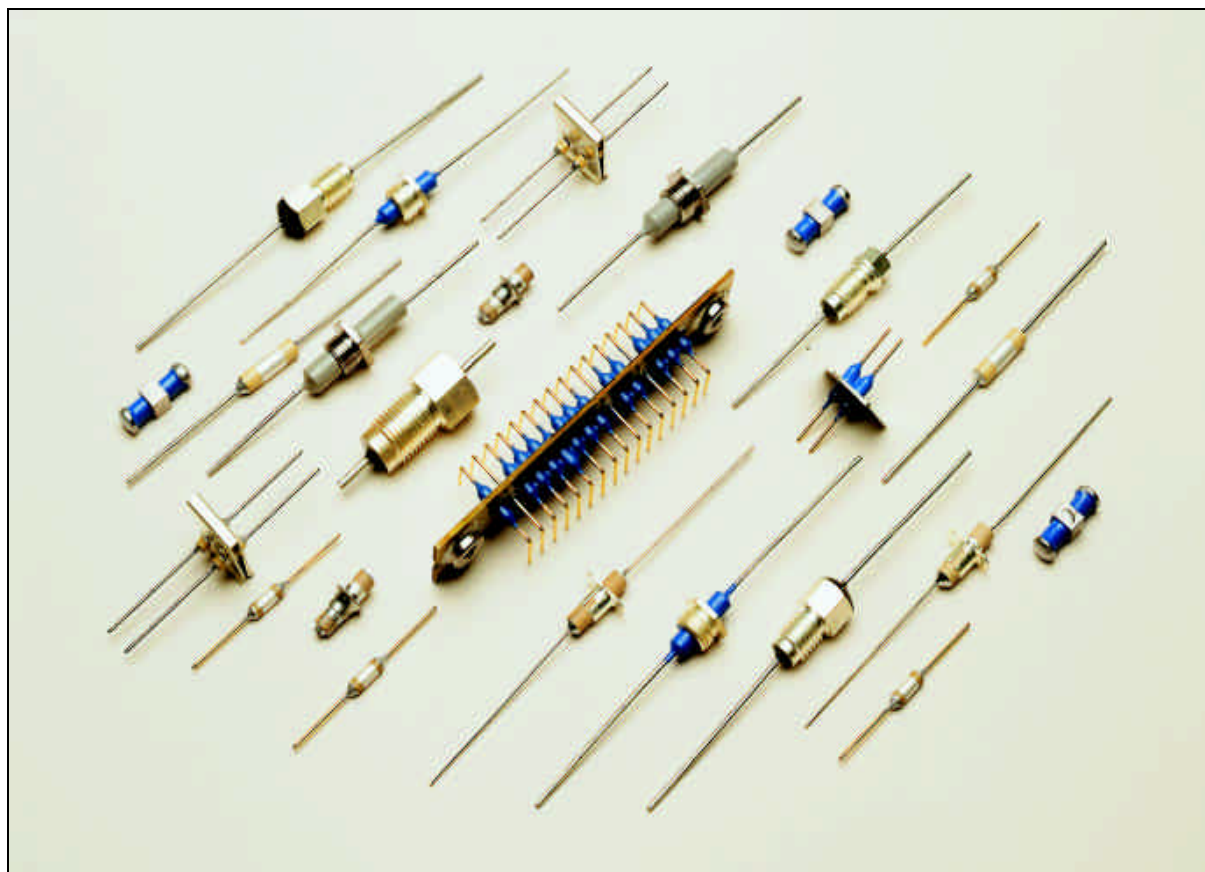


The Reliable Source . . .

FERROPERM



. . . for High Quality



*Feed-through Capacitors,
Pi-Filters and Arrays*

FEEDTHROUGH FILTERS

from FERROPERM UK Ltd.

Introduction

This catalogue presents a survey of feedthrough filters from FERROPERM. These include capacitors and Pi-filters and are available as single items or as arrays. Whilst some of these are manufactured by FERROPERM many are produced by our associate company, EMC Filters ApS in Denmark. The scope of our filter production is constantly widening due to our commitment to research and development.

This brochure presents our standard filters plus some examples of custom designs. Whatever your requirement in filters, please ask us for a quotation. Selective filtering with a mixture of different filters in the same array can be produced.

p 3	Product Selector and Cross-Reference List
pp 4-7.	Single feedthrough capacitors.
pp 8-24.	Single feedthrough Pi-filters.
pp 25-29.	Arrays of feedthrough Pi-filters.
back page	Address and contact details.

FERROPERM

EMC Filters

CUSTOM FILTERS

If you would like us to design a filter (or filter array) to meet your requirements, please send us the following information. If you do not have all the information available, please just give what you can.

1. Specify the application.
 2. If you have a preference for a particular hardware design please state it. Otherwise, specify the maximum dimensions of the space you have available for the filter.
 3. Specify any special physical requirements you may have for the filter. For instance, you might want IP64 rating or an explosion proof design.
 4. Specify your estimated requirements of quantities and delivery dates both for short term and long term. This is important because it may influence what hardware is specified for the design.
 5. If you have a target or maximum price level, please state it.
 6. Please specify the maximum operating currents and voltage. Please give as much detail as you can.
 7. EITHER: Specify minimum required impedance at particular frequencies or sketch a graph of minimum required impedance versus frequency.
OR: Specify what filter elements (for instance, 2x1nF capacitance and 100nH inductance) you require.
-

Whilst every care was taken to avoid any mistakes in the compilation of this catalogue, no responsibility can be assumed for any errors which may have occurred in it. In line with Ferroperm's policy of continual development, Ferroperm reserves the right to alter specifications of any products without notice.

FERROPERM

FEEDTHROUGH FILTERS

PRODUCT SELECTOR AND CROSS-REFERENCE LIST.

