



## DATA SHEET

# SINGLE PHASE EMI FILTER - SMF2233

### Description

These series of filters designed for motor and power drive systems which can provide superior attenuation performance and suppress conducted noise even when high interference level are present.

### Technical Specifications:

Maximum continuous operating voltage	: 250 VAC, 50/60Hz, 250 VDC
Operating Frequency	: DC to 400Hz
Current ratings	: 1A to 30A @40°C
High Potential test voltage	: P to N 1075VDC for 2 Sec P to G 2250VDC for 2 Sec P to G 1500VAC 2 Sec (M Types)
Overload Capability	: 4 x rated current at switch on 1.5x rated current for 1 minute, once per hour
Design Corresponding to	: UL 60939-3 and IEC 60939-1&2
Flammability corresponding to	: UL 94 V-0 or better
Temperature range	: -25°C to +100°C
Climatic Category	: 25/100/21
Protection category	: IP20

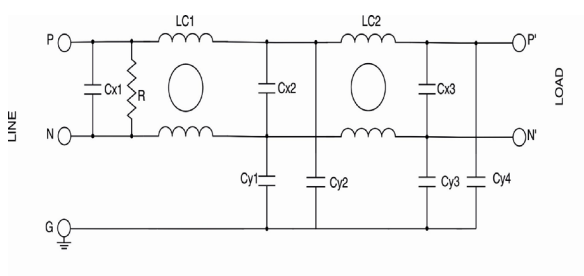
### Features:

- Designed for easy and fast chassis mounting
- Filters offer an optimized filter range for high performance AC & DC applications
- All filters provide an exceptional conducted attenuation performance based on chokes with high permeable core material and excellent thermal behavior
- The higher inductivity versus amperage offers increased attenuation performance with same form factor
- Various terminal options allow you to select the desired pulse connection style




### Applications:




- Power Systems
- Electronic Equipment
- Frequency convertors
- PS/Inverters
- Medical Equipment
- Various Noisy Applications requiring high attenuation Performance




### Typical Circuit Diagram:






Ordering information:

STANDARD VERSION								
Model Number	Part Number	Current Rating @ 40°C (A)	Leakage current @ 250 VAC/50 Hz (mA)	Power loss @25°C / 50Hz (W)	Termination			Weight Approx. (g)
								
SMF2233-1-4	E108266-1	1	0.25	2	-4	-	-	100
SMF2233-1-5	E108266-2	1	0.25	2	-	-5	-	100
SMF2233-3-4	E108267-1	3	0.25	4	-4	-	-	200
SMF2233-3-5	E108267-2	3	0.25	4	-	-5	-	200
SMF2233-4-4	E108268-1	4	0.25	6.5	-4	-	-	250
SMF2233-4-5	E108268-2	4	0.25	6.5	-	-5	-	250
SMF2233-6-4	E108269-1	6	0.35	7.5	-4	-	-	250
SMF2233-6-5	E108269-2	6	0.35	7.5	-	-5	-	250
SMF2233-6-1	E108269-3	6	0.35	7.5	-	-	-1	250
SMF2233-8-4	E108270-1	8	0.35	8	-4	-	-	350
SMF2233-8-5	E108270-2	8	0.35	8	-	-5	-	350
SMF2233-10-4	E108271-1	10	0.35	8.5	-4	-	-	500
SMF2233-10-5	E108271-2	10	0.35	8.5	-	-5	-	500
SMF2233-10-1	E108271-3	10	0.35	8.5	-	-	-1	500
SMF2233-12-4	E108272-1	12	0.85	12.5	-4	-	-	500
SMF2233-12-5	E108272-2	12	0.85	12.5	-	-5	-	500
SMF2233-12-1	E108272-3	12	0.85	12.5	-	-	-1	500
SMF2233-16-4	E108273-1	16	0.85	11	-4	-	-	550
SMF2233-16-5	E108273-2	16	0.85	11	-	-5	-	550
SMF2233-20-4	E108274-1	20	0.85	8.5	-4	-	-	600
SMF2233-20-1	E108274-2	20	0.85	8.5	-	-	-1	600
SMF2233-30-1	E108275-1	30	0.85	10.5	-	-	-1	600

SAFETY VERSION								
Model Number	Part Number	Current Rating @ 40°C (A)	Leakage current @ 250 VAC/50 Hz (mA)	Power loss @25°C / 50Hz (W)	Termination			Weight Approx. (g)
								
