EMC filters

2-line filters

Series/Type: **B84771*000**

Date: November 2012

Power line filters for 1-phase systems
Rated voltage 250 V AC/DC
Rated current 1 A to 20 A

Construction

- 2-line filter with IEC connector
- Appliance connector according to IEC/EN 60320-1
- Metal case

Versions

- With discharge resistor (B84771A*)
- Without discharge resistor (B84771C*)
- Medical version with low leakage current (B84771M*)

Features

- Easy to install
- Compact design
- Cost optimized construction
- Degree of protection from front side IP 40[1)]
- Design complies with
  IEC / EN 60939, UL 1283, CSA C22.2 No.8
- ENEC10 approval obtained (1 ... 15 A)[2)], approval for
  16 ... 20 A is pending
- UL and cUL approval obtained for 1 ... 20 A

Applications

- Switched-mode power supplies
- DC applications
- Measuring instruments
- Medical equipment

Terminals

Screw mounting, Snap-in version

- Line side: IEC inlet C14 according to IEC/EN 60320-1 (1 ... 15 A)
  IEC inlet C20 according to IEC/EN 60320-1 (16 ... 20 A)
- Load side: Tab connectors 6.3 × 0.8 mm

Litz wire version

- Line side: IEC inlet C14 according to IEC/EN 60320-1
- Load side: wire 160 mm × 3, wire size: type 1−8 A: AWG 18;
  type 10−15 A: AWG 16.

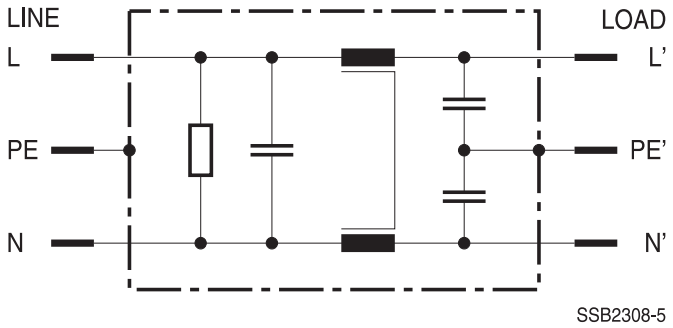
1) To IEC 60529:2001
2) ENEC approval at 12 A and 15 A types maximum with 10 A and 20 A type maximum with 16 A feasible.

Marking

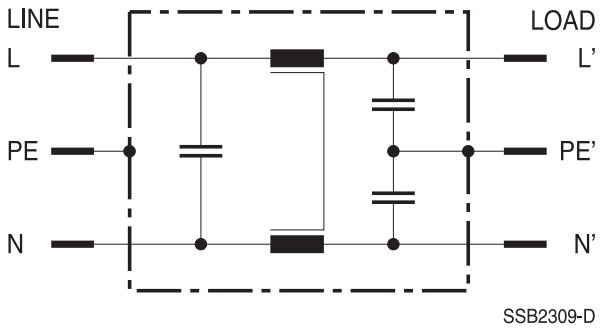
Marking on component:
Manufacturer's logo, ordering code, rated voltage, rated current, rated temperature, climatic category, date code

Minimum data on packaging:
Manufacturer's logo, ordering code, quantity, date code

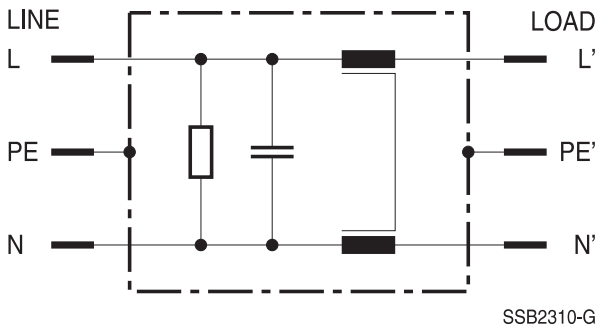
Typical circuit diagram of B84771A* (with discharge resistor)



Typical circuit diagram of B84771C* (without discharge resistor)



Typical circuit diagram of B84771M* (medical version)



Technical data and measuring conditions of B84771*A000

Rated voltage	V_R	250	V DC/AC
Rated frequency	f_R	50/60	Hz
Test voltage line to line for 2 s (1 ... 15 A types)	V_{test}	1000	V AC
Test voltage line to line for 2 s (16 ... 20 A types)	V_{test}	1100	V DC
Test voltage line to case for 2 s (B84771A/C*)	V_{test}	2000	V AC
Test voltage line to case for 2 s (B84771M*)	V_{test}	2500	V AC
Rated temperature	T_R	50	°C
Climatic category (IEC 60068-1)		25/085/21	

Screw mounting versions with tab connectors: characteristics and ordering codes of B84771*A000

V_R = 250 V AC/DC

I_R	C_R X2	C_R Y2	L_R	I_{leak} [1)]	R_{dis}	Approx. weight	Ordering code	Approvals		
A	µF	pF	mH	mA	MΩ	g				
1	1 × 0.1	2 × 2200	2 × 12	0.173	1	40	B84771A0001A000	×	×	×
	1 × 0.1	2 × 2200	2 × 12	0.173	–	40	B84771C0001A000	×	×	×
	1 × 0.1	–	2 × 12	0	1	40	B84771M0001A000	×	×	×
3	1 × 0.1	2 × 2200	2 × 2.5	0.173	1	40	B84771A0003A000	×	×	×
	1 × 0.1	2 × 2200	2 × 2.5	0.173	–	40	B84771C0003A000	×	×	×
	1 × 0.1	–	2 × 2.5	0	1	40	B84771M0003A000	×	×	×
6	1 × 0.1	2 × 2200	2 × 0.84	0.173	1	40	B84771A0006A000	×	×	×
	1 × 0.1	2 × 2200	2 × 0.84	0.173	–	40	B84771C0006A000	×	×	×
	1 × 0.1	–	2 × 0.84	0	1	40	B84771M0006A000	×	×	×
8	1 × 0.1	2 × 2200	2 × 0.45	0.173	1	40	B84771A0008A000	×	×	×
	1 × 0.1	2 × 2200	2 × 0.45	0.173	–	40	B84771C0008A000	×	×	×
	1 × 0.1	–	2 × 0.45	0	1	40	B84771M0008A000	×	×	×
10	1 × 0.1	2 × 2200	2 × 0.24	0.173	1	40	B84771A0010A000	×	×	×
	1 × 0.1	2 × 2200	2 × 0.24	0.173	–	40	B84771C0010A000	×	×	×
	1 × 0.1	–	2 × 0.24	0	1	40	B84771M0010A000	×	×	×
12	1 × 0.1	2 × 2200	2 × 0.14	0.173	1	40	B84771A0012A000	×*	×	×
	1 × 0.1	2 × 2200	2 × 0.14	0.173	–	40	B84771C0012A000	×*	×	×
	1 × 0.1	–	2 × 0.14	0	1	40	B84771M0012A000	×*	×	×
15	1 × 0.1	2 × 2200	2 × 0.09	0.173	1	40	B84771A0015A000	×*	×	×
	1 × 0.1	2 × 2200	2 × 0.09	0.173	–	40	B84771C0015A000	×*	×	×
	1 × 0.1	–	2 × 0.09	0	1	40	B84771M0015A000	×*	×	×
16	1 × 0.33	2 × 2200	2 × 0.4	0.173	1	130	B84771A0016A000	P*	×	×
	1 × 0.33	–	2 × 0.4	0	1	130	B84771M0016A000	P*	×	×
20	1 × 0.33	2 × 2200	2 × 0.3	0.173	1	130	B84771A0020A000	P*	×	×
	1 × 0.33	–	2 × 0.3	0	1	130	B84771M0020A000	P*	×	×

