



## **EMC filters**

2-line filters

SIFI-A for normal insertion loss

Rated current 1 to 20 A

**Series/Type:**            **B84111A**

Date:                      January 2006

**Power line filters for 1-phase systems**  
**Rated voltage 250 V DC/AC, 50/60 Hz**  
**Rated current 1 to 20 A**

### Alternative version

- Series B84111F (SIFI-F)  
 offers a low-cost solution

### Construction

- 2-line filters
- Metal case
- Polyurethane potting (UL 94 V-0)

### Features

- Compact design
- Optimized leakage current
- Cost-optimized construction
- Also for assembly on top-hat rails
- ENEC10, UL and CSA approval 

### Applications

- Switch-mode power supplies in
  - industrial electronics
  - telecommunications
  - data systems
  - medical equipment
- DC applications

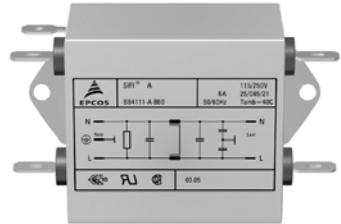
### Case styles and terminal styles

- |              |                                                                                                                      |
|--------------|----------------------------------------------------------------------------------------------------------------------|
| Case style A | Tab connectors on face ends, lateral fixing lugs.<br>Particularly suitable for mounting on a shielding wall.         |
| Case style B | Tab connectors on face ends, fixing lugs on face ends.                                                               |
| Case style K | IEC connector as per IEC 60320 C 14 on line side,<br>tab connectors on load side, mounting holes with metric thread. |
| Case style L | Litz wires on face ends, fixing lugs on face ends                                                                    |

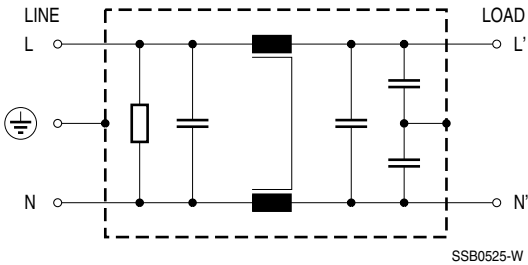
### Marking

Marking on component:  
 Manufacturer's logo, ordering code,  
 rated voltage, rated current, rated temperature,  
 climatic category, date code

Minimum marking on packaging:  
 Manufacturer's logo, ordering code



### Circuit diagram



### Technical data and measuring conditions

|                                 |                                                           |
|---------------------------------|-----------------------------------------------------------|
| Rated voltage $V_R$             | 250 V DC/AC 50/60 Hz                                      |
| Rated current $I_R$             | Referred to 40 °C ambient temperature                     |
| Test voltage $V_{test}$         | 1414 V DC, 2 s (line/line)<br>2700 V DC, 2 s (lines/case) |
| Leakage current $I_{leak}$      | At 230 V AC, 50 Hz                                        |
| Climatic category (IEC 60068-1) | 25/085/21 (–25 °C/+85 °C/21 days damp heat test)          |
| Approvals                       | EN 133200, UL 1283, CSA C22.2 No.8                        |