SMF2233S-1-4	E108276-1	1	0.1	2	-4	-	-	100
SMF2233S-1-5	E108276-2	1	0.1	2	-	-5	-	100
SMF2233S-3-4	E108277-1	3	0.1	4	-4	-	-	200
SMF2233S-3-5	E108277-2	3	0.1	4	-	-5	-	200
SMF2233S-4-4	E108278-1	4	0.1	6.5	-4	-	-	250
SMF2233S-4-5	E108278-2	4	0.1	6.5	-	-5	-	250
SMF2233S-6-4	E108279-1	6	0.1	7.5	-4	-	-	250
SMF2233S-6-5	E108279-2	6	0.1	7.5	-	-5	-	250
SMF2233S-6-1	E108279-3	6	0.1	7.5	-	-	-1	250
SMF2233S-8-4	E108280-1	8	0.1	8	-4	-	-	350
SMF2233S-8-5	E108280-2	8	0.1	8	-	-5	-	350
SMF2233S-10-4	E108281-1	10	0.1	8.5	-4	-	-	500
SMF2233S-10-5	E108281-2	10	0.1	8.5	-	-5	-	500
SMF2233S-10-1	E108281-3	10	0.1	8.5	-	-	-1	500
SMF2233S-12-4	E108282-1	12	0.1	12.5	-4	-	-	500
SMF2233S-12-5	E108282-2	12	0.1	12.5	-	-5	-	500
SMF2233S-12-1	E108282-3	12	0.1	12.5	-	-	-1	500
SMF2233S-16-4	E108283-1	16	0.1	11	-4	-	-	550
SMF2233S-16-5	E108283-2	16	0.1	11	-	-5	-	550
SMF2233S-20-4	E108284-1	20	0.1	8.5	-4	-	-	600
SMF2233S-20-1	E108284-2	20	0.1	8.5	-	-	-1	600
SMF2233S-30-1	E108296-1	30	1.57	10.5	-	-	-1	600

MEDICAL VERSION								
Model Number	Part Number	Current Rating @ 40°C (A)	Leakage current @ 250 VAC/50 Hz (mA)	Power loss @25°C / 50Hz (W)	Termination			Weight Approx. (g)
								
SMF2233M-1-4	E108297-1	1	0	2	-4	-	-	100
SMF2233M-1-5	E108297-2	1	0	2	-	-5	-	100
SMF2233M-3-4	E108298-1	3	0	4	-4	-	-	200
SMF2233M-3-5	E108298-2	3	0	4	-	-5	-	200
SMF2233M-4-4	E108299-1	4	0	6.5	-4	-	-	250
SMF2233M-4-5	E108299-2	4	0	6.5	-	-5	-	250
SMF2233M-6-4	E108300-1	6	0	7.5	-4	-	-	250
SMF2233M-6-5	E108300-2	6	0	7.5	-	-5	-	250
SMF2233M-6-1	E108300-3	6	0	7.5	-	-	-1	250
SMF2233M-8-4	E108301-1	8	0	8	-4	-	-	350
SMF2233M-8-5	E108301-2	8	0	8	-	-5	-	350
SMF2233M-10-4	E108302-1	10	0	8.5	-4	-	-	500
SMF2233M-10-5	E108302-2	10	0	8.5	-	-5	-	500
SMF2233M-10-1	E108302-3	10	0	8.5	-	-	-1	500
SMF2233M-12-4	E108303-1	12	0	12.5	-4	-	-	500
SMF2233M-12-5	E108303-2	12	0	12.5	-	-5	-	500
SMF2233M-12-1	E108303-3	12	0	12.5	-	-	-1	500
SMF2233M-16-4	E108304-1	16	0	11	-4	-	-	550
SMF2233M-16-5	E108304-2	16	0	11	-	-5	-	550
SMF2233M-20-4	E108305-1	20	0	8.5	-4	-	-	600
SMF2233M-20-1	E108305-2	20	0	8.5	-	-	-1	600
SMF2233M-30-1	E108306-1	30	0	10.5	-	-	-1	600

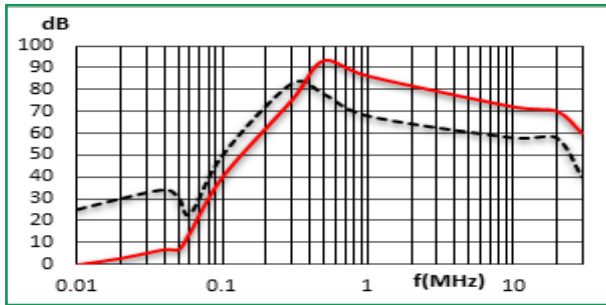
ENHANCED VERSION								
Model Number	Part Number	Current Rating @ 40°C (A)	Leakage current @ 250 VAC/50 Hz (mA)	Power loss @25°C / 50Hz (W)	Termination			Weight Approx. (g)
								