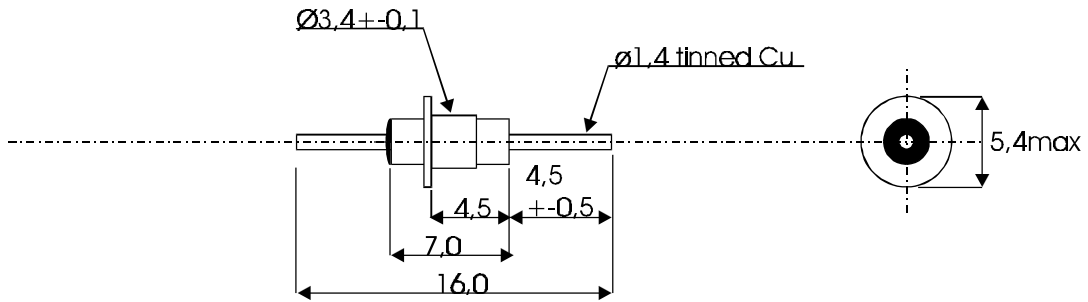
Ferroperm UK Ltd. Part Number	Value	Item	EMC Filters A/S Part Number	Page No.
17 SA 12	1nF-20+80%	Feedthrough capacitor	32812003S	6
17 SA 13	3nF -0/+100%	Pi filter	33822001S	12
17 SA 17	1500pF GMV	Pi-Filter	33824006S	23
17 SA 20	10pF ± 10%	Feedthrough capacitor	31212001S	4
17 SA 21	470pF ± 20%	Feedthrough capacitor	32812001S	5
17 SA 22	56pF ±20%	Feedthrough capacitor	32813003S	7
17 SA 23	min. 2x1,5nF	Pi-Filter	33821001D	8
17 SA 24	min. 2x1,0nF	Pi-Filter	33821002D	9
17 SA 25	2nF -0/+100%	Pi-Filter	33821003D	10
17 SA 26	4nF -0/+100%	Pi-Filter	33822001D	11
17 SA 27	min. 2x1,5nF	Pi-Filter	33822002D	13
17 SA 28	3nF -50/+100%	Pi-Filter	33822002S	14
17 SA 29	min. 2x1,5nF	Pi-Filter	33822003S	15
17 SA 30	1,5nF -50/+100%	Pi-Filter	33822004S	16
17 SA 31	1600pF -0/+80%	Pi-Filter	33823001D	17
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17 SA 33	2nF -0/+100%	Pi-Filter	33823003D	19
17 SA 34	4nF -0/+100%	Pi-Filter	33824001D	20
17 SA 35	min 2x1,5nF	Pi-Filter	33824002D	21
17 SA 36	min 2x6,0nF	Pi-Filter	33824003S	22
17 SA 37	4nF -0/+100%	Pi-Filter	33825001D	24
17 SA 38	2x1nF GMV	Filter Array, 2xPi	33826002S	25
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17 SA 40	2x1nF GMV	Filter Array, 12x2xPi	33826006S	27
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17 SA 42	2x1nF GMV	Filter Array, 3x2xPi	33826008S	29

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FEEDTHROUGH CAPACITOR

17 SA 20

EMC Filters' Pt.No. 31212001S



Working voltage.....	300Vdc
Test voltage.....	900Vdc 1min.
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Class.....	1B
Capacitance.....	10pF \pm 10%

28/2-2001

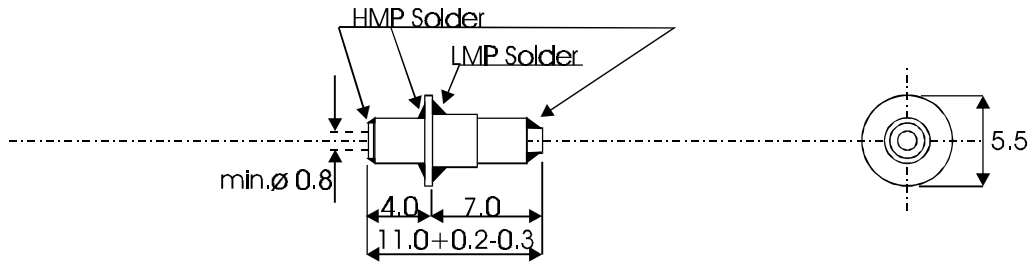
FERROPERM

FEEDTHROUGH CAPACITOR

17 SA 21

Corresponding to F.C. Spec. 88081/3

EMC Filters' Pt.No. 32812001S



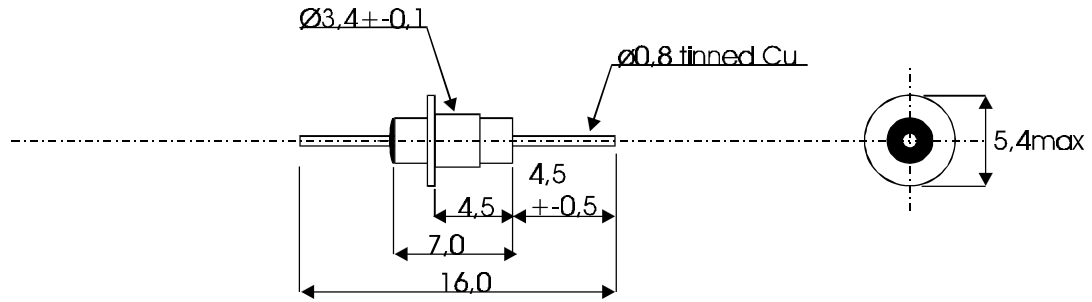
Working voltage.....	220Vdc
Test voltage.....	550Vdc
Feed-through current.....	max 5A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance.....	470pF \pm 20%
Marking.....	none
Coating.....	none

FERROPERM

FEEDTHROUGH CAPACITOR

17 SA 12

EMC Filters' Pt.No. 32812003S



Working voltage.....	300Vdc
Test voltage.....	900Vdc 1min.
Insulation resistance.....	min 5×10^3 M Ω
IEC category.....	55/085/56
Class.....	2F2
Capacitance.....	1nF -20/+80%