**2-line filters**
**B84111A**
**SIFI-A for normal insertion loss**
**Characteristics and ordering codes**

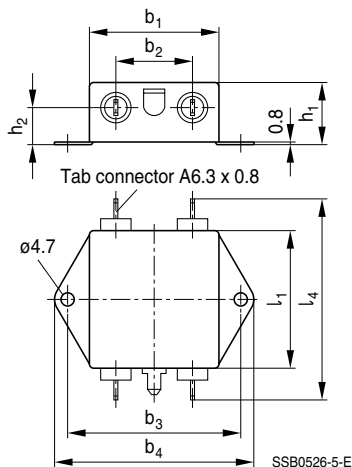
| $I_R$                                 | $C_R$                                                                   | $L_R$           | $I_{leak}$ | Case style | Approx. weight g | Ordering code   | Mounting plate for top-hat rail (ordering code) |
|---------------------------------------|-------------------------------------------------------------------------|-----------------|------------|------------|------------------|-----------------|-------------------------------------------------|
| A                                     |                                                                         | mH              | mA         |            |                  |                 |                                                 |
| $V_R = 250 \text{ V DC/AC, 50/60 Hz}$ |                                                                         |                 |            |            |                  |                 |                                                 |
| 1                                     | $2 \times 0.1 \mu\text{F (X2)}$<br>+<br>$2 \times 4700 \text{ pF (Y2)}$ | $2 \times 1.5$  | < 0.5      | A<br>K     | 80<br>140        | B84111A0000A010 | —                                               |
|                                       |                                                                         |                 |            |            |                  | B84111A0000K010 | —                                               |
| 2                                     | $2 \times 0.1 \mu\text{F (X2)}$<br>+<br>$2 \times 4700 \text{ pF (Y2)}$ | $2 \times 1.5$  | < 0.5      | A          | 80               | B84111A0000A020 | —                                               |
| 3                                     | $2 \times 0.1 \mu\text{F (X2)}$<br>+<br>$2 \times 4700 \text{ pF (Y2)}$ | $2 \times 1.5$  | < 0.5      | A          | 80               | B84111A0000A030 | —                                               |
|                                       |                                                                         |                 |            | K          | 140              | B84111A0000K030 | —                                               |
|                                       |                                                                         |                 |            | L          | 80               | B84111A0000L030 | —                                               |
| 6                                     | $2 \times 0.1 \mu\text{F (X2)}$<br>+<br>$2 \times 4700 \text{ pF (Y2)}$ | $2 \times 1.8$  | < 0.5      | A          | 110              | B84111A0000A060 | —                                               |
|                                       |                                                                         |                 |            | B          | 110              | B84111A0000B060 | C62122A0132B091                                 |
|                                       |                                                                         |                 |            | K          | 140              | B84111A0000K060 | —                                               |
|                                       |                                                                         |                 |            | L          | 110              | B84111A0000L060 | —                                               |
| 10                                    | $2 \times 0.1 \mu\text{F (X2)}$<br>+<br>$2 \times 4700 \text{ pF (Y2)}$ | 0.82            | < 0.5      | A          | 120              | B84111A0000A110 | —                                               |
|                                       |                                                                         |                 |            | B          | 120              | B84111A0000B110 | C62122A0132B091                                 |
|                                       |                                                                         |                 |            | L          | 120              | B84111A0000L110 | —                                               |
| 20                                    | $2 \times 0.1 \mu\text{F (X2)}$<br>+<br>$2 \times 4700 \text{ pF (Y2)}$ | $2 \times 0.47$ | < 0.5      | A          | 210              | B84111A0000A120 | —                                               |
|                                       |                                                                         |                 |            | B          | 210              | B84111A0000B120 | C62122A0132B091                                 |

### Case styles and dimensions

| Case style | I <sub>R</sub><br>A | Dimensions (mm)         |                |                |                |                |                |                |                |                |                |      |   | Litz<br>mm <sup>2</sup> | Style<br>1015 |
|------------|---------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|---|-------------------------|---------------|
|            |                     | b <sub>1</sub>          | b <sub>2</sub> | b <sub>3</sub> | b <sub>4</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | h <sub>1</sub> | h <sub>2</sub> |      |   |                         |               |
| A          | 1                   | 45                      | 26.5           | 60.4           | 70             | 50             | —              | —              | 76.5           | 22.3           | 14             | —    | — |                         |               |
| K          | 1                   | 51                      | —              | —              | —              | 63.5           | —              | —              | —              | 32             | —              | —    | — |                         |               |
| A          | 2                   | 45                      | 26.5           | 60.4           | 70             | 50             | —              | —              | 76.5           | 22.3           | 14             | —    | — |                         |               |
| A          | 3                   | 45                      | 26.5           | 60.4           | 70             | 50             | —              | —              | 76.5           | 22.3           | 14             | —    | — |                         |               |
| K          | 3                   | 51                      | —              | —              | —              | 63.5           | —              | —              | —              | 32             | —              | —    | — |                         |               |
| L          | 3                   | 45                      | —              | —              | —              | 50             | 60.4           | 70             | —              | 28.6           | —              | 0.82 | — | AWG18                   |               |
| A          | 6                   | 45                      | 26.5           | 60.4           | 70             | 50             | —              | —              | 76.5           | 28.6           | 20             | —    | — |                         |               |
| B          | 6                   | 45                      | 26.5           | —              | —              | 50             | 60.4           | 70             | 76.5           | 28.6           | 20             | —    | — |                         |               |
| K          | 6                   | 51                      | —              | —              | —              | 63.5           | —              | —              | —              | 32             | —              | —    | — |                         |               |
| L          | 6                   | 45                      | —              | —              | —              | 50             | 60.4           | 70             | —              | 28.6           | —              | 0.82 | — | AWG18                   |               |
| A          | 10                  | 45                      | 26.5           | 60.4           | 70             | 50             | —              | —              | 76.5           | 28.6           | 20             | —    | — |                         |               |
| B          | 10                  | 45                      | 26.5           | —              | —              | 50             | 60.4           | 70             | 76.5           | 28.6           | 20             | —    | — |                         |               |
| L          | 10                  | 45                      | —              | —              | —              | 50             | 60.4           | 70             | —              | 28.6           | —              | 1.35 | — | AWG16                   |               |
| A          | 20                  | 63.5                    | 31.5           | 74.7           | 84.5           | 50.8           | —              | —              | 77             | 38.1           | 28             | —    | — |                         |               |
| B          | 20                  | See dimensional drawing |                |                |                |                |                |                |                |                |                |      |   |                         |               |

