



## **3–line filters for converters and power electronics**

520/300 V, 50/60 Hz, 10...100 A, 50 °C

<b>Ordering code:</b>	<b>B84143A*R106</b>
Date:	2009–09–10
Version:	06

## Construction

- 3-line filter
- Metal case

## Features

- High insertion loss
- Optimized leakage current
- Easy to install
- Low weight
- Compact design
- Degree of protection IP 20 <sup>1)</sup>
- Optimized for long motor cable and operation under full load
- ENEC10, UL und cUL approval



## Applications

- Frequency converters for motor drives, e.g.
  - elevators
  - pumps
  - conveyor systems
  - HVAC systems (heating, ventilation and air conditioning)
- Power supplies
- Textile machines, packaging machines, machine-tools

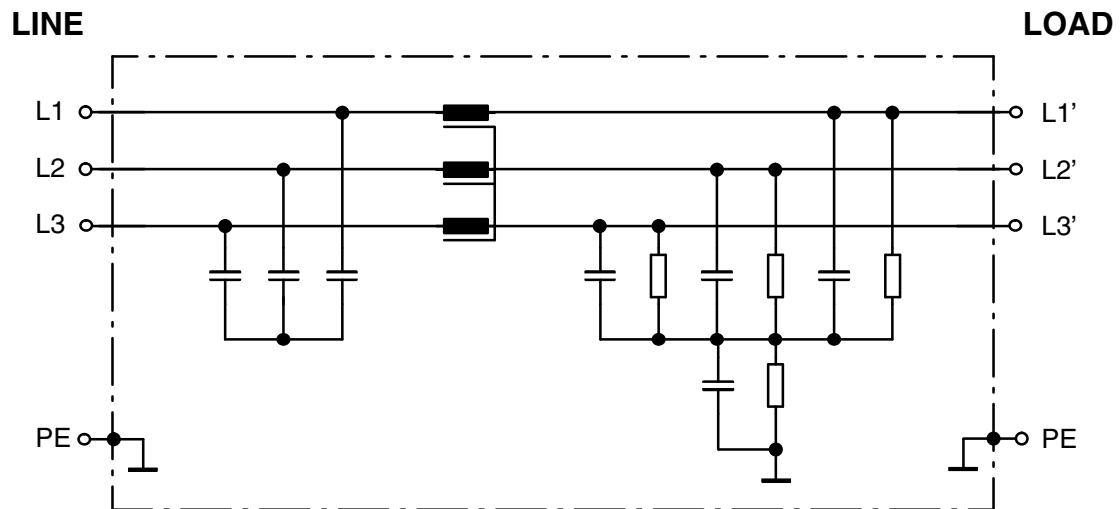
## Terminals

- Line side: finger-save terminal blocks
- Load side: finger-save terminal blocks

## 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, date code, quantity

<sup>1)</sup> To IEC 60529:2001

**Typical circuit diagram**

**Technical data and measuring conditions**

Rated voltage	$U_R$	520/300	V AC
Rated frequency	$f_R$	50/60	Hz
Test voltage line to line for 2 s	$U_{test}$	2236	V DC
Test voltage line to case for 2 s	$U_{test}$	2720	V DC
Rated temperature	$T_R$	50	°C
Overload capability (thermal) for 3 min per hour or for 30 s per hour		1.5 x $I_R$ 2.5 x $I_R$	
Climatic category (IEC 60068-1)		25/100/21	