× = Approval granted

P = Approval pending

* = ENEC approval at 12 A and 15 A types maximum with 10 A, at 20 A type maximum with 16 A feasible.

1) Calculation according draft proposal IEC 60939−1 Ed. 3 (2008−10−29), annex A, ”Calculation of leakage current” at 50 Hz. In practice are up to double values to be expected due to the insulation resistance values of the used ceramic capacitors. For the medical version results computationally the value 0. In practice are values 1 ... 2 µA to be expected due to the insulation resistance values of the used materials.

Snap-in versions with tab connectors: characteristics and ordering codes of B84771*30*A000

V_R = 250 V AC/DC

I_R	C_R X2	C_R Y2	L_R	I_{leak} [1]	R_{dis}	Approx. weight	Ordering code	Approvals		
A	µF	pF	mH	mA	MΩ	g				
1	1 × 0.1	2 × 2200	2 × 12	0.173	1	40	B84771A3001A000	P	×	×
	1 × 0.1	–	2 × 12	0	1	40	B84771M3001A000	P	×	×
3	1 × 0.1	2 × 2200	2 × 2.5	0.173	1	40	B84771A3003A000	P	×	×
	1 × 0.1	–	2 × 2.5	0	1	40	B84771M3003A000	P	×	×
6	1 × 0.1	2 × 2200	2 × 0.84	0.173	1	40	B84771A3006A000	P	×	×
	1 × 0.1	–	2 × 0.84	0	1	40	B84771M3006A000	P	×	×
8	1 × 0.1	2 × 2200	2 × 0.45	0.173	1	40	B84771A3008A000	P	×	×
	1 × 0.1	–	2 × 0.45	0	1	40	B84771M3008A000	P	×	×
10	1 × 0.1	2 × 2200	2 × 0.24	0.173	1	40	B84771A3010A000	P	×	×
	1 × 0.1	–	2 × 0.24	0	1	40	B84771M3010A000	P	×	×
12	1 × 0.1	2 × 2200	2 × 0.14	0.173	1	40	B84771A3012L000	P*	×	×
	1 × 0.1	–	2 × 0.14	0	1	40	B84771M3012A000	P*	×	×
15	1 × 0.1	2 × 2200	2 × 0.09	0.173	1	40	B84771A3015A000	P*	×	×
	1 × 0.1	–	2 × 0.09	0	1	40	B84771M3015A000	P*	×	×

× = Approval granted
P = Approval pending
* = ENEC approval at 12 A and 15 A types maximum with 10 A, at 20 A type maximum with 16 A feasible.

1) Calculation according draft proposal IEC 60939−1 Ed. 3 (2008−10−29), annex A, ”Calculation of leakage current” at 50 Hz. In practice are up to double values to be expected due to the insulation resistance values of the used ceramic capacitors. For the medical version results computationally the value 0. In practice are values 1 ... 2 µA to be expected due to the insulation resistance values of the used materials.

Screw mounting versions with litz wires: characteristics and ordering codes of B84771*L000