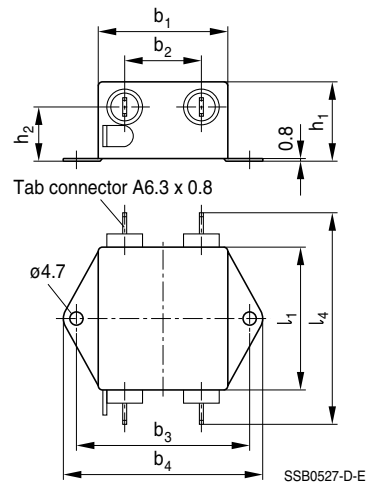
### Case style A

1 ... 3 A (B84111A0000A010, A020, A030)



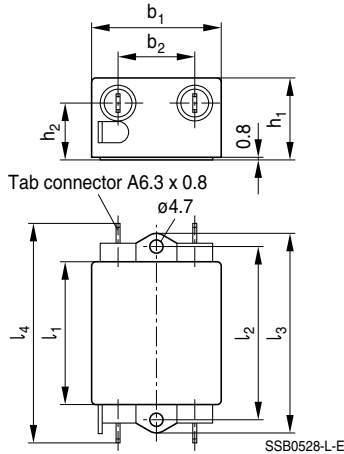
### Case style A

6 ... 20 A (B84111A0000A060, A110, A120)



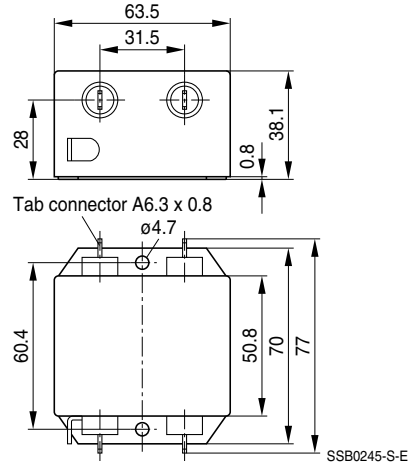
### Case style B

6 and 10 A (B84111A0000B060, B110)

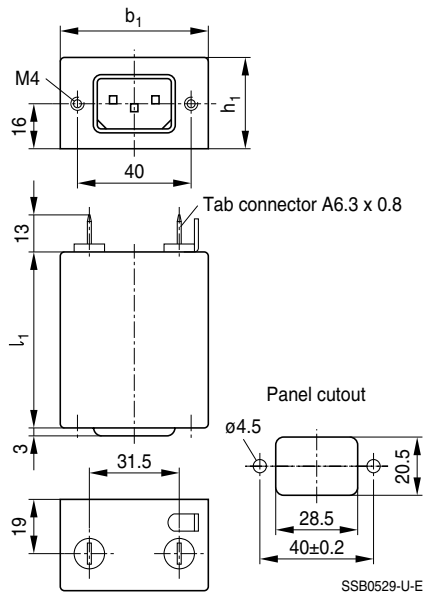


### Case style B

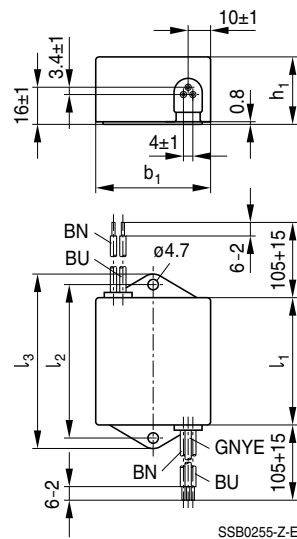
20 A (B84111A0000B120)