SMF2233N-1-4	E108307-1	1	3.4	2	-4	-	-	100
SMF2233N-1-5	E108307-2	1	3.4	2	-	-5	-	100
SMF2233N-3-4	E108308-1	3	15.71	4	-4	-	-	200
SMF2233N-4-4	E108309-1	4	15.71	6.5	-4	-	-	250
SMF2233N-6-4	E108310-1	6	15.71	7.5	-4	-	-	250
SMF2233N-8-4	E108311-1	8	15.71	8	-4	-	-	350
SMF2233N-10-4	E108312-1	10	5.1	8.5	-4	-	-	500
SMF2233N-10-1	E108312-2	10	5.1	8.5	-	-	-1	500
SMF2233N-12-4	E108313-1	12	5.1	12.5	-4	-	-	500
SMF2233N-12-1	E108313-2	12	5.1	12.5	-	-	-1	500
SMF2233N-16-4	E108314-1	16	5.1	11	-4	-	-	550
SMF2233N-20-4	E108315-1	20	5.1	8.5	-4	-	-	600
SMF2233N-20-1	E108315-2	20	5.1	8.5	-	-	-1	600
SMF2233N-30-1	E108316-1	30	5.1	10.5	-	-	-1	600

Note : Maximum leakage current is according to IEC 60939-3 under normal AC operating conditions. The worst leakage current could double the value if the neutral is interrupted.

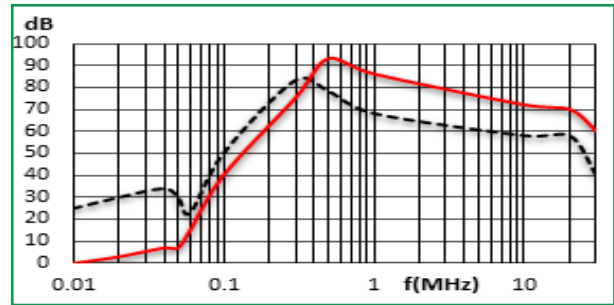
**Insertion Loss :** ..... Common mode \_\_\_\_\_ Differential Mode

Per CISPR 17; C=50  $\Omega$ /50  $\Omega$  D=50  $\Omega$ /50  $\Omega$

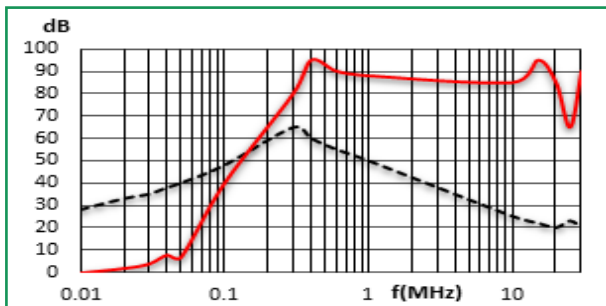
## 1A Standard Version



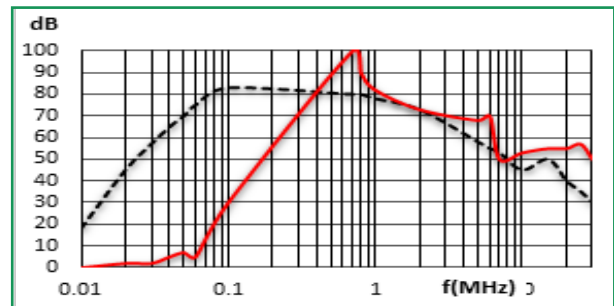
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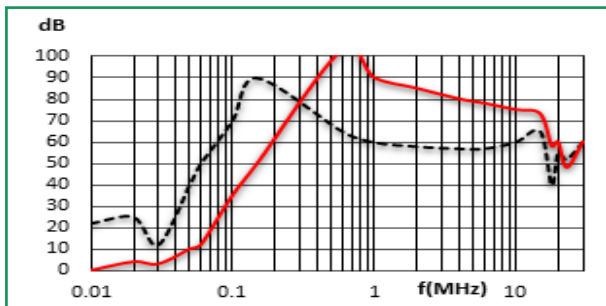
## Medical Version