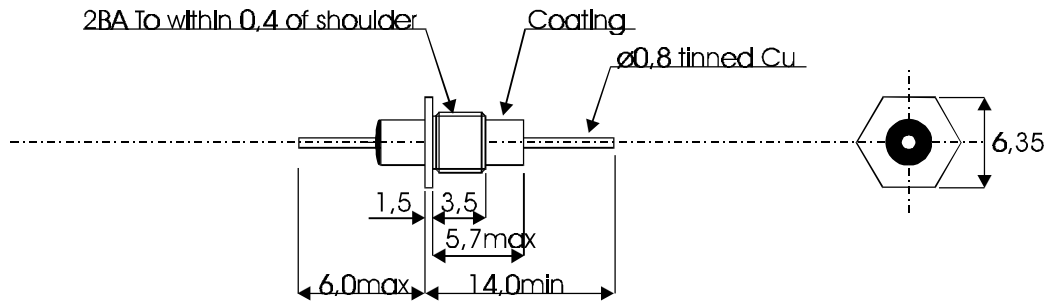
1/3-2001

FERROPERM

FEEDTHROUGH CAPACITOR

17 SA 22

EMC Filters' Pt.No. 32813003S



Working voltage.....	500Vdc
Test voltage.....	1500Vdc 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance.....	56pF \pm 20%
Class.....	1B

Addition: delivered together with a hexagonal nut, loose, 6,35mm

19/3-2001

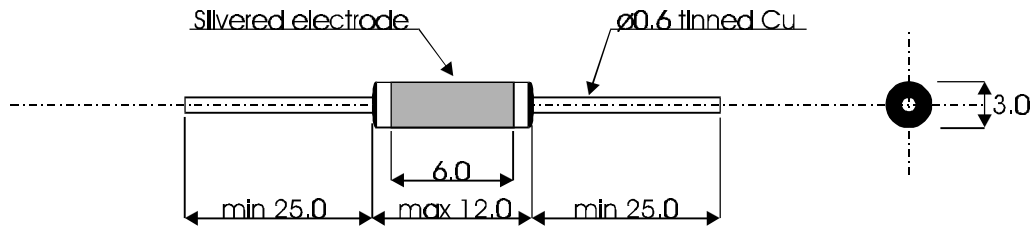
FERROPERM

PI-FILTER

17 SA 23

Corresponding to F.C. type 138.62002

EMC Filters' Pt.No. 33821001D



Working voltage.....	250Vdc
Test voltage.....	750Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance.....	min. $2 \times 1,5$ nF
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

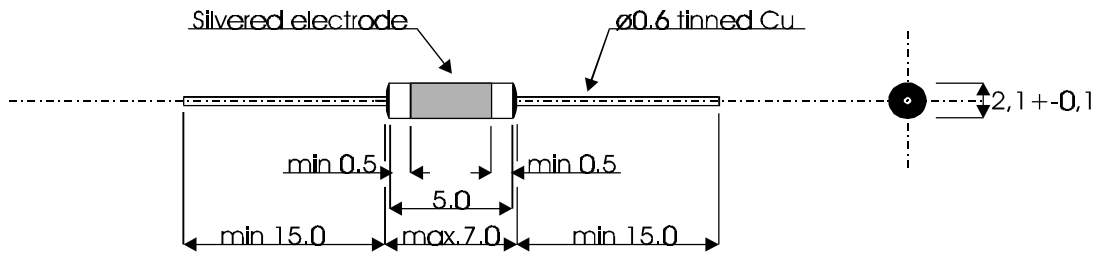
FERROPERM

PI-FILTER

17 SA 24

Corresponding to F.C. type 138.62001

EMC Filters' Pt.No. 33821002D



Working voltage.....	100Vdc
Test voltage.....	250Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	min. 2×1,0nF
Inductance.....	min. 100nH
Marking.....	none

Attenuation (typical values)	1MHz	1dB
	10MHz	10dB
	100MHz	50dB
	1000MHz	80dB

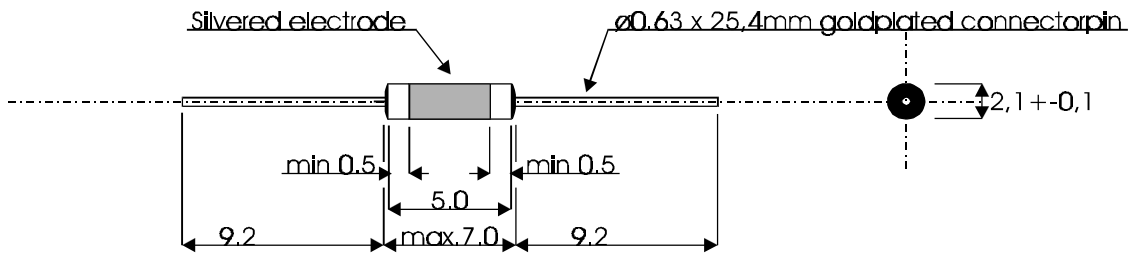
FERROPERM

PI-FILTER

17 SA 25

Corresponding to F.C. type 138.62001

EMC Filters' Pt.No. 33821003D



Working voltage.....	100Vdc
Test voltage.....	250Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance (total).....	2nF -0/+100%
Inductance.....	200nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	10dB
	100MHz	50dB
	1000MHz	80dB

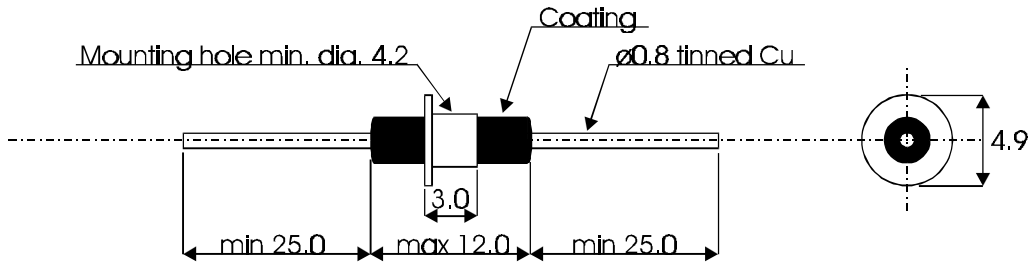
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PI-filter for EX applications according to EN 50 020