### Case style K



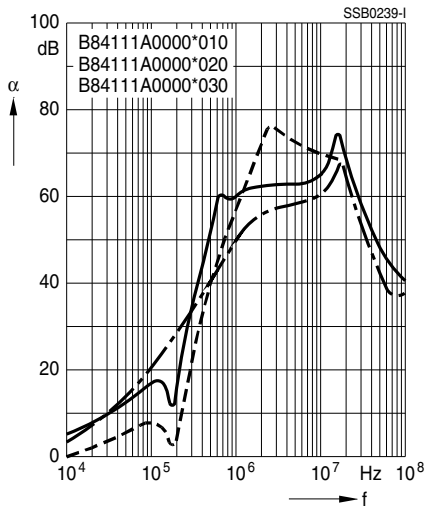
### Case style L



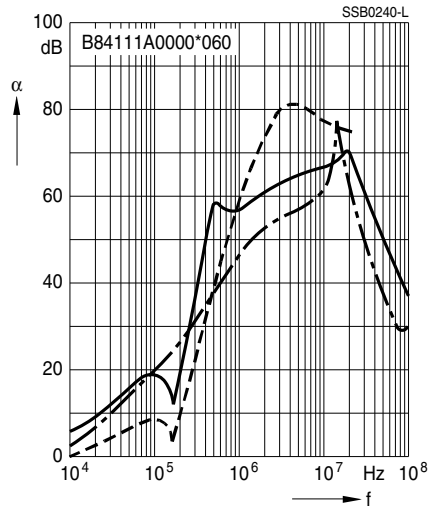
**Insertion loss** (typical values at  $Z = 50 \Omega$ )

- unsymmetrical, adjacent branches terminated
- - - - - common mode, all branches in parallel (asymmetrical)
- - - - - differential mode (symmetrical)

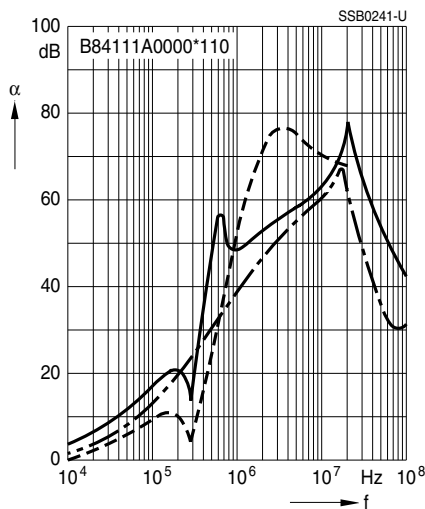
Filters for 1 to 3 A



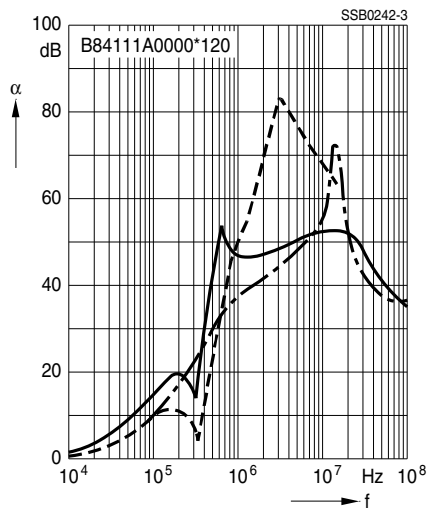
Filters for 6 A



Filters for 10 A



Filters for 20 A



### **Important information**

Please read all safety and warning notes carefully before installing the EMC filter and putting it into operation (see ). The same applies to the warning signs on the filter. Please ensure that the signs are not removed nor their legibility impaired by external influences.

Death, serious bodily injury and substantial material damage to equipment may occur if the appropriate safety measures are not carried out or the warnings in the text are not observed.

### **Using according to the terms**

The EMC filters may be used only for their intended application within the specified values in low-voltage networks in compliance with the instructions given in the data sheets and the data book. The conditions at the place of application must comply with all specifications for the filter used.

### **Warnings**

- It shall be ensured that only qualified persons (electricity specialists) are engaged on work such as planning, assembly, installation, operation, repair and maintenance. They must be provided with the corresponding documentation.
- Danger of electric shock. EMC filters contain components that store an electric charge. Dangerous voltages can continue to exist at the filter terminals for longer than five minutes even after the power has been switched off.
- The protective earth connections shall be the first to be made when the EMC filter is installed and the last to be disconnected. Depending on the magnitude of the leakage currents, the particular specifications for making the protective-earth connection must be observed.
- Impermissible overloading of the EMC filter, such as impermissible voltages at higher frequencies that may cause resonances etc. can lead to destruction of the filter housing.
- EMC filters must be protected in the application against impermissible exceeding of the rated currents by suitable overcurrent protective.

## EMC filters

### Important notes

The following applies to all products named in this publication:

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- Техническую поддержку проекта.
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