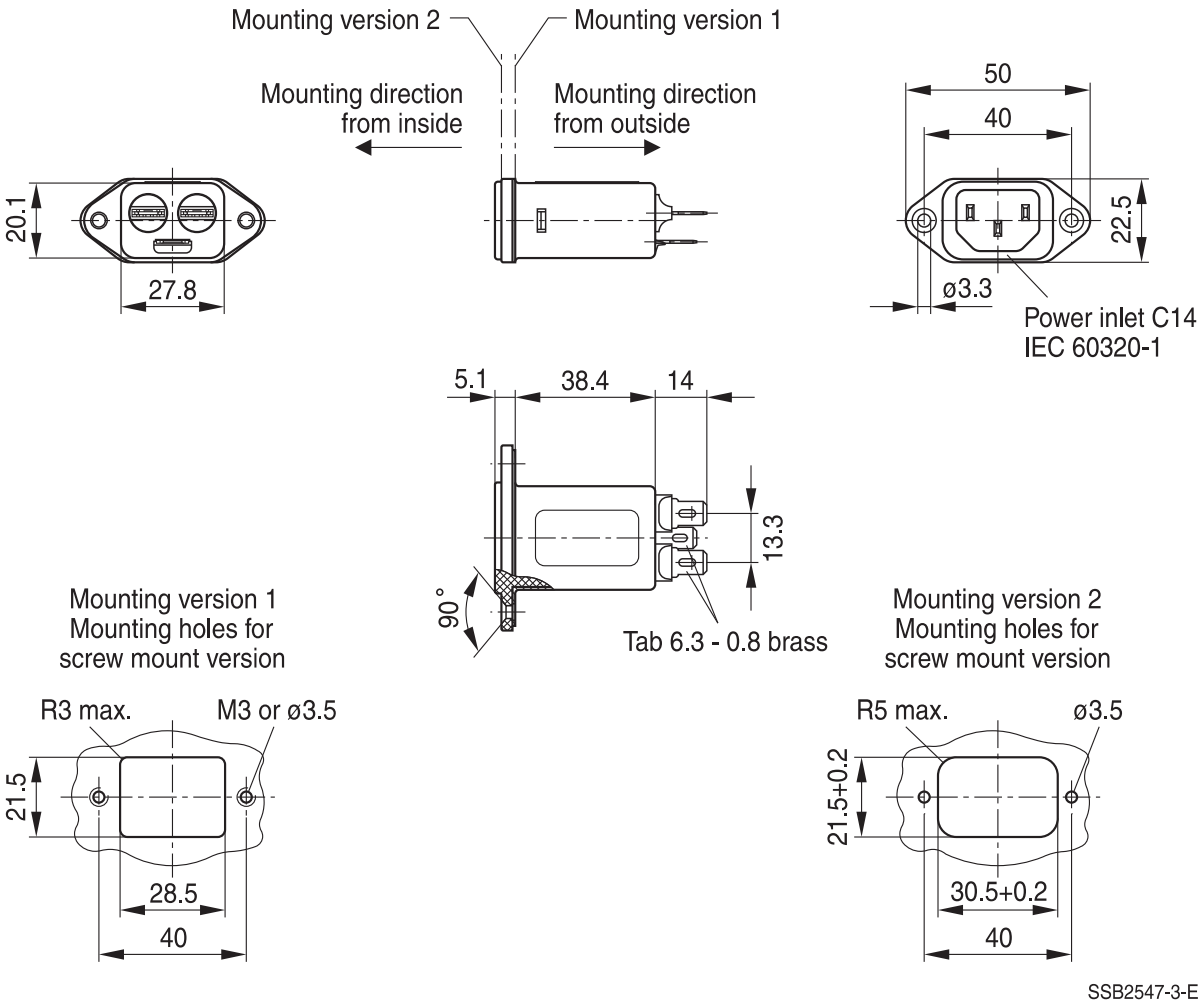
V_R = 250 V AC/DC

I_R	C_R X2	C_R Y2	L_R	I_{leak} [1]	R_{dis}	Approx. weight	Ordering code	Approvals		
A	µF	pF	mH	mA	MΩ	g				
1	1 × 0.1	2 × 2200	2 × 12	0.173	1	40	B84771A0001L000	P	×	×
	1 × 0.1	–	2 × 12	0	1	40	B84771M0001L000	P	×	×
3	1 × 0.1	2 × 2200	2 × 2.5	0.173	1	40	B84771A0003L000	P	×	×
	1 × 0.1	–	2 × 2.5	0	1	40	B84771M0003L000	P	×	×
6	1 × 0.1	2 × 2200	2 × 0.84	0.173	1	40	B84771A0006L000	P	×	×
	1 × 0.1	–	2 × 0.84	0	1	40	B84771M0006L000	P	×	×
8	1 × 0.1	2 × 2200	2 × 0.45	0.173	1	40	B84771A0008L000	P	×	×
	1 × 0.1	–	2 × 0.45	0	1	40	B84771M0008L000	P	×	×
10	1 × 0.1	2 × 2200	2 × 0.24	0.173	1	40	B84771A0010L000	P	×	×
	1 × 0.1	–	2 × 0.24	0	1	40	B84771M0010L000	P	×	×
12	1 × 0.1	2 × 2200	2 × 0.14	0.173	1	40	B84771A0012L000	P*	×	×
	1 × 0.1	–	2 × 0.14	0	1	40	B84771M0012L000	P*	×	×
15	1 × 0.1	2 × 2200	2 × 0.09	0.173	1	40	B84771A0015L000	P*	×	×
	1 × 0.1	–	2 × 0.09	0	1	40	B84771M0015L000	P*	×	×

× = Approval granted
P = Approval pending
* = ENEC approval at 12 A and 15 A types maximum with 10 A, at 20 A type maximum with 16 A feasible.

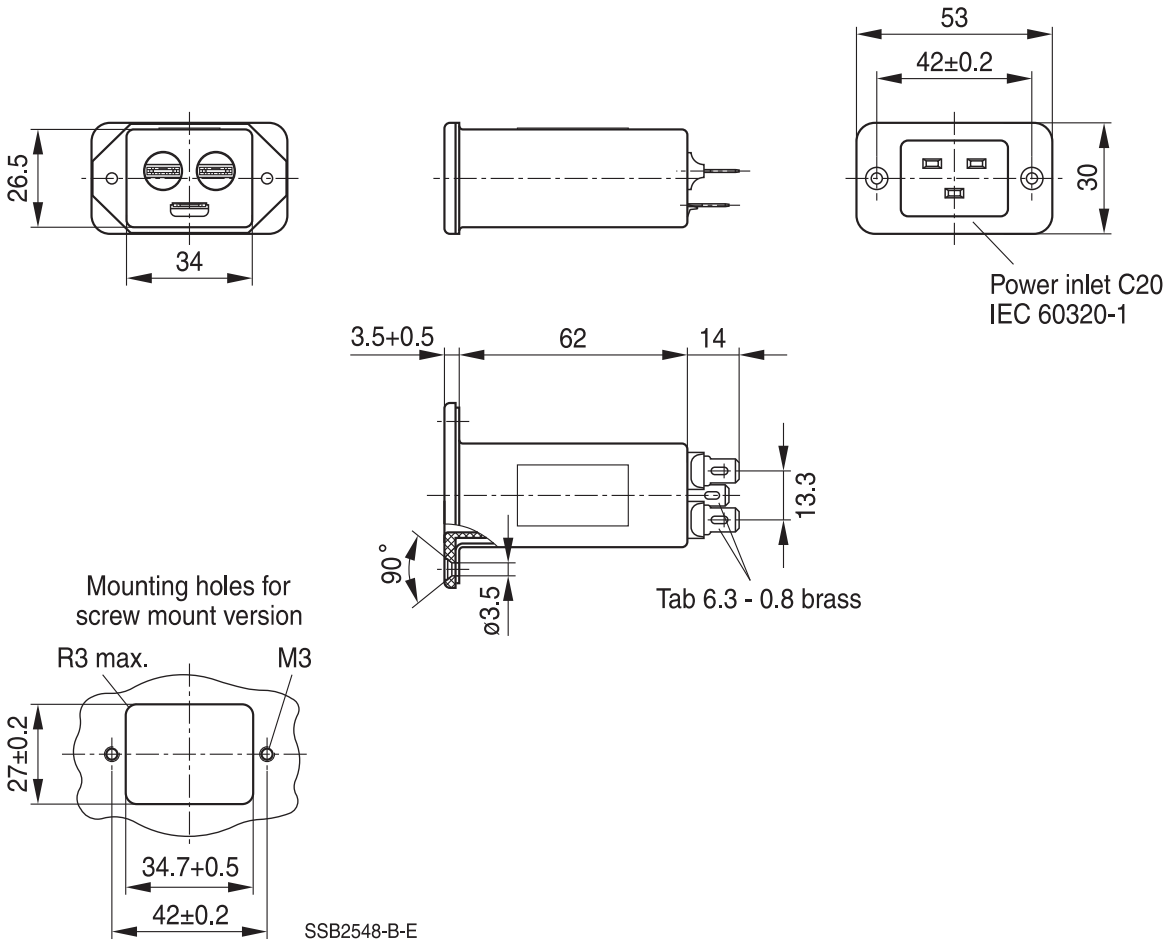
1) Calculation according draft proposal IEC 60939−1 Ed. 3 (2008−10−29), annex A, ”Calculation of leakage current” at 50 Hz. In practice are up to double values to be expected due to the insulation resistance values of the used ceramic capacitors. For the medical version results computationally the value 0. In practice are values 1 ... 2 µA to be expected due to the insulation resistance values of the used materials.