**Characteristics and ordering codes**

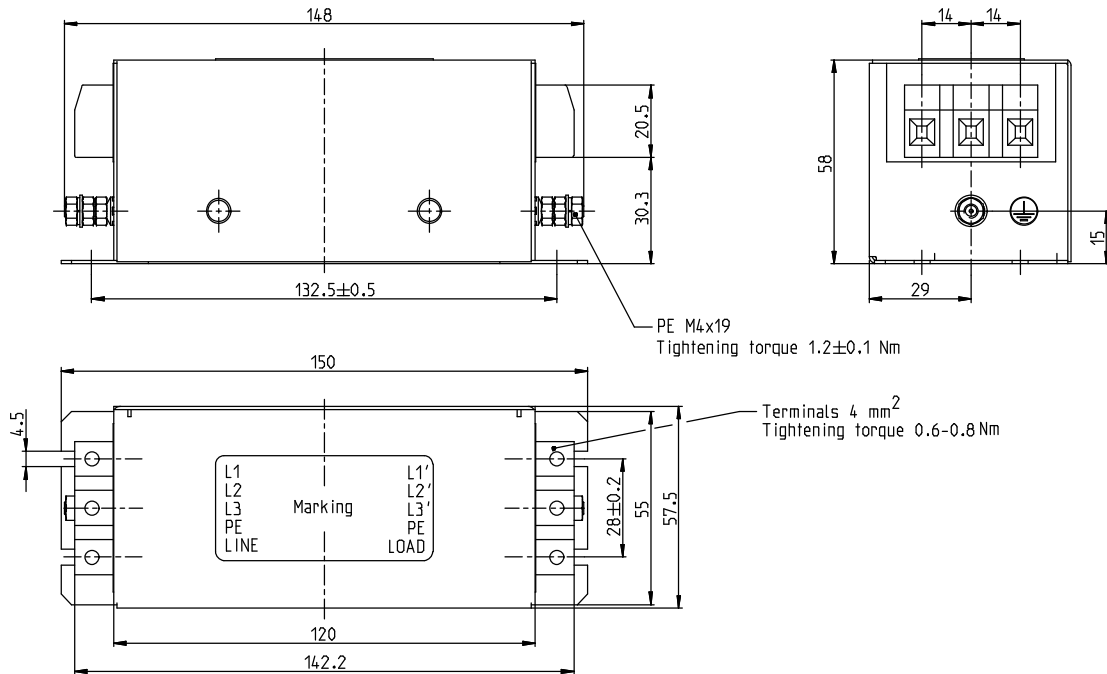
$I_R$	Terminal cross section mm <sup>2</sup>	$I_{leak}^{2)}$ mA	$R_{typ}$ mΩ	Approx. weight kg	Ordering code	Approvals		
								
10	4	14,3	5,5	0,4	B84143A0010R106	x	x	x
20	4	14,3	3,3	0,6	B84143A0020R106	x	x	x
35	10	15,8	1,7	0,9	B84143A0035R106	x	x	x
50	25	15,8	1,1	1,4	B84143A0050R106	x	x	x
65	25	15,8	0,94	1,9	B84143A0065R106	x	x	x
80	50	15,8	0,60	2,4	B84143A0080R106	x	x	x
100	50	15,8	0,48	2,9	B84143A0100R106	x	x	x

X = approval granted

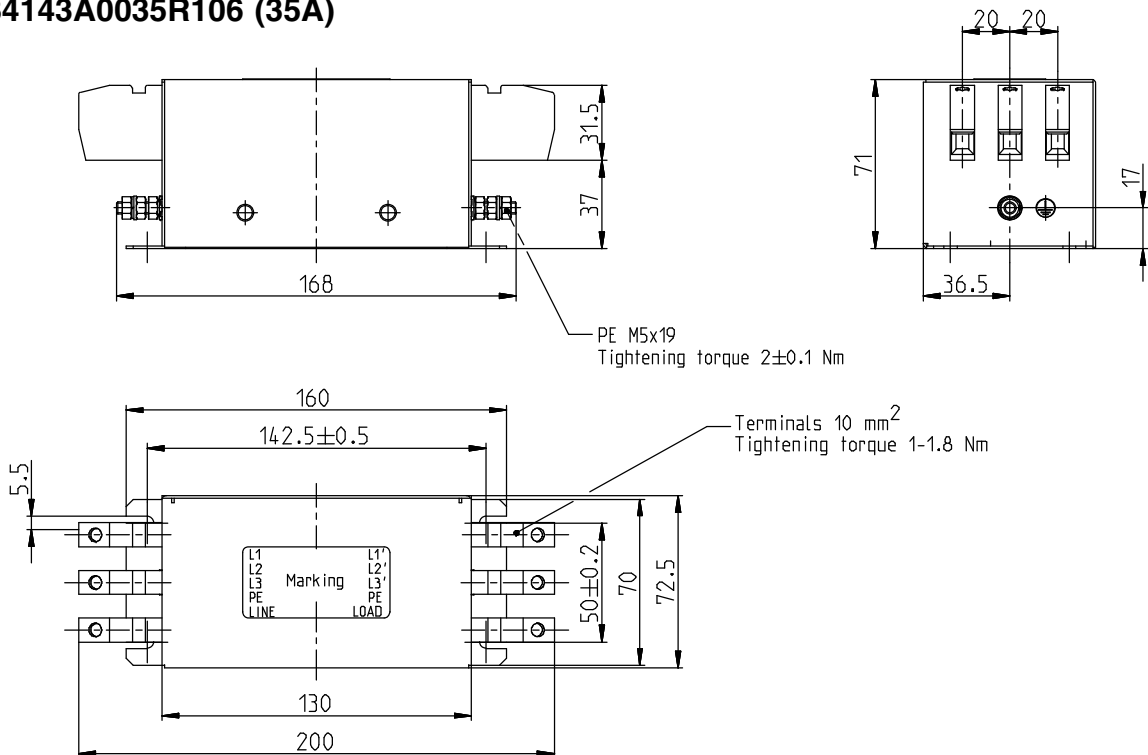
2) 3 phase operation in TN network; maximum voltage =  $U_R$ ; frequency = 50 Hz without harmonics; tolerance of capacitors -20%/ 0%; worst case positioning of the components; unbalance 2% according EN 50160:2000.