17 SA 26

Corresponding to F.C. type 138.64002

EMC Filters' Pt.No. 33822001D



Working voltage.....	250Vdc
Test voltage.....	1500Vdc 1min. / 1060Vac 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance (total).....	4nF -0/+100%
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

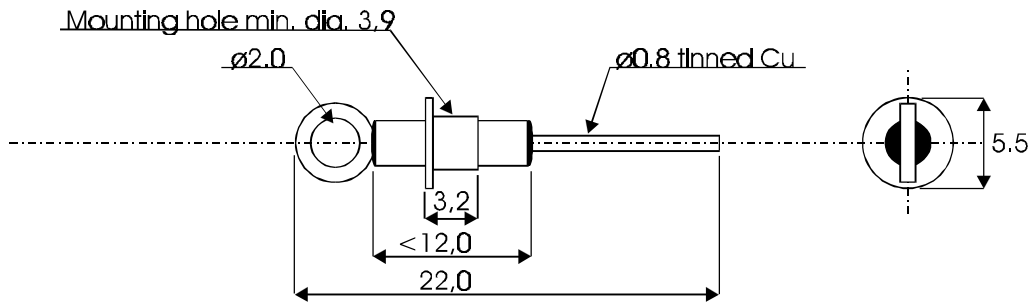
FERROPERM

PI-FILTER

17 SA 13

Corresponding to F.C. Spec. 91244

EMC Filters' Pt.No. 33822001S



Working voltage.....	250Vdc
Test voltage.....	750Vdc 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance (total).....	3nF -0/+100%
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

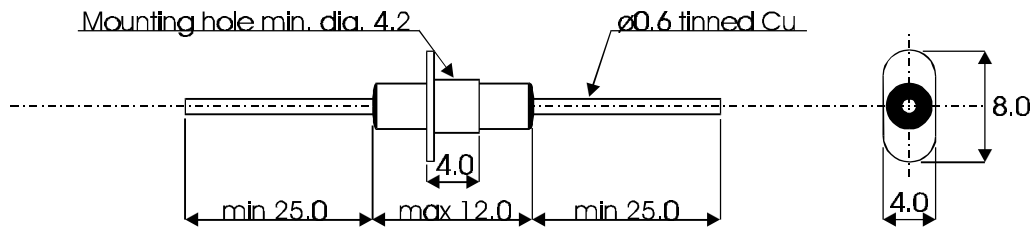
FERROPERM

PI-FILTER

17 SA 27

Corresponding to F.C. type 138.64001

EMC Filters' Pt.No. 33822002D



Working voltage.....	250Vdc
Test voltage.....	750Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	min. 2×1,5nF
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

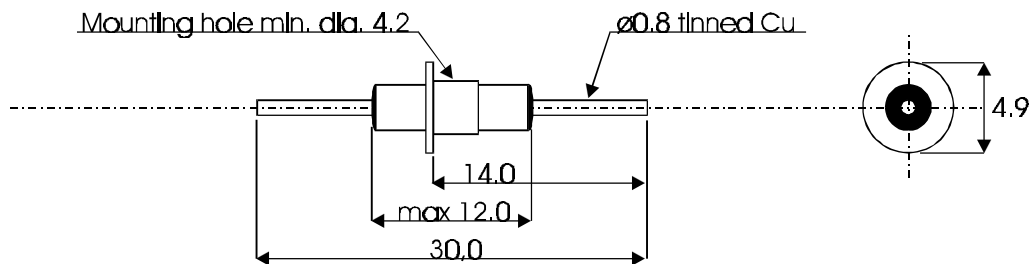
FERROPERM

PI-FILTER

17 SA 28

Corresponding to F.C. Spec. 91240/2

EMC Filters' Pt.No. 33822002S



Working voltage.....	250Vdc
Test voltage.....	750Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance (total).....	3nF -50/+100%
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

FERROPERM

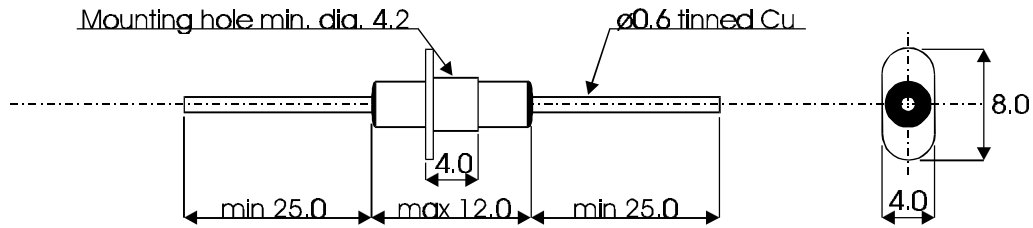
PI-FILTER

17 SA 29

Corresponding to F.C. Spec. 95605

EMC Filters' Pt.No. 33822003S

This filter is high temperature soldered.



Working voltage.....	250Vdc
Test voltage.....	750Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	min. 2x1,5nF
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

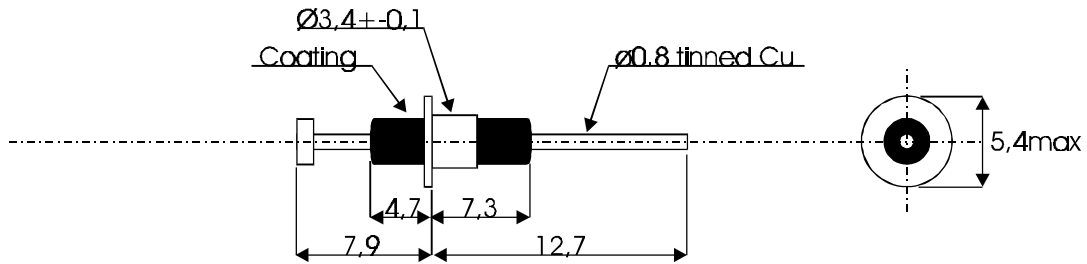
Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

