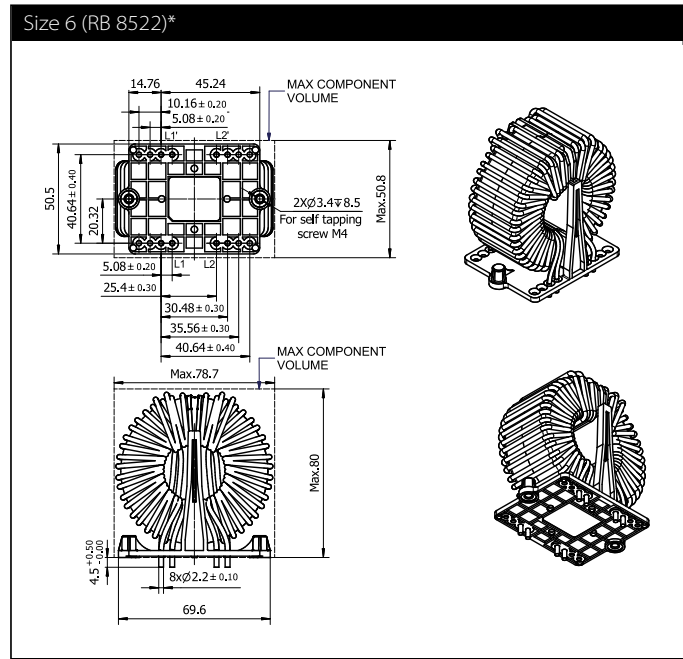
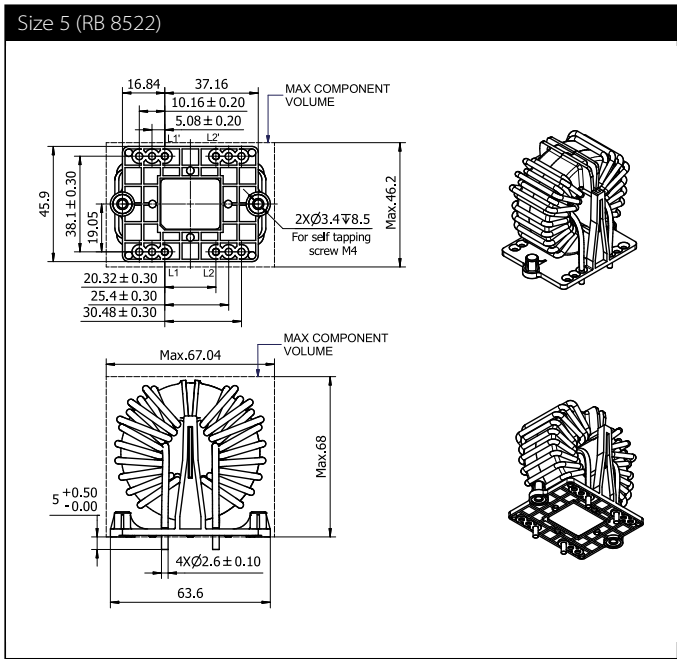