Dimensional drawings

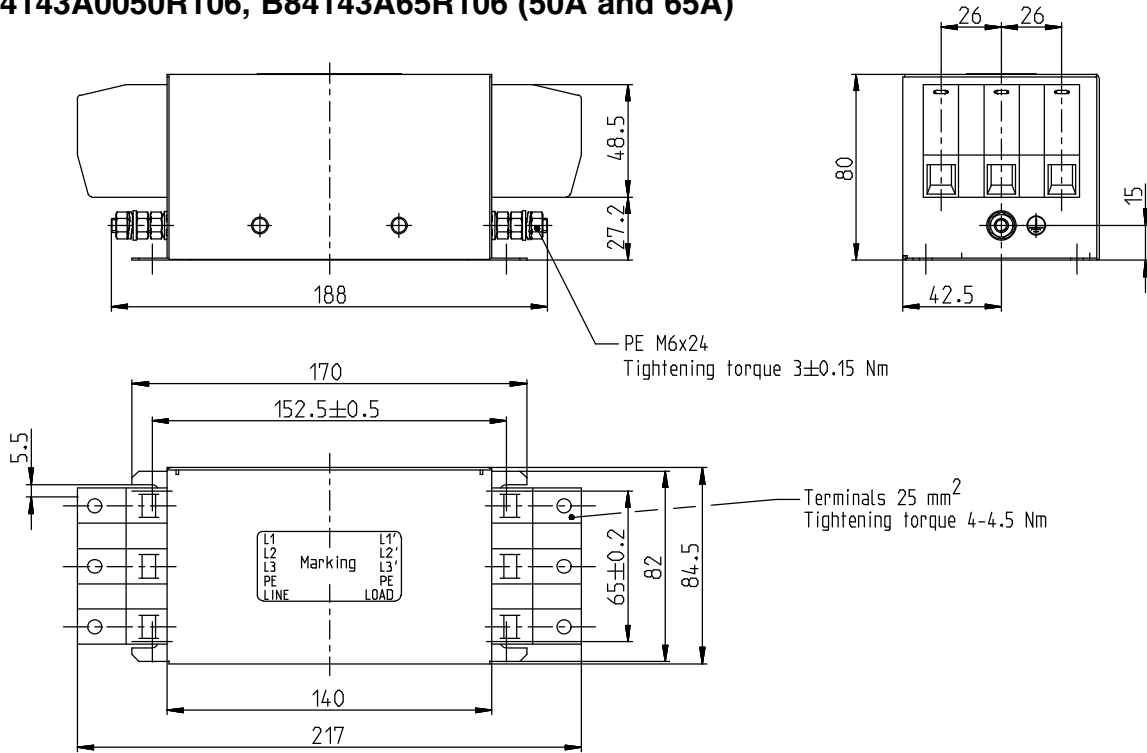
B84143A0010R106, B84143A0020R106 (10A and 20A)