Dimensional drawings of screw mounting versions (1 ... 15 A types)



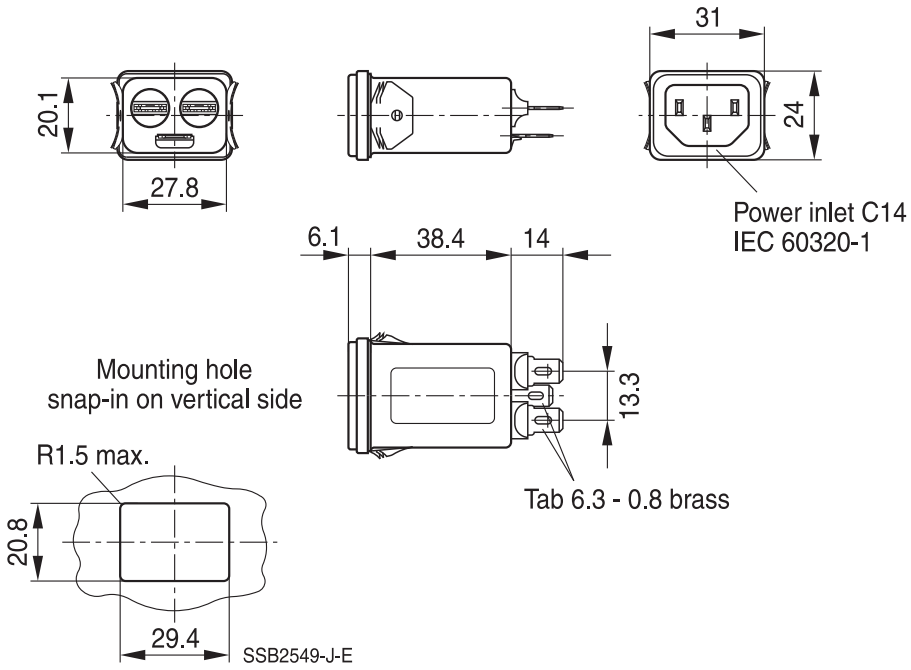
Dimensions in mm
ISO 2768-cl

Dimensional drawings of screw mounting versions (16 ... 20 A types)



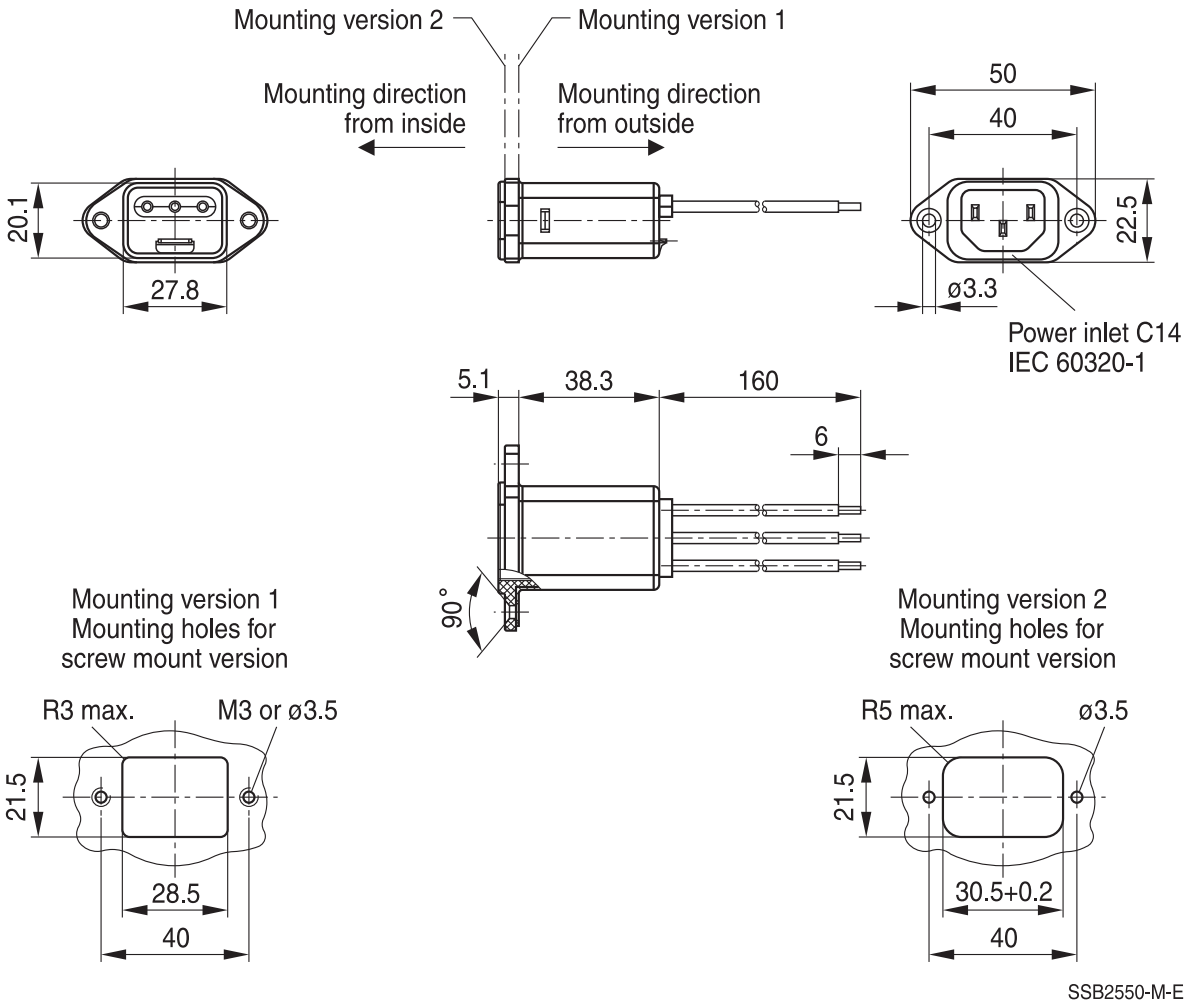
Dimensions in mm
ISO 2768-cl

Dimensional drawings of snap-in versions, snapper on vertical side (1 ... 15 A types)