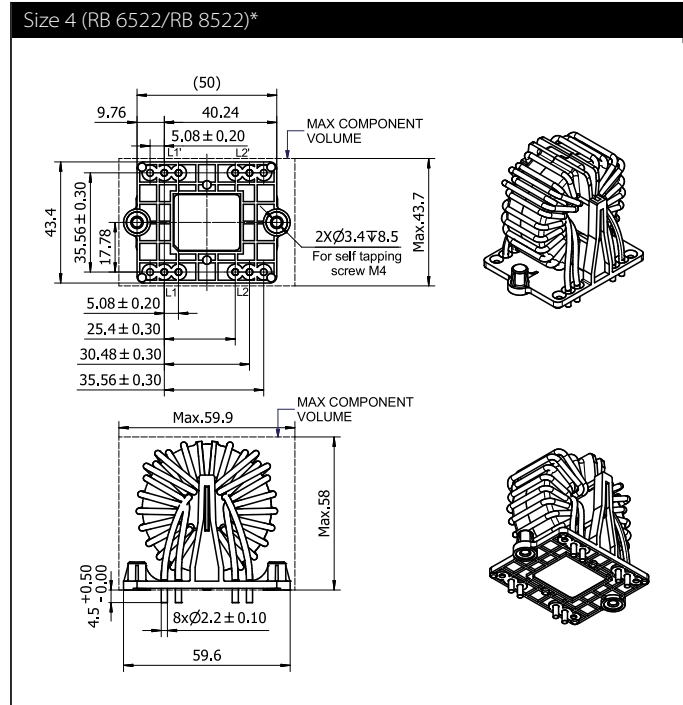
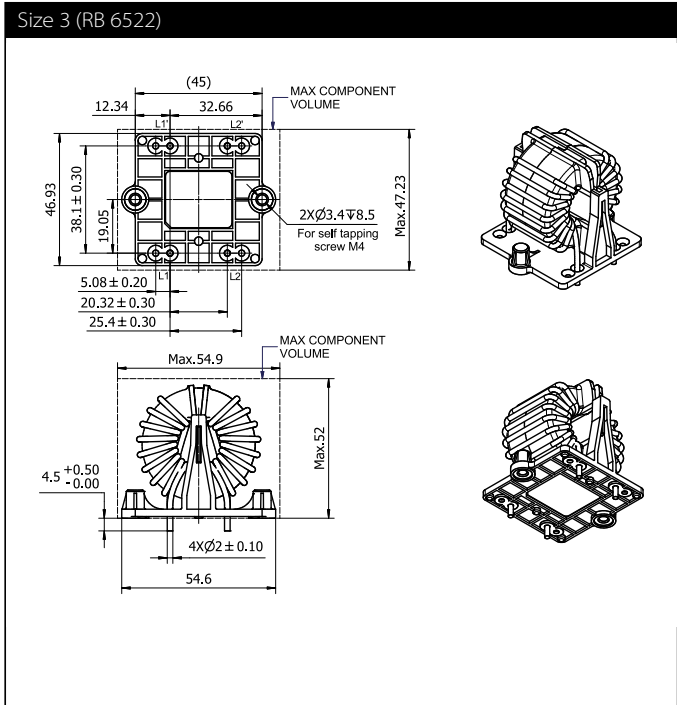
MAX COMPONENT VOLUME