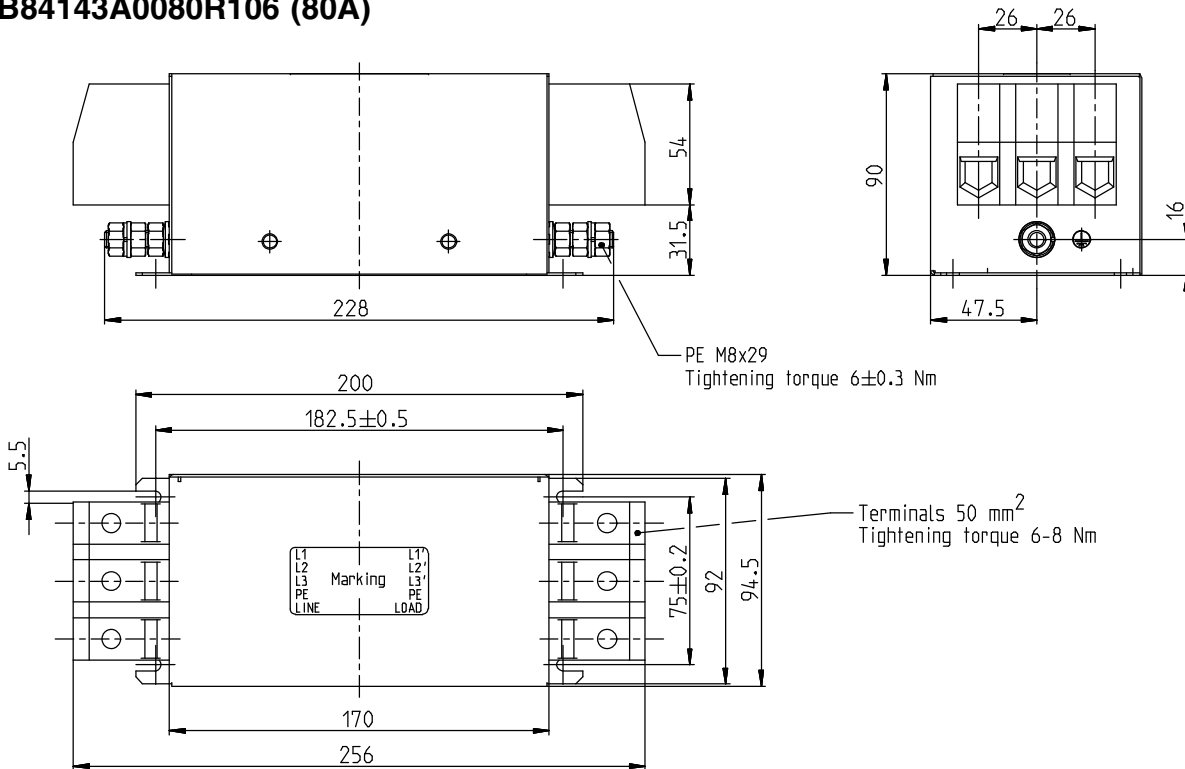
B84143A0035R106 (35A)