Dimensions in mm
ISO 2768-cl

Dimensional drawings of versions with litz wire output

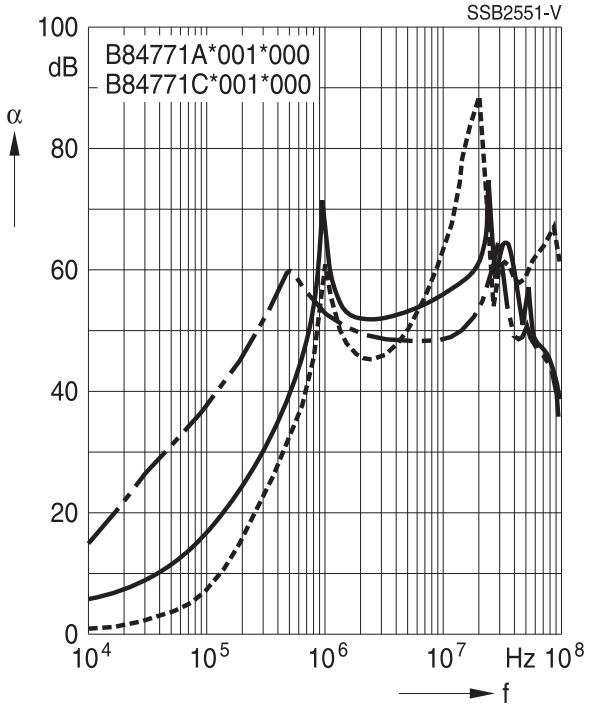


Dimensions in mm
ISO 2768-cl

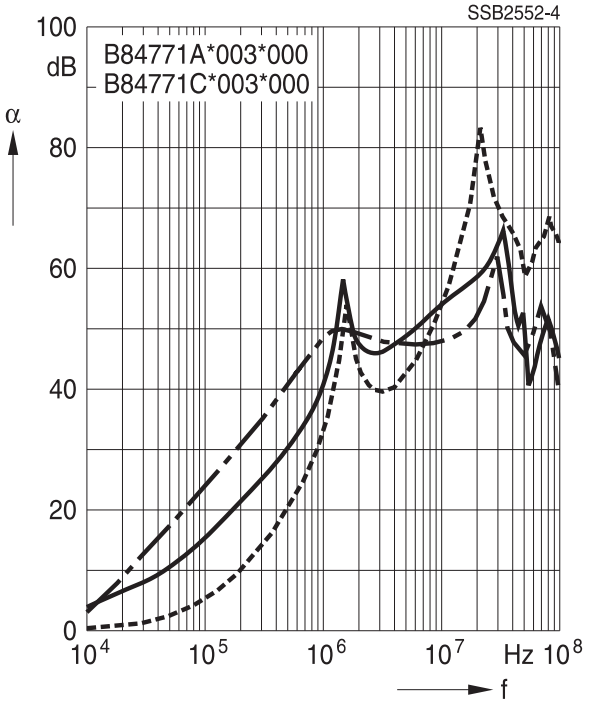
Insertion loss (typical values at Z = 50 Ω)

——————— unsymmetrical, adjacent branches terminated
—·—·—·—·— common mode, all branches in parallel (asymmetrical)
– – – – – – – – differential mode (symmetrical)