Max.61.3

4.5 +0.50 -0.00

Max.38.3

4xØ2.2 ± 0.10



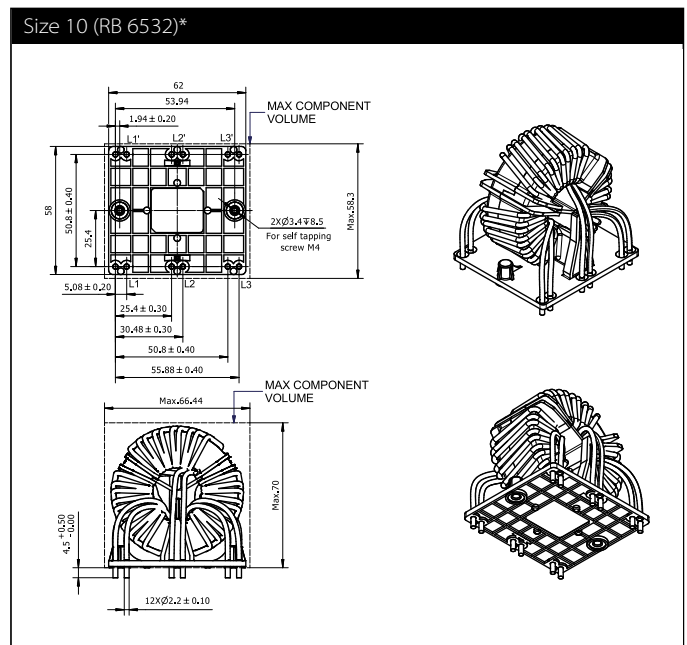
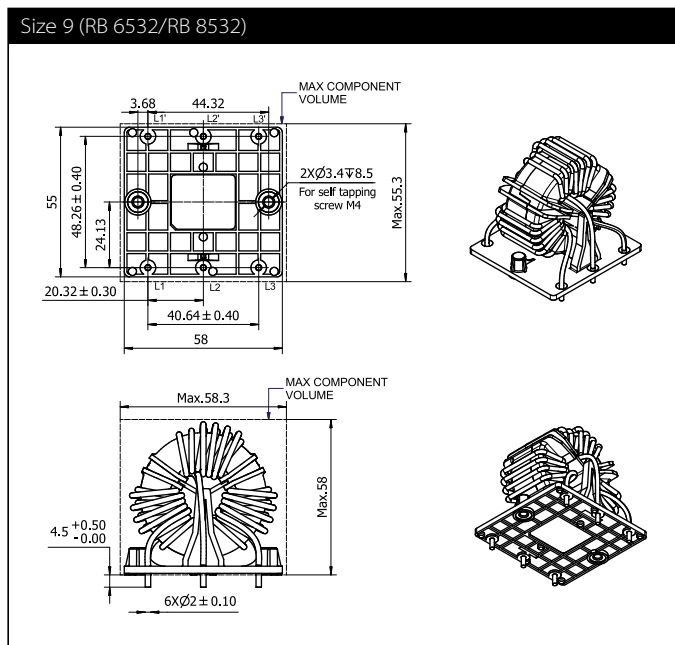
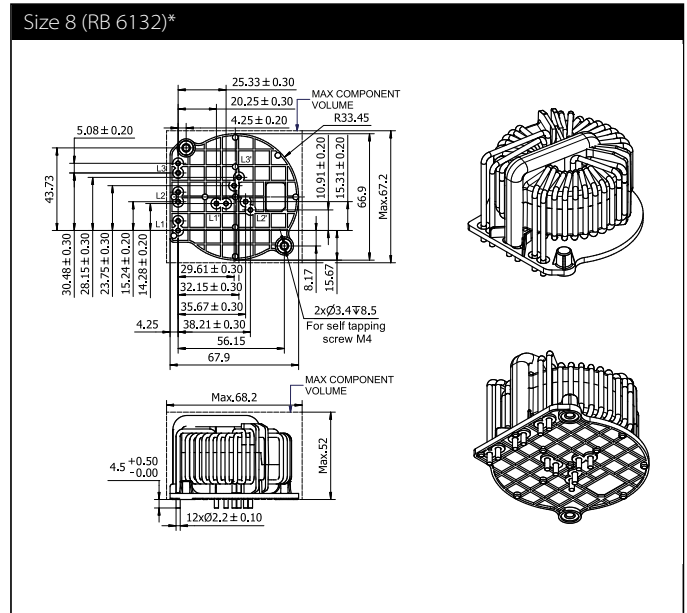
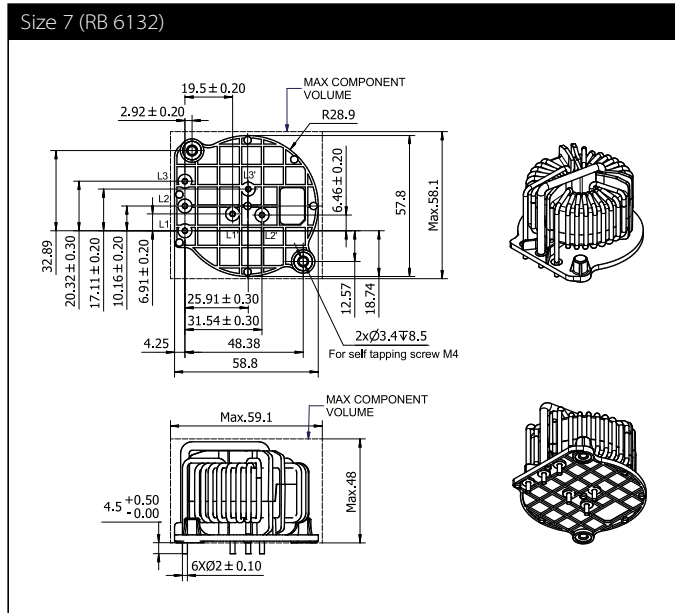
\* These choke sizes do have two parallel wires. Due to manufacturing processes and to cover current ampacity of chokes with high current rating, the number of parallel wires does vary between different sizes.