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PI-FILTER

17 SA 30

EMC Filters' Pt.No. 33822004S



Working voltage.....	350Vdc
Test voltage.....	700Vdc 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10^4 M Ω
IEC category.....	55/085/56
Capacitance (total).....	1,5nF -50/+100%
Inductance.....	min 200nH
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	15dB
	100MHz	55dB
	1000MHz	80dB

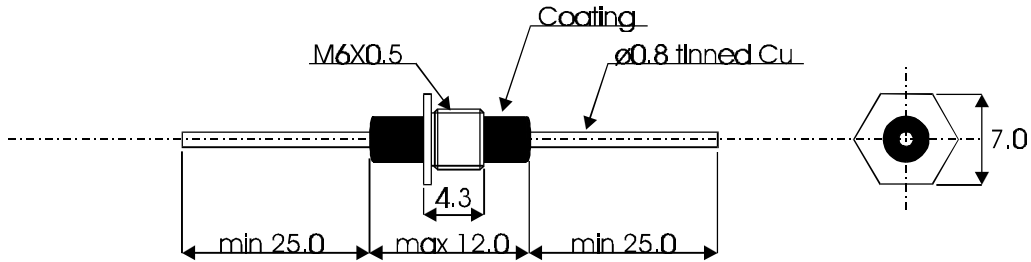
FERROPERM

PI-filter for EX applications according to EN 50 020

17 SA 31

Corresponding to F.C. type 138.66005

EMC Filters' Pt.No. 33823001D



Working voltage.....	350Vdc
Test voltage.....	1700Vdc 1min. / 1060Vac 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance (total).....	1600pF -0/+80%
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

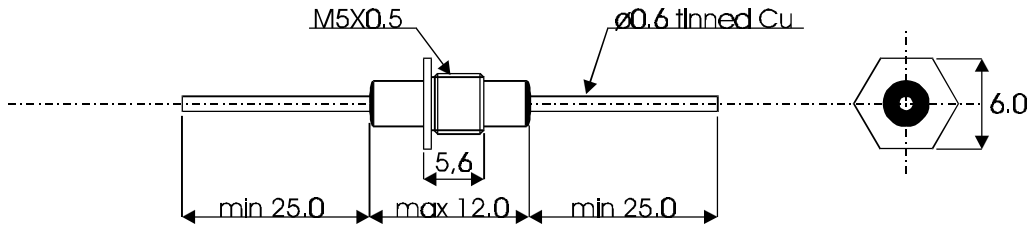
FERROPERM

PI-FILTER

17 SA 32

Corresponding to F.C. type 138.66002

EMC Filters' Pt.No. 33823002D



Working voltage.....	250Vdc
Test voltage.....	750Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	min. 2x1,5nF
Inductance.....	1000nH -50/+100%
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

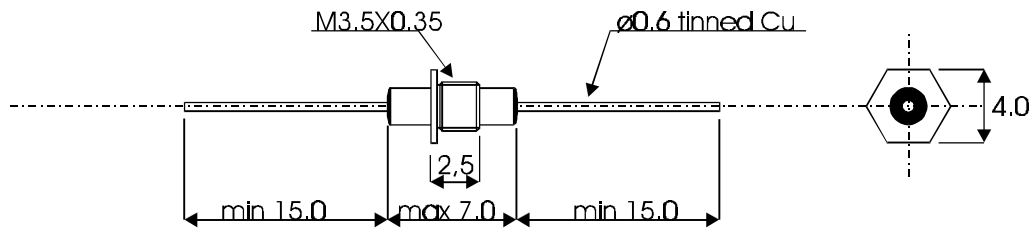
FERROPERM

PI-FILTER

17 SA 33

Corresponding to F.C. type 138.66001

EMC Filters' Pt.No. 33823003D



Working voltage.....	100Vdc
Test voltage.....	250Vdc 1min.
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance (total).....	2nF -0/+100%
Inductance.....	200nH -50/+200%
Marking.....	none

Attenuation (typical values)	1MHz	1dB
	10MHz	12dB
	100MHz	50dB
	1000MHz	80dB

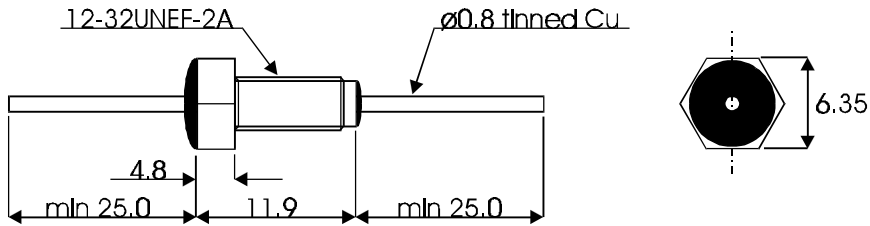
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PI-filter for EX applications according to EN 50 020

17 SA 34

Corresponding to F.C. type 138.66009

EMC Filters' Pt.No. 33824001D



Working voltage.....	250Vdc
Test voltage.....	1500Vdc 1min. / 1060Vac 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance (total).....	4nF -0/+100%
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250 °C
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

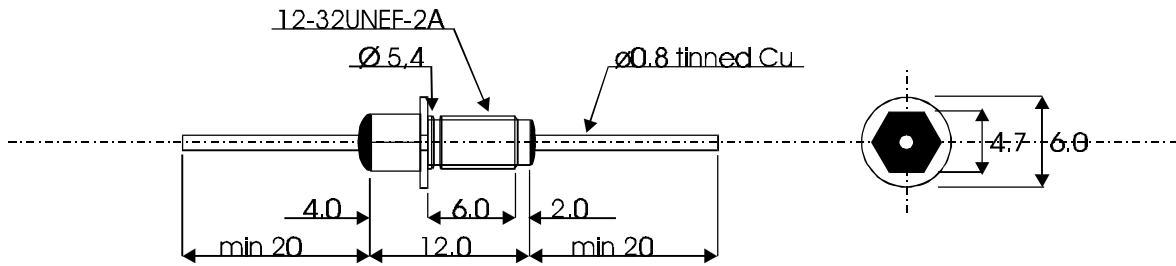
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PI-FILTER