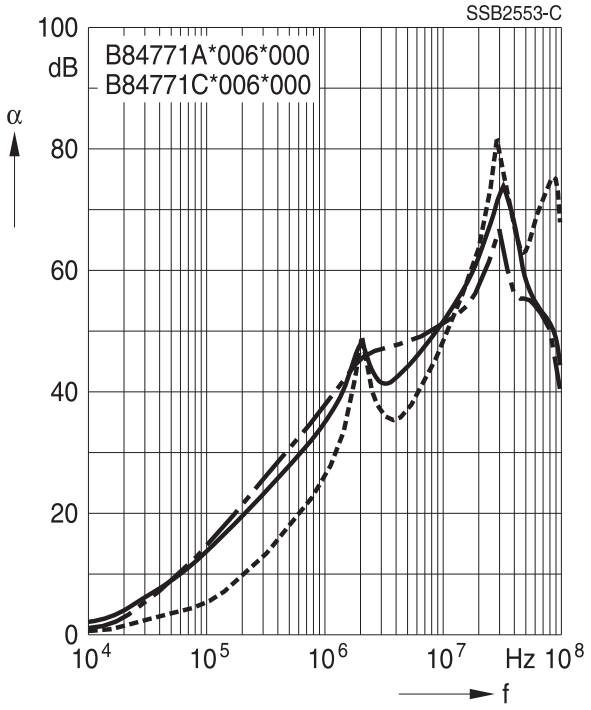
Filter for 1 A



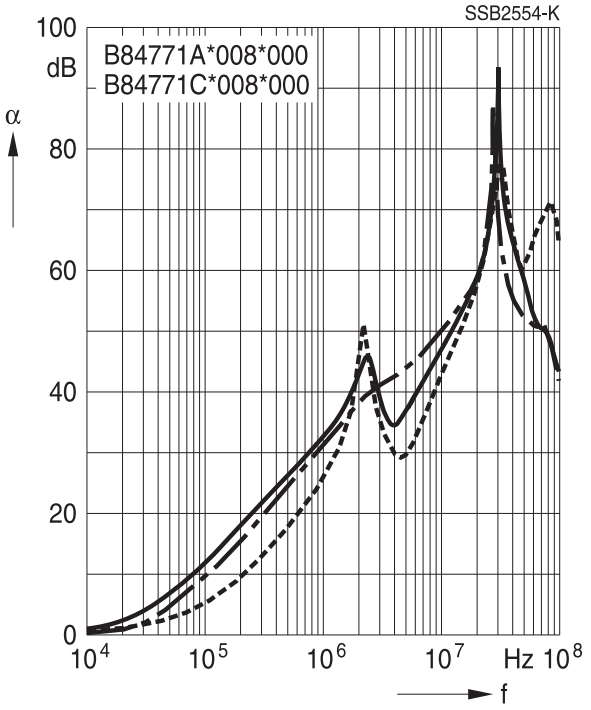
Filter for 3 A



Filter for 6 A



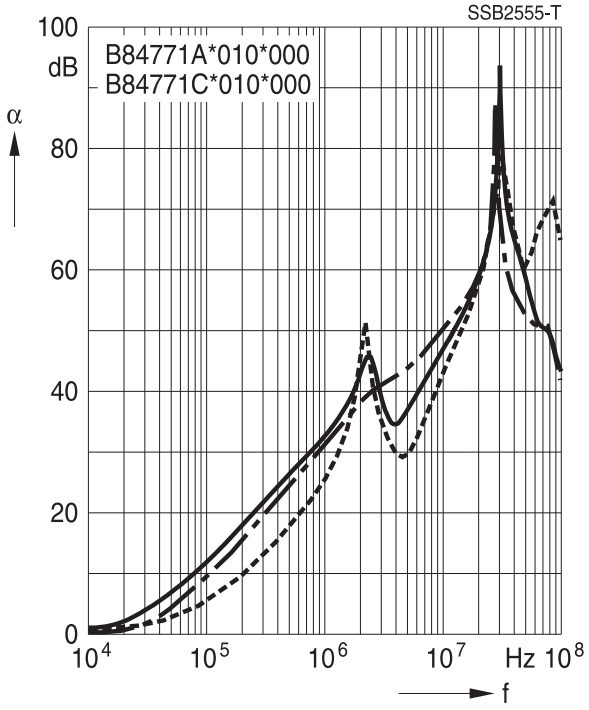
Filter for 8 A



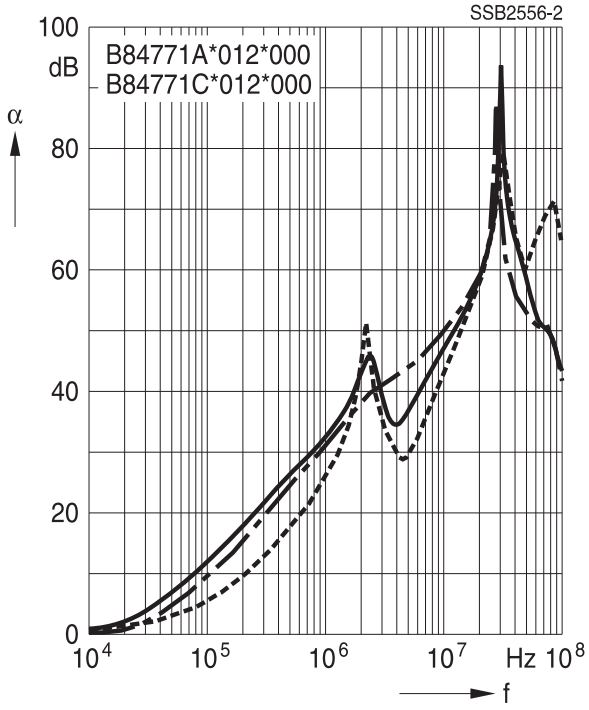
Insertion loss (typical values at Z = 50 Ω)

——————— unsymmetrical, adjacent branches terminated
—·—·—·—·— common mode, all branches in parallel (asymmetrical)
– – – – – – – – differential mode (symmetrical)

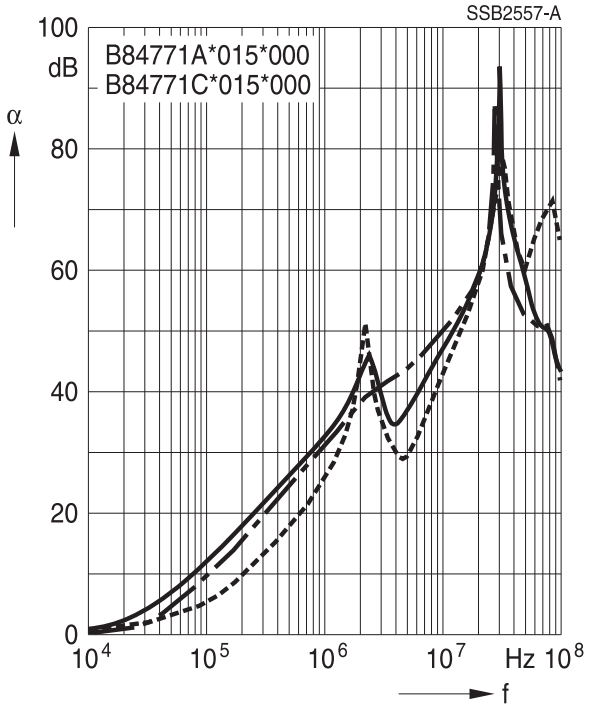
Filter for 10 A



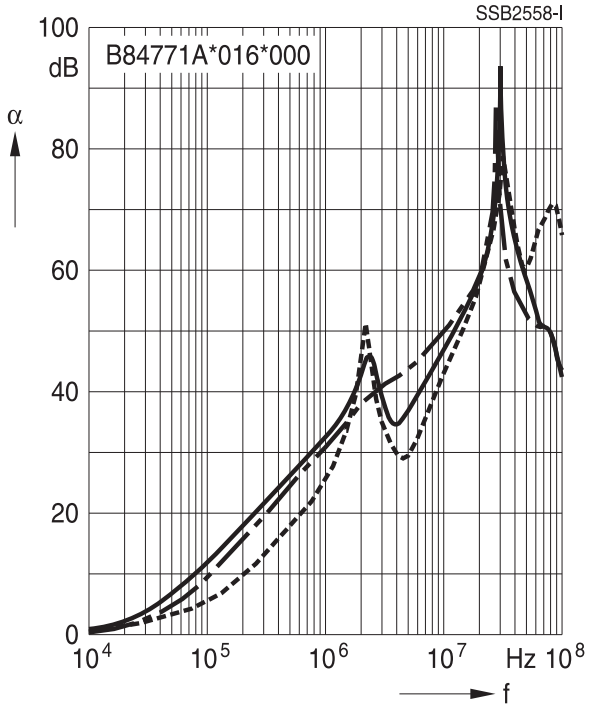
Filter for 12 A



Filter for 15 A



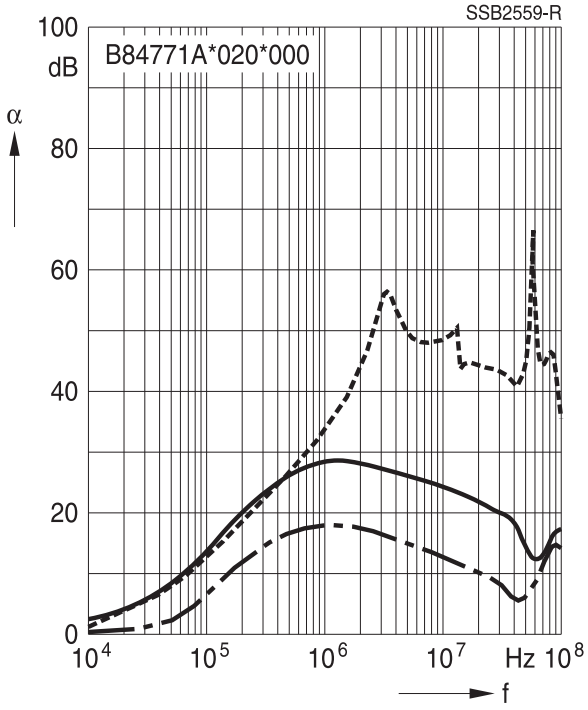
Filter for 16 A



Insertion loss (typical values at Z = 50 Ω)

——————— unsymmetrical, adjacent branches terminated
—·—·—·—·—·— common mode, all branches in parallel (asymmetrical)
– – – – – – – – differential mode (symmetrical)