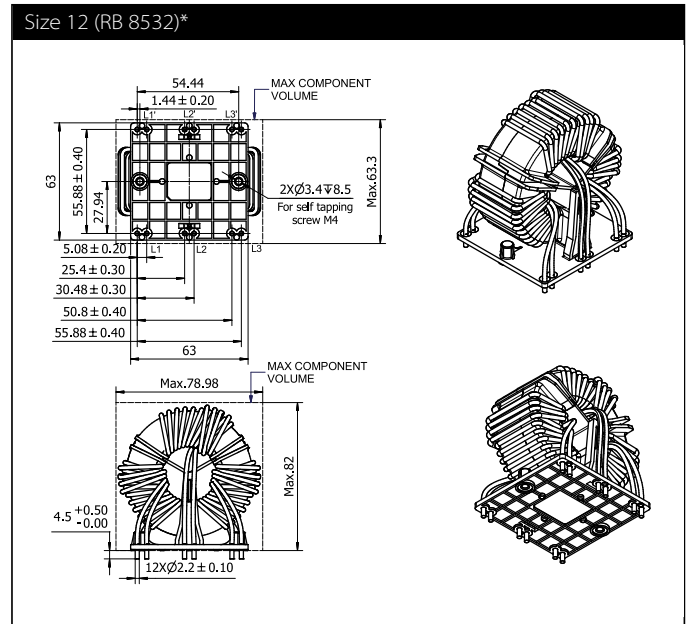
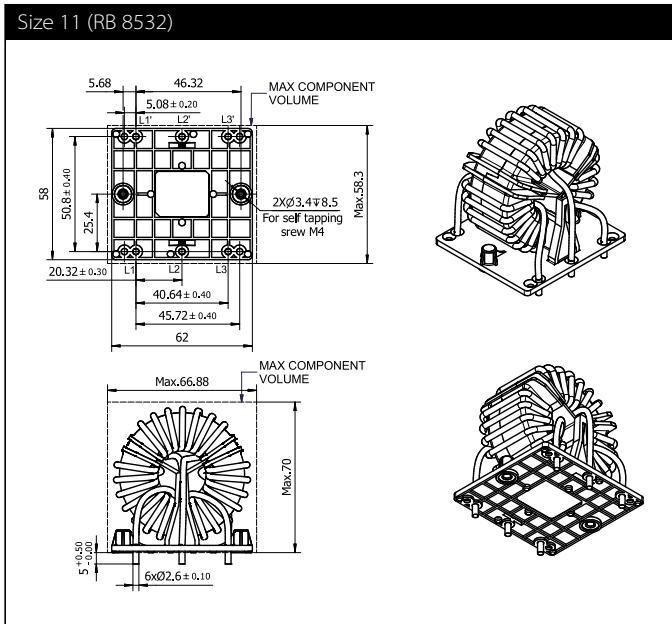
### Mechanical data: 3-phase chokes

All dimensions in mm; 1 inch = 25.4 mm

Tolerances according: ISO 2768-m/EN 22768-m

Windings of chokes are within max. component dimensions. Windings are illustrated simplified.





\* These choke sizes do not have two parallel wires. Due to manufacturing processes and to cover current ampacity of chokes with high current rating, the number of parallel wires does vary between different sizes.

### Available Supporting Material

#### Accessories

For all RB choke types an evaluation board is available (not including capacitors and RB chokes)

All boards feature voltage ratings according to the chokes usable on the board - up to 600VAC/1000VDC.