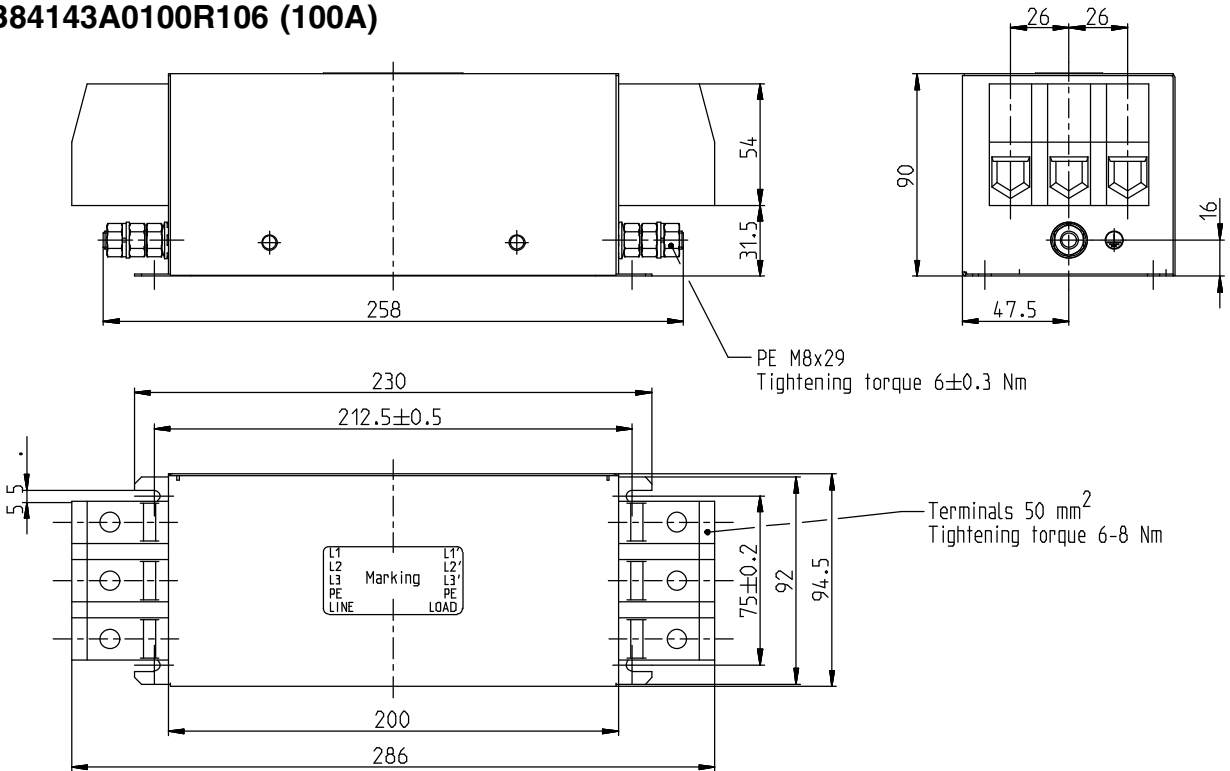
**B84143A0050R106, B84143A65R106 (50A and 65A)**



**B84143A0080R106 (80A)**



**B84143A0100R106 (100A)**

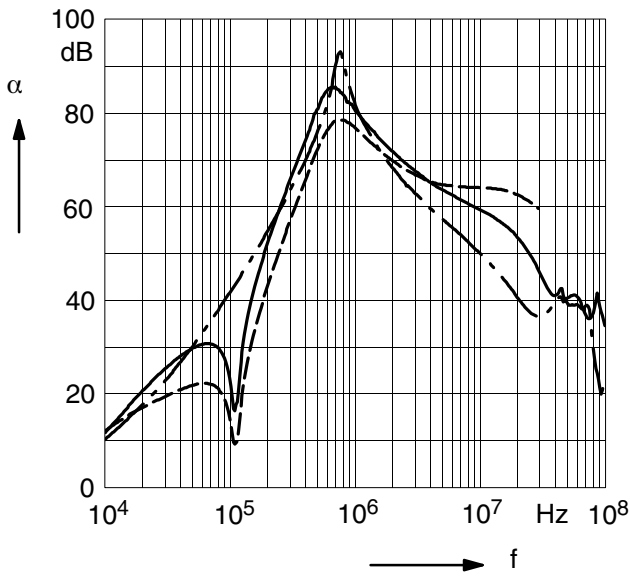


all dimensions in mm

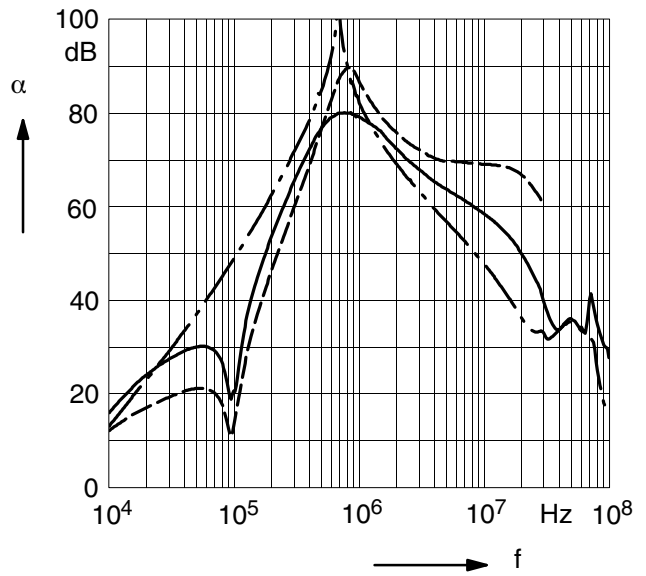
Insertion loss (typical values at  $Z = 50 \Omega$ )