17 SA 35

Corresponding to F.C. type 138.68001

EMC Filters' Pt.No. 33824002D



Working voltage.....	250Vdc
Test voltage.....	1000Vdc 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	min 2x1,5nF
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	max 250°C
Marking.....	none

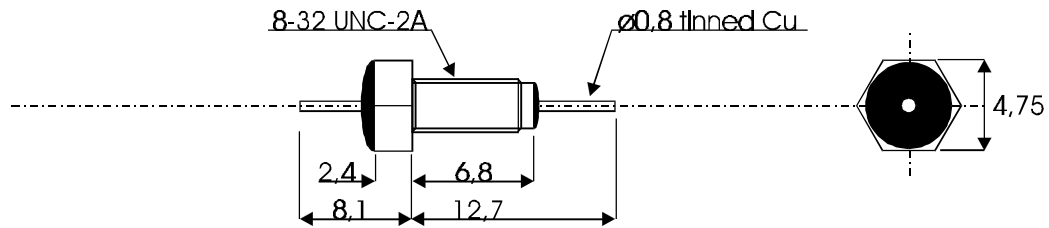
Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

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PI-FILTER

17 SA 36

EMC Filters' Pt.No. 33824003S



Working voltage.....	100Vdc
Test voltage.....	250Vdc 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10^3 M Ω
IEC category.....	55/085/56
Capacitance.....	min 2x6,0nF
Inductance.....	min 200nH
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	30dB
	100MHz	75dB
	1000MHz	80dB

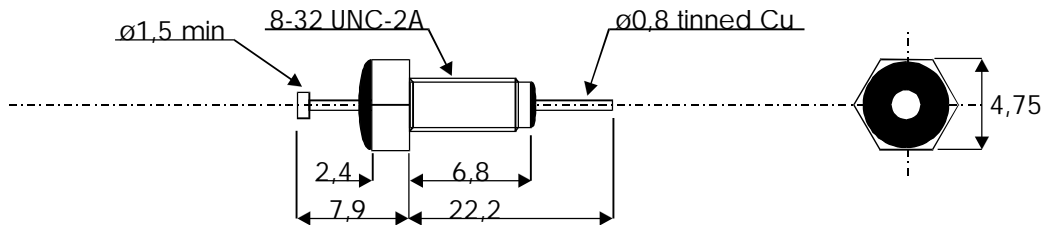
7/3-2001

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PI-FILTER

17 SA 17

EMC Filters' Pt.No. 33824006S



Working voltage.....	200Vdc
Test voltage.....	500Vdc 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10 ³ MΩ
IEC category.....	55/125/56
Capacitance.....	min 2×1,0nF
Inductance.....	min 100nH
Marking.....	none
Mounting Torque.....	0.6Nm

Attenuation (typical values)	1MHz	2dB
	10MHz	20dB
	100MHz	50dB
	1000MHz	80dB

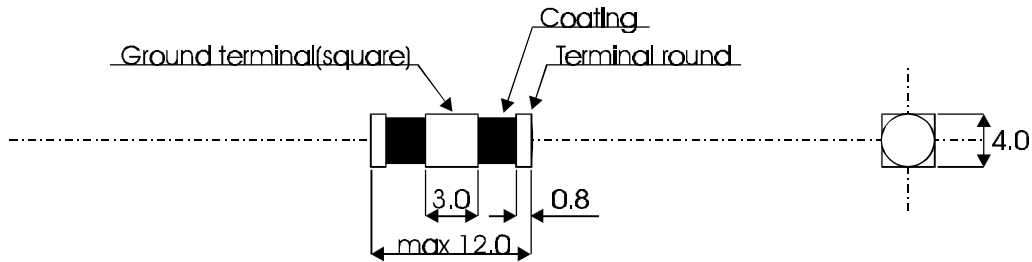
FERROPERM

PI-filter for EX applications according to EN 50 020

17 SA 37

Corresponding to F.C. type SPPL4715

EMC Filters' Pt.No. 33825001S



Working voltage.....	250Vdc
Test voltage.....	1500Vdc 1min. / 1060Vac 1min.
Feed through current.....	max 10A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	4nF -0/+100%
Inductance.....	1000nH -50/+100%
Soldering Conditions.....	250°C
Marking.....	none

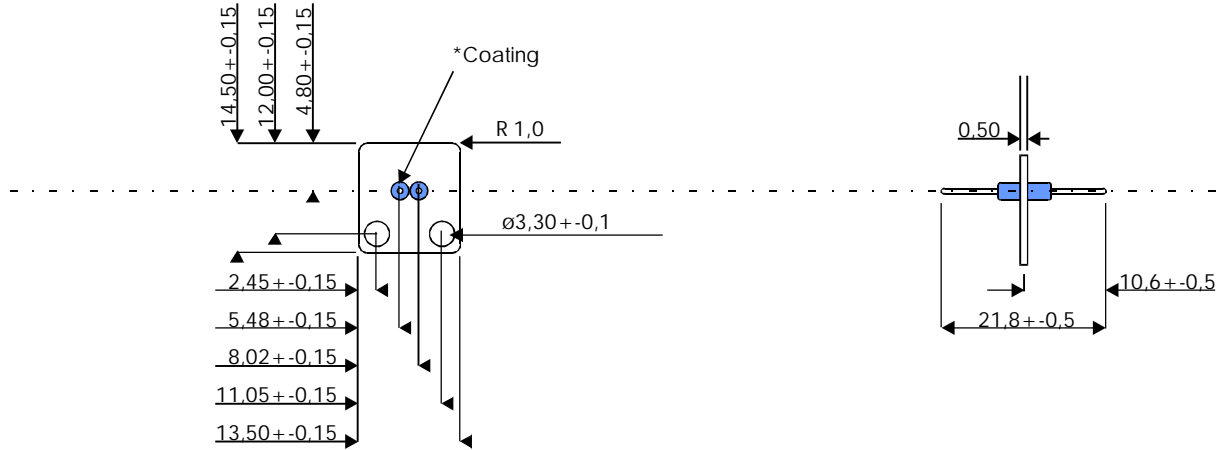
Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