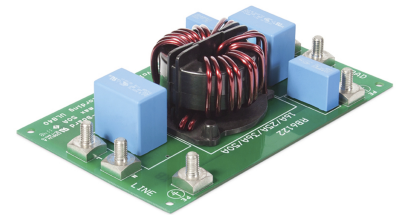
The capacitors used need to be selected according to application and safety level. Recommended are Y1 and X1 capacitors with a voltage rating of at least 600VAC and 1000VDC.

The pitch for Y-capacitors (between phase and PE) is 15 or 22.5 mm. With a max outer dimension of 12 x 26 mm (w x l).

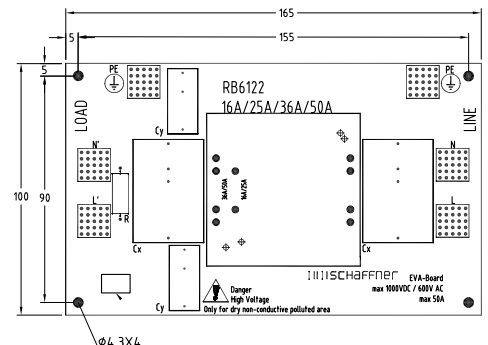
The pitch for X-capacitors (between phases) is 22.5, 27.5 or 37.5 mm. With a max outer dimension of 28 x 40 mm (w x l).

For discharge reason a resistor can be fitted in parallel to the X-capacitors.

All connections to the boards are done with M6 screw terminals (recommended torque is 2.5 Nm).



Selection table	Nom. Current of RB Choke	Eval. Board	Order Name	Order Code
[RB XXXX]	[Range A]	No		
RB 6122	16 - 50	1	EVA-BOARD FOR RB6122 SERIES	813249
RB 6522	16 - 50	2	EVA-BOARD FOR RB6522 SERIES	813252
RB 8522	16 - 50	3	EVA-BOARD FOR RB8522 SERIES	813254
RB 6132	16 - 25	4	EVA-BOARD FOR RB6132-16/25	813250
RB 6132	36 - 50	5	EVA-BOARD FOR RB6132-36/50	813251
RB 6532	16 - 50	6	EVA-BOARD FOR RB6532 SERIES	813253
RB 8532	16 - 50	7	EVA-BOARD FOR RB8532 SERIES	813255



For further drawings and CAD data of the different boards please contact your local Schaffner subsidiary.

#### Application Note

##### EMC/EMI Filter Design with RB Common Mode-Chokes

This application note addresses experienced engineers, who are familiar with the basics of EMC, and intends to provide additional information about RB choke series and Design support for PCB integrated EMC/EMI filters.

[Link to PDF](#)



## Headquarters, global innovation and development

### Switzerland

#### Schaffner Group

Industrie Nord  
Nordstrasse 11e  
4542 Luterbach  
T +41 32 681 66 26  
[info@schaffner.com](mailto:info@schaffner.com)



## Sales and application centers

### China

#### Schaffner EMC Ltd. Shanghai

T20-3 C, No 565 Chuangye Road,  
Pudong district  
201201 Shanghai  
T +86 21 3813 9500  
[cschina@schaffner.com](mailto:cschina@schaffner.com)  
[www.schaffner.com.cn](http://www.schaffner.com.cn)

### Finland

#### Schaffner Oy

Sauvonrinne 19 H  
08500 Lohja  
T +358 10 567 2855  
[finlandsales@schaffner.com](mailto:finlandsales@schaffner.com)

### France

#### Schaffner EMC S.A.S.

16-20 Rue Louis Rameau  
95875 Bezons  
T +33 1 34 34 30 60  
F +33 1 39 47 02 28  
[francesales@schaffner.com](mailto:francesales@schaffner.com)

### Germany

#### Schaffner Deutschland GmbH

Schoemperlenstrasse 12B  
76185 Karlsruhe  
T +49 721 56910  
F +49 721 569110  
[germanysales@schaffner.com](mailto:germanysales@schaffner.com)