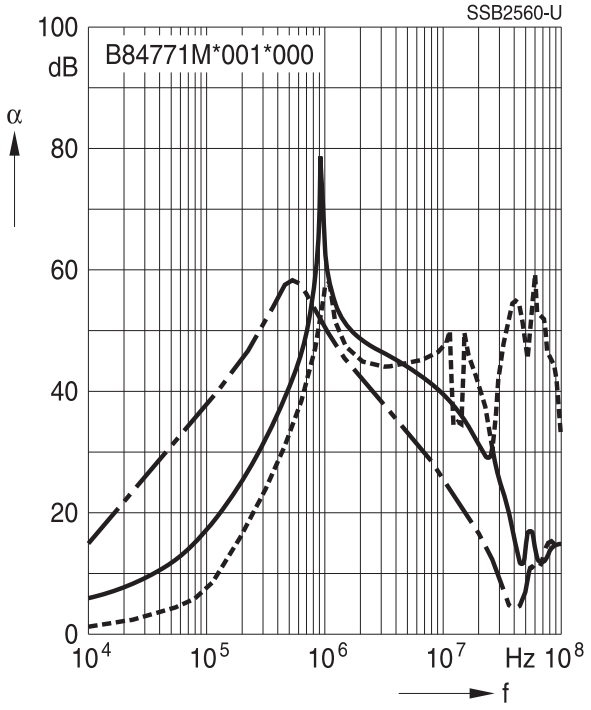
Filter for 20 A



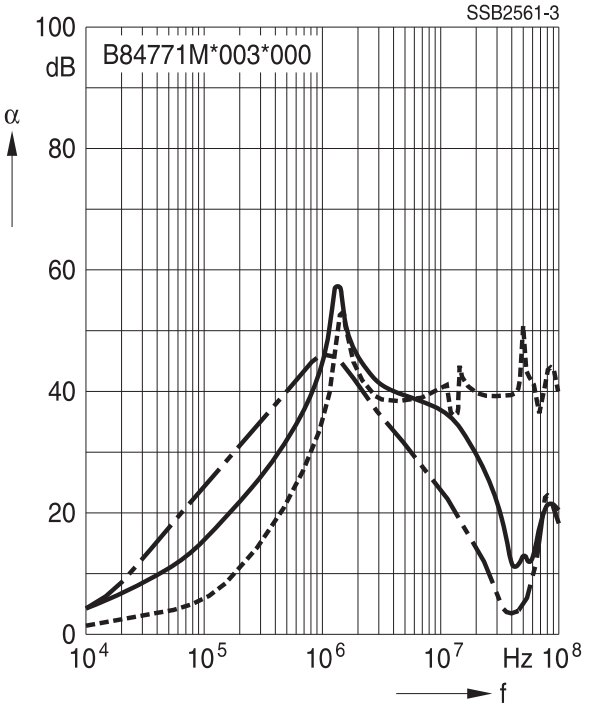
Insertion loss for medical version (typical values at Z = 50 Ω)

——————— unsymmetrical, adjacent branches terminated
—·—·—·—·— common mode, all branches in parallel (asymmetrical)
– – – – – – – differential mode (symmetrical)