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Filter Array, 2xPi

17 SA 38

EMC Filters' Pt.No. 33826002S



Groundplate: Nickel-silver, Sn-plated
 Connectorpin: Brass, Ni-plated, Au-plated
 * Coating: SB 240 Blue Dipping grade from ESL
 Solderjoint between Groundplate and filter: Sn62

Working voltage.....	100Vdc
Test voltage.....	250Vdc
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	2x1nF GMV
Inductance.....	100nH GMV
Marking.....	none

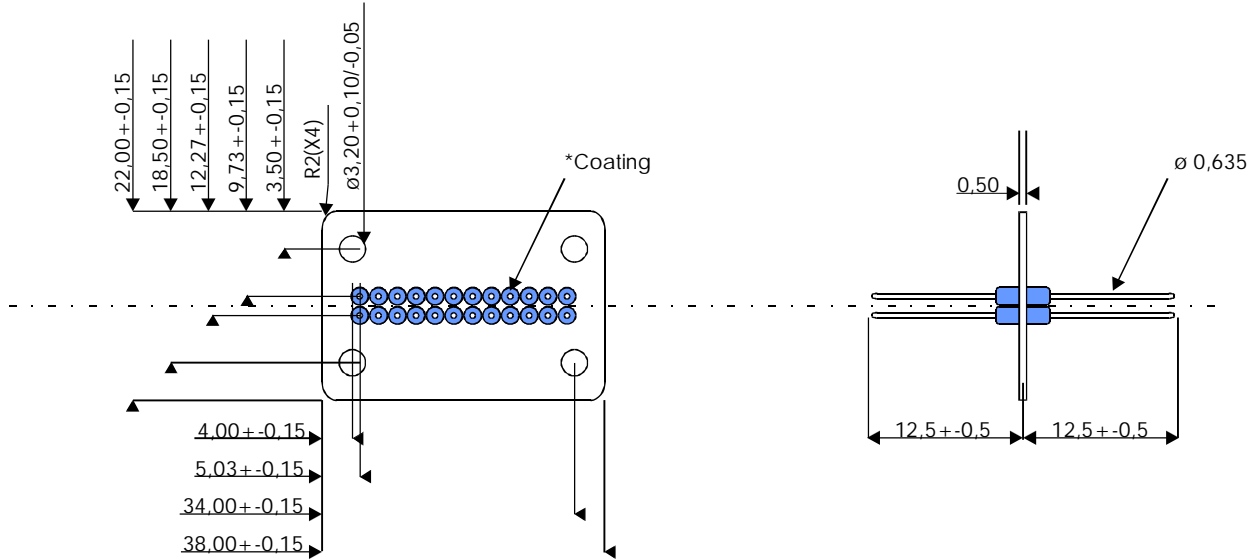
Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

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Filter Array, 12x2xPi

17 SA 39

EMC Filters' Pt.No. 33826004S



Groundplate: Nickel-silver, Sn-plated
 Connectorpin: Brass, Ni-plated, Au-plated
 * Coating: SB 240 Blue Dipping grade from ESL
 Solderjoint between Groundplate and filter: Sn62

Working voltage.....	100Vdc
Test voltage.....	250Vdc
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	2×1nF GMV
Inductance.....	100nH GMV
Marking.....	none

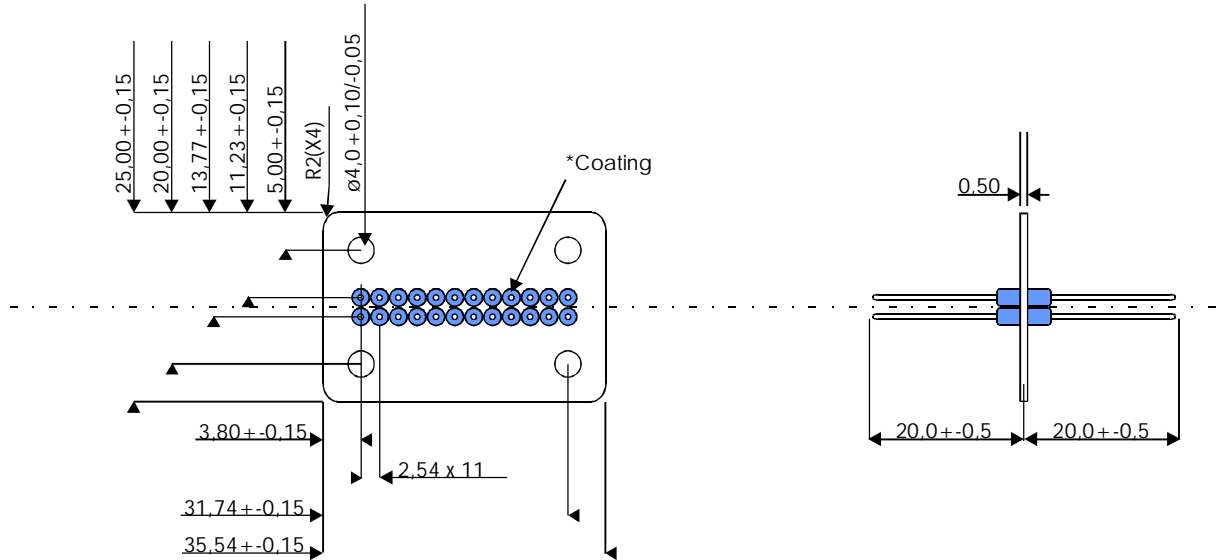
Attenuation (typical values)	1MHz	2dB
	10MHz	20dB
	100MHz	50dB
	1000MHz	80dB

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Filter Array, 12x2xPi

17 SA 40

EMC Filters' Pt.No. 33826006S



Groundplate: Nickel-silver, Sn-plated
 Connectorpin: Brass, Ni-plated, Au-plated
 * Coating: SB 240 Blue Dipping grade from ESL
 Solderjoint between Groundplate and filter: Sn62