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

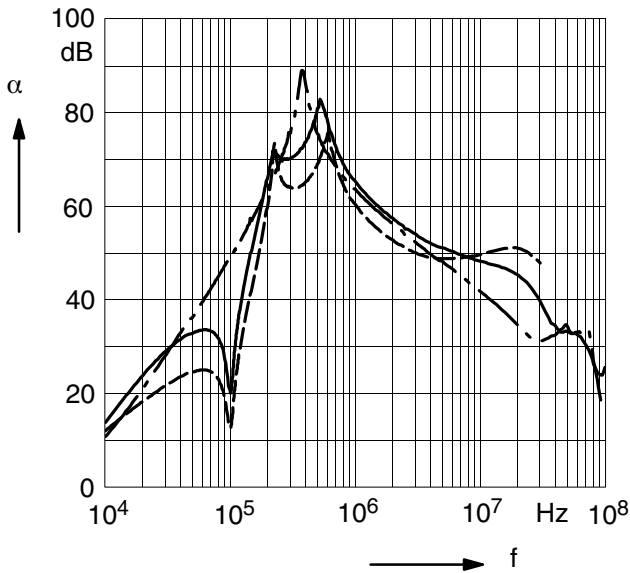
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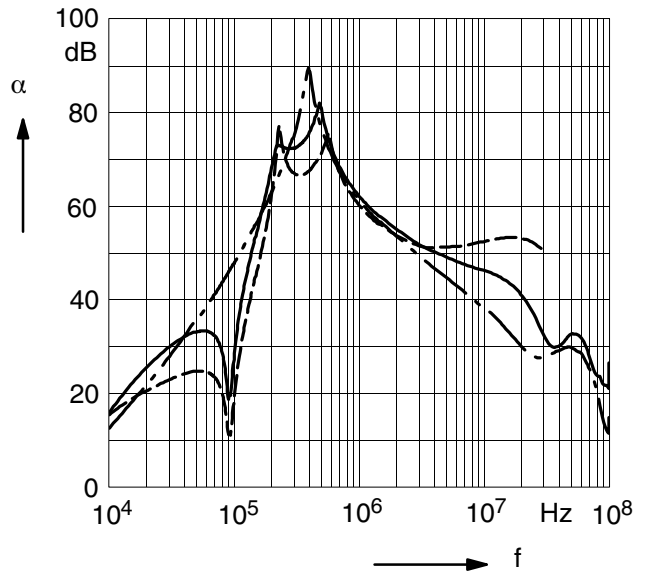
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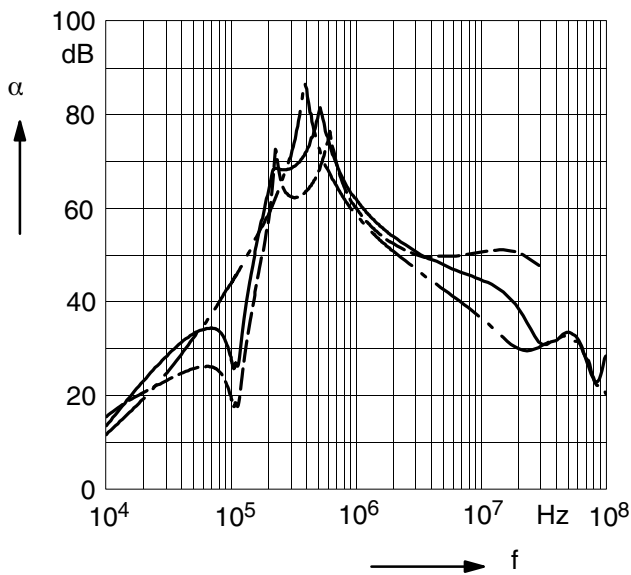