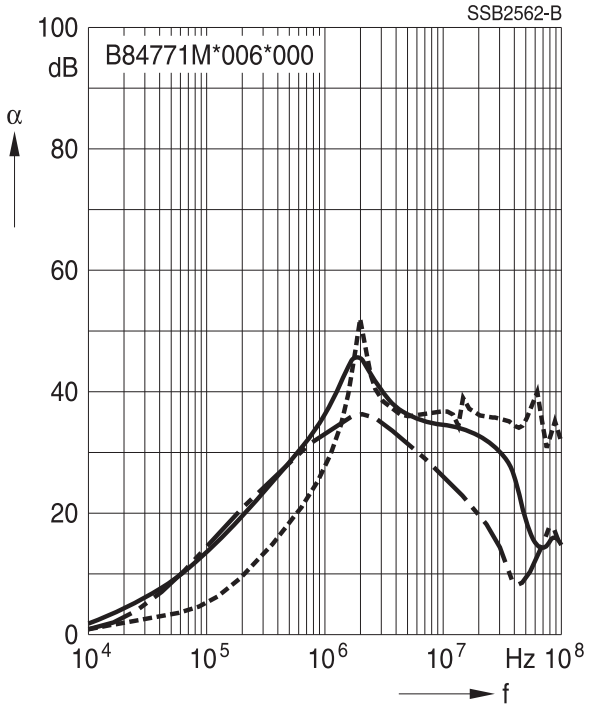
Filter for 1 A



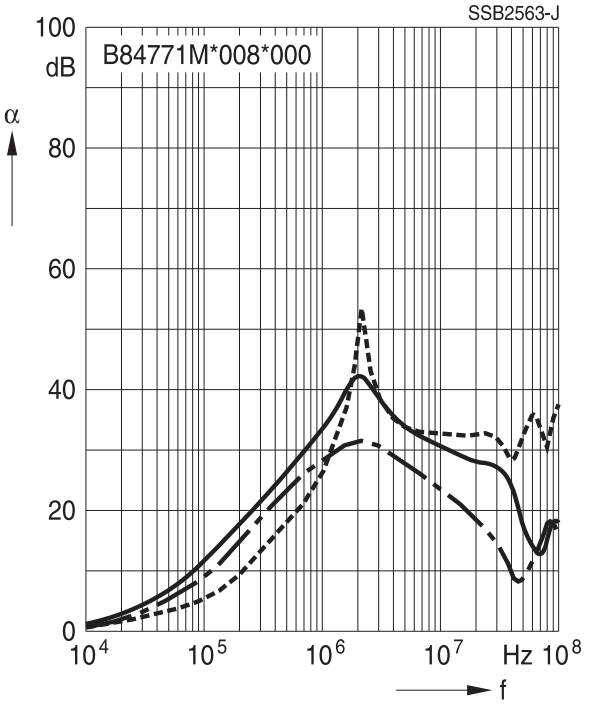
Filter for 3 A



Filter for 6 A



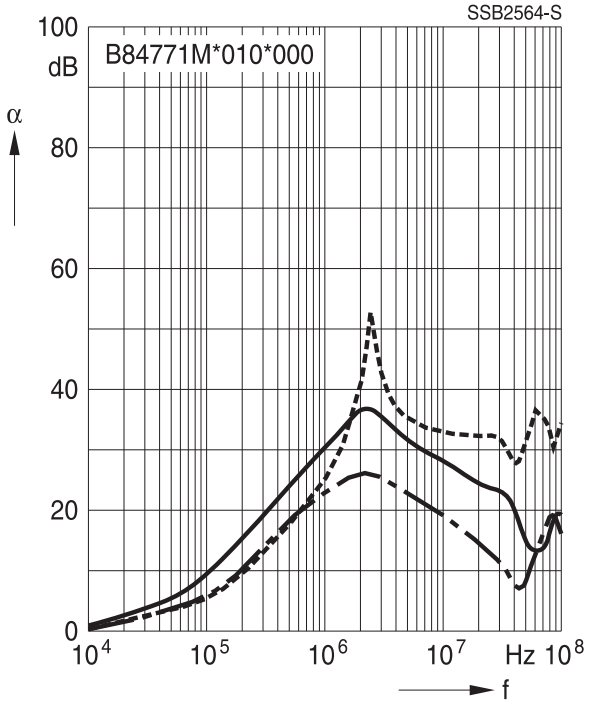
Filter for 8 A



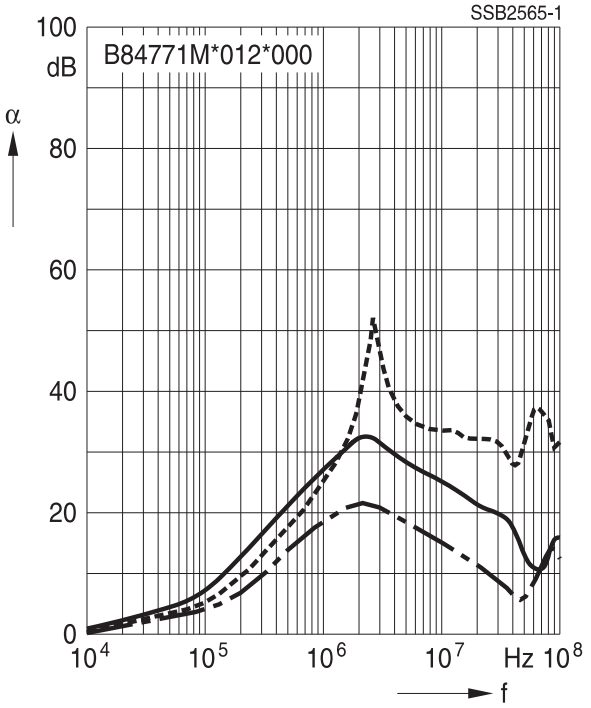
Insertion loss for medical versions (typical values at Z = 50 Ω)

——————— unsymmetrical, adjacent branches terminated
—·—·—·—·— common mode, all branches in parallel (asymmetrical)
– – – – – – – – differential mode (symmetrical)

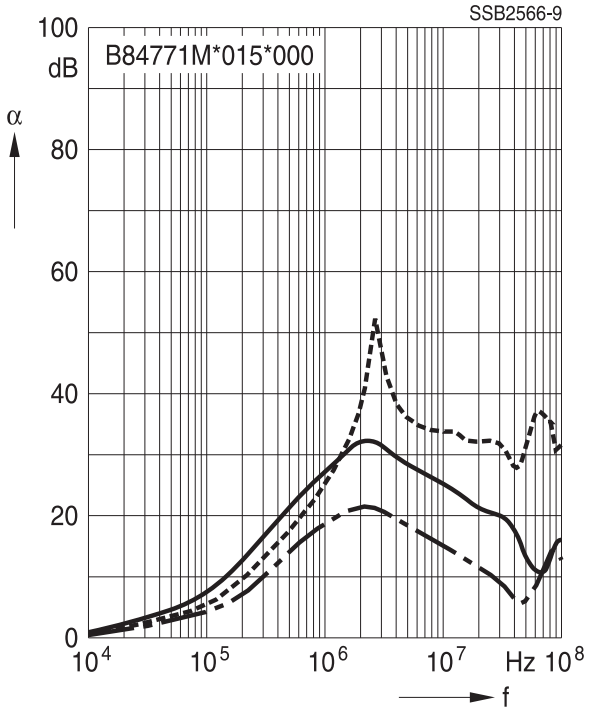
Filter for 10 A



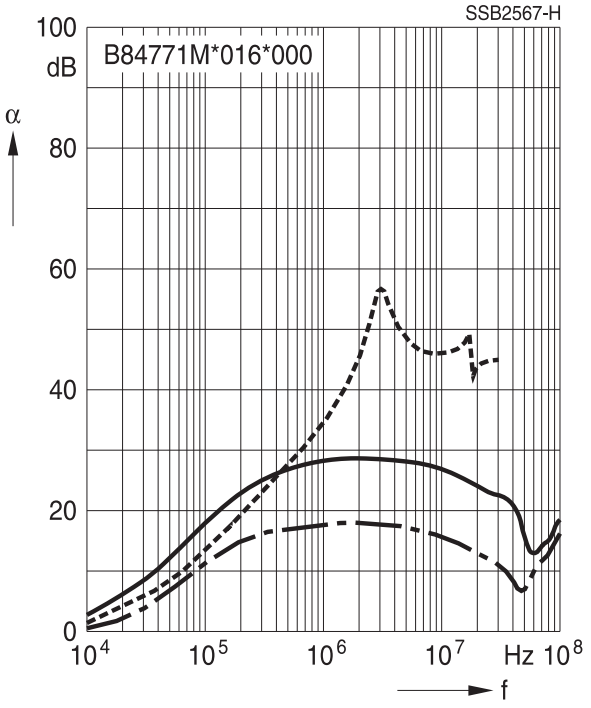
Filter for 12 A



Filter for 15 A



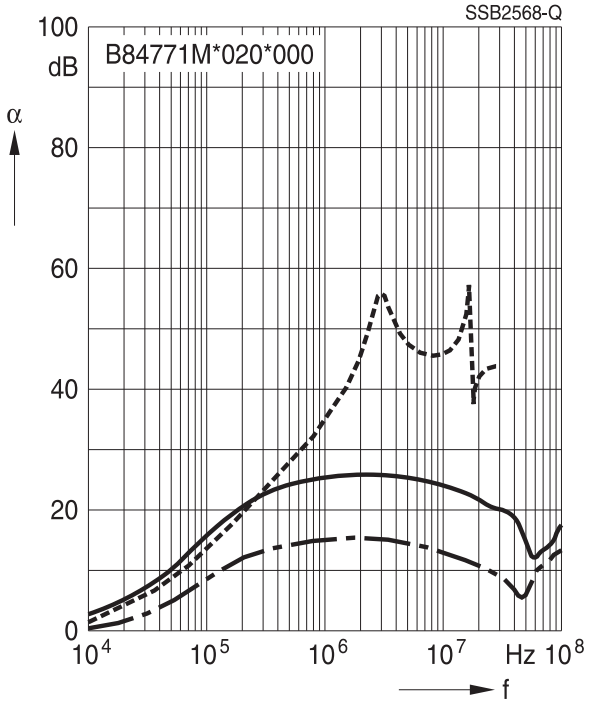
Filter for 16 A



Insertion loss for medical versions (typical values at Z = 50 Ω)

——————— unsymmetrical, adjacent branches terminated
—·—·—·—·—·— common mode, all branches in parallel (asymmetrical)
– – – – – – – – differential mode (symmetrical)

Filter for 20 A



Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or lifesaving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.epcos.com/material). Should you have any more detailed questions, please contact our sales offices.
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