### India

#### Schaffner India Pvt. Ltd

REGUS WORLD TRADE CENTRE  
WTC, 22nd Floor Unit No 2238, Brigade  
Gateway Campus, 26/1, Dr. Rajkumar Road  
Malleshwaram (W)  
560055 Bangalore  
T +91 80 67935355  
[indiasales@schaffner.com](mailto:indiasales@schaffner.com)

### Italy

#### Schaffner EMC S.r.l.

Via Ticino, 30  
20900 Monza (MB)  
T +39 039 21 41 070  
[italysales@schaffner.com](mailto:italysales@schaffner.com)

### Japan

#### Schaffner EMC K.K.

Taiju-Seimei Sangenjaya Bldg.  
1-32-12, Kamiuma, Setagaya-ku  
154-0011 Tokyo  
T +81 3 5712 3650  
F +81 3 5712 3651  
[japansales@schaffner.com](mailto:japansales@schaffner.com)  
[www.schaffner.jp](http://www.schaffner.jp)

### Singapore

#### Schaffner EMC Pte Ltd.

#05-09, Kg Ubi Ind. Estate  
408705 Singapore  
T +65 6377 3283  
F +65 6377 3281  
[singaporesales@schaffner.com](mailto:singaporesales@schaffner.com)

### Spain

#### Schaffner EMC España

Calle Caléndula 93, Miniparc III, Edificio E  
El Soto de Moraleja, Alcobendas  
28109 Madrid  
T +34 917 912 900  
F +34 917 912 901  
[spainsales@schaffner.com](mailto:spainsales@schaffner.com)

### Sweden

#### Schaffner EMC AB

Östermalmstorg 1  
114 42 Stockholm  
T +46 8 5050 2425  
[swedensales@schaffner.com](mailto:swedensales@schaffner.com)  
[www.schaffner.com](http://www.schaffner.com)

### Switzerland

#### Schaffner EMV AG

Industrie Nord  
Nordstrasse 11e  
4542 Luterbach  
T +41 32 681 66 26  
[switzerlandsales@schaffner.com](mailto:switzerlandsales@schaffner.com)

### Taiwan R.O.C.

#### Schaffner EMV Ltd.

20 Floor-2, No 97, Section 1, XinTai 5th Road  
22175 XiZhi District New Taipei City 22175  
T +886 2 2697 5500  
F +886 2 2697 5533  
[taiwansales@schaffner.com](mailto:taiwansales@schaffner.com)  
[www.schaffner.com.tw](http://www.schaffner.com.tw)

### Thailand

#### Schaffner EMC Co. Ltd.

Northern Region Industrial Estate  
67 Moo 4 Tambon Ban Klang  
Amphur Muangng P.O. Box 14  
51000 Lamphun  
T +66 53 58 11 04  
F +66 53 58 10 19  
[thailandsales@schaffner.com](mailto:thailandsales@schaffner.com)

### United Kingdom

#### Schaffner Ltd.

1, Oakmede Place  
Binfield  
RG42 4JF Berkshire  
T +44 118 9770070  
F +44 118 9792969  
[uksales@schaffner.com](mailto:uksales@schaffner.com)

### USA

#### Schaffner EMC Inc.

52 Mayfield Avenue  
Edison, New Jersey  
T +1 732 225 9533  
F +1 732 225 4789  
[usasales@schaffner.com](mailto:usasales@schaffner.com)  
[www.schaffnerusa.com](http://www.schaffnerusa.com)

#### Schaffner North America

6722 Thirlane Road  
24019 Roanoke, Virginia  
T +1 276 228 7943  
F +1 276 228 7953

#### Schaffner North America

823 Fairview Road  
24382 Wytheville, Virginia  
T +1 276 228 7943  
F +1 276 228 7258

To find your local partner within Schaffner's global network: [www.schaffner.com](http://www.schaffner.com)

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