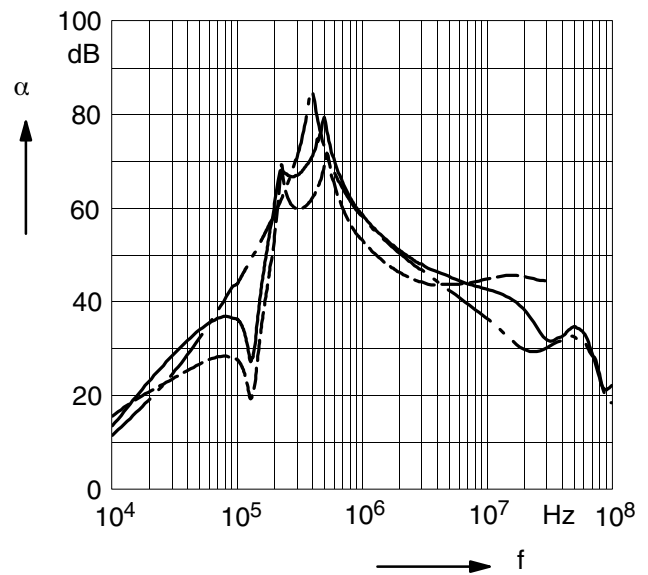
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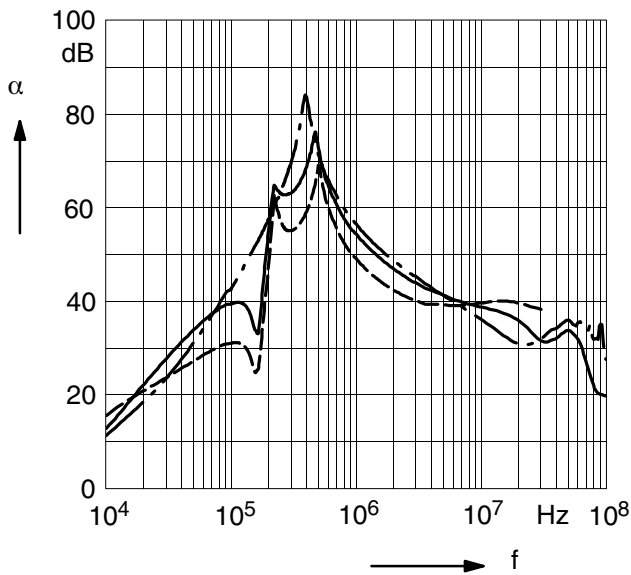
B84143A0065R106



B84143A0080R106



B84143A0100R106



### Caution and warnings

- Please note the advices in our data book “EMC Filters” (latest edition); attention should be paid to the chapter “General safety notes”.
- 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 with circuits able to cause resonances, impermissible voltages at higher frequencies etc. can lead to bodily injury and death as well as cause substantial material damages (e.g. destruction of the filter housing).
- EMC filters must be protected in the application against impermissible exceeding of the rated currents by overcurrent protective.
- In case of leakage currents  $> 3.5 \text{ mA}$  you shall mount the PE conductor stationary with the required cross section before beginning of operation and save it against disconnecting. For leakage currents  $I_L^{4)} < 10 \text{ mA}$  the PE conductor must have a KU value <sup>3)</sup> of 4.5; for leakage currents  $I_L \geq 10 \text{ mA}$  the PE conductor must have a KU value of 6.

3) The KU value (symbol KU) is a classification parameter of safety–referred failure types designed to ensure protection against hazardous body currents and excessive heating.

A value of KU = 4.5 with respect to interruptions is attained:

– with a permanently connected protective earth circuit  $\geq 1.5 \text{ mm}^2$

– with a protective earth circuit  $\geq 2.5 \text{ mm}^2$  connected via shroud connectors (IEC 60309–2).

KU = 6 with respect to interruptions is achieved for fixed–connection lines  $\geq 10 \text{ mm}^2$  where the type of connection and line layout correspond to the requirements for PEN conductors as specified in relevant standards.

4)  $I_L$  = leakage current let–go

## 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 life-saving 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.
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