Working voltage.....	100Vdc
Test voltage.....	250Vdc
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	2x1nF GMV
Inductance.....	100nH GMV
Marking.....	none

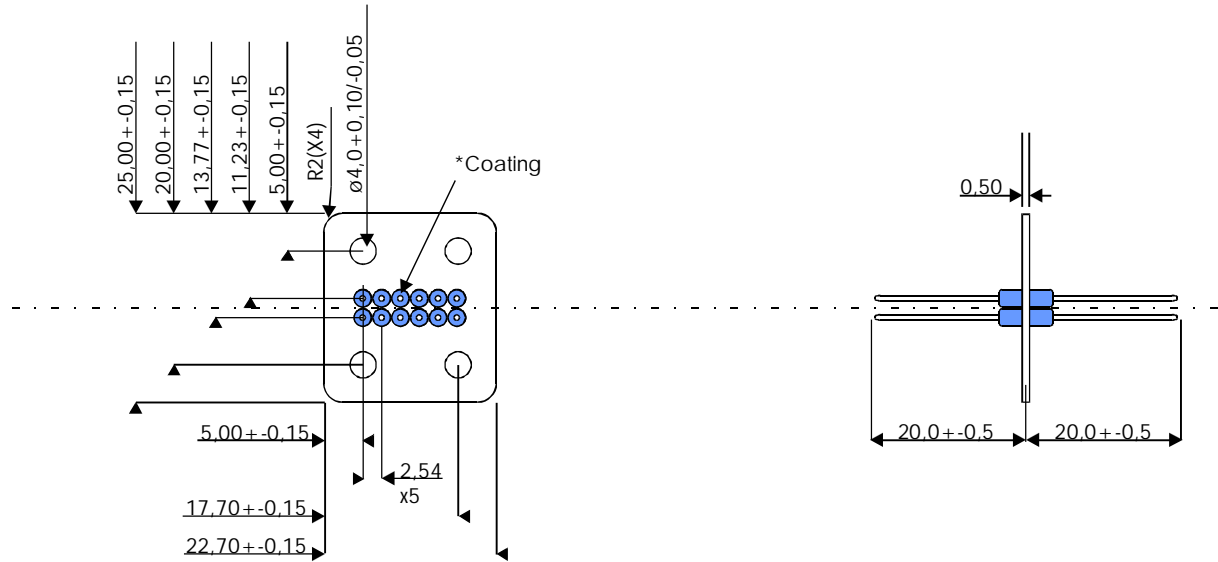
Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

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Filter Array, 6x2xPi

17 SA 41

EMC Filters' Pt.No. 33826007S



Groundplate: Nickel-silver, Sn-plated
 Connectorpin: Brass, Ni-plated, Au-plated
 * Coating: SB 240 Blue Dipping grade from ESL
 Solderjoint between Groundplate and filter: Sn62

Working voltage.....	100Vdc
Test voltage.....	250Vdc
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	2x1nF GMV
Inductance.....	100nH GMV
Marking.....	none

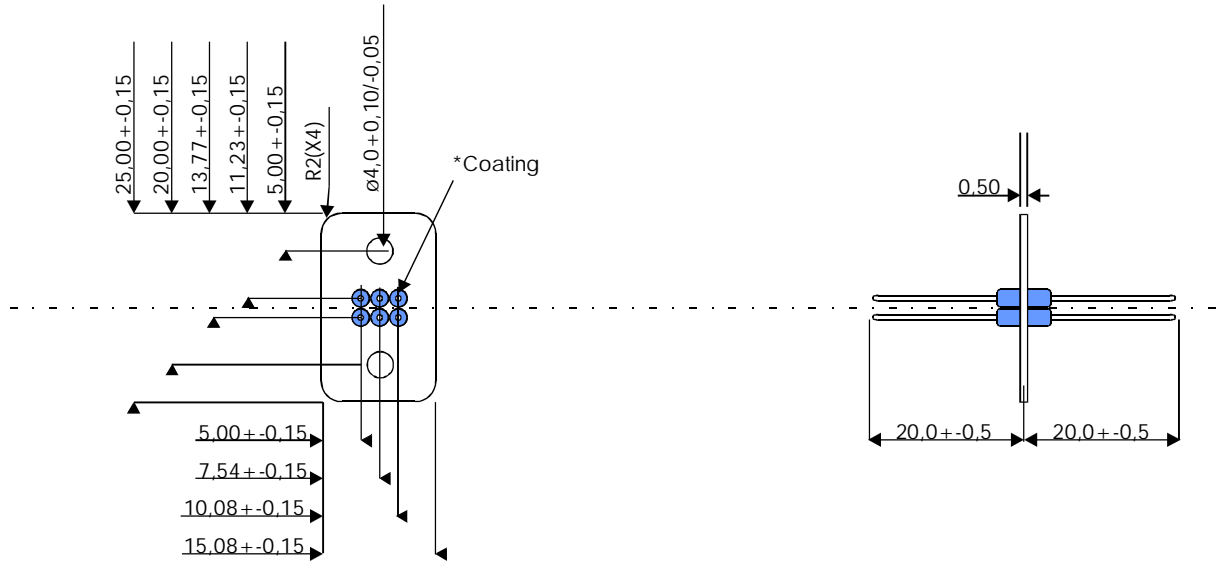
Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

FERROPERM

Filter Array, 3x2xPi

17 SA 42

EMC Filters' Pt.No. 33826008S



Groundplate: Nickel-silver, Sn-plated
 Connectorpin: Brass, Ni-plated, Au-plated
 * Coating: SB 240 Blue Dipping grade from ESL
 Solderjoint between Groundplate and filter: Sn62

Working voltage.....	100Vdc
Test voltage.....	250Vdc
Feed through current.....	max 5A
Insulation resistance.....	min 10 ⁴ MΩ
IEC category.....	55/085/56
Capacitance.....	2×1nF GMV
Inductance.....	100nH GMV
Marking.....	none

Attenuation (typical values)	1MHz	2dB
	10MHz	25dB
	100MHz	65dB
	1000MHz	80dB

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