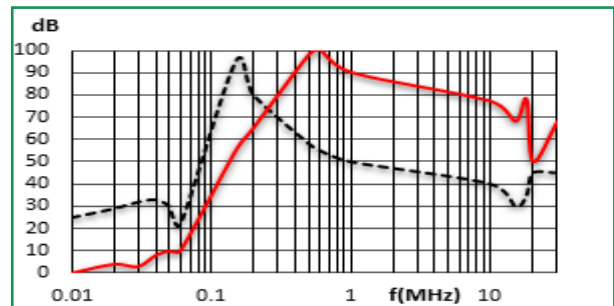
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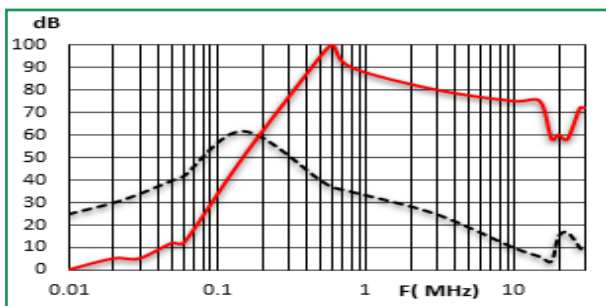
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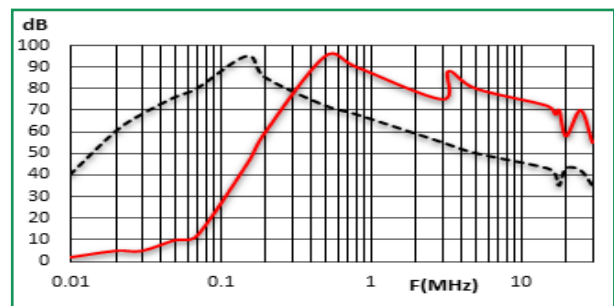
## Safety Version



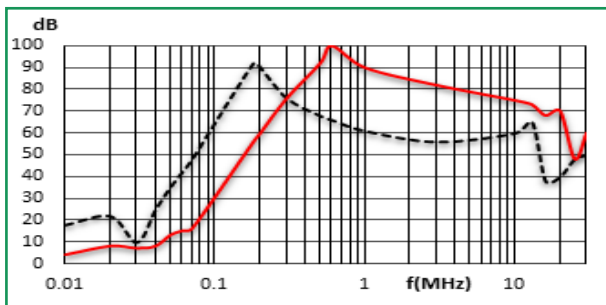
## Medical Version



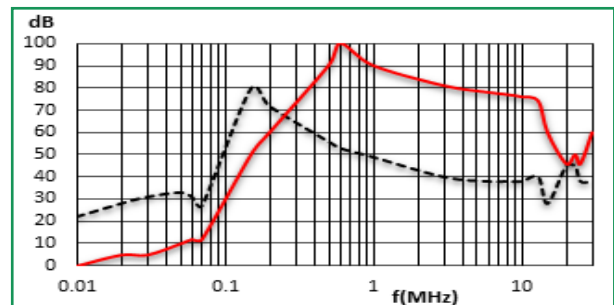
## Enhanced Performance



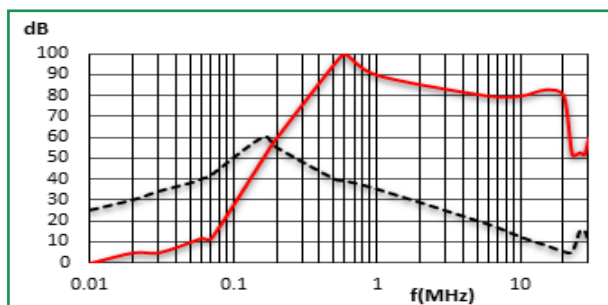
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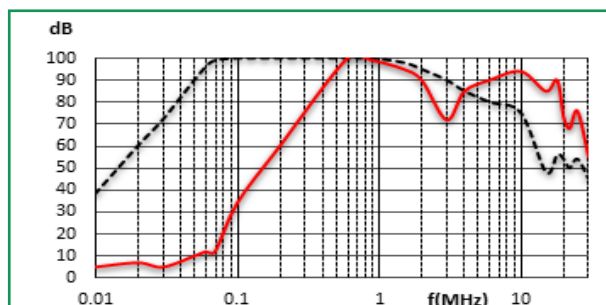
## Safety Version



## Medical Version

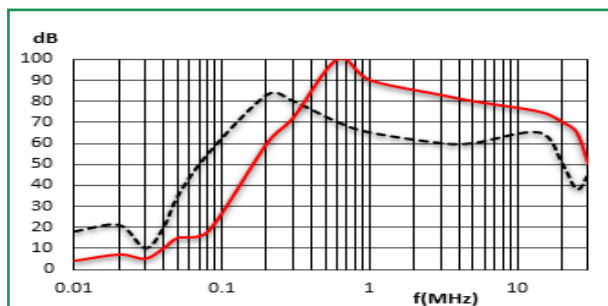


## Enhanced Performance

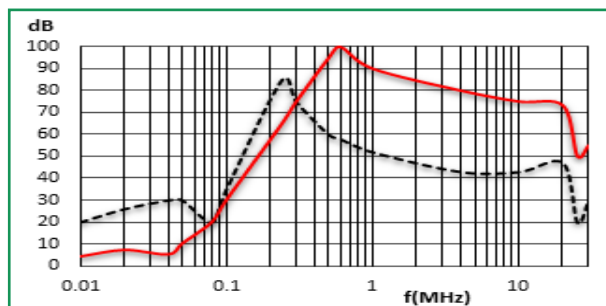


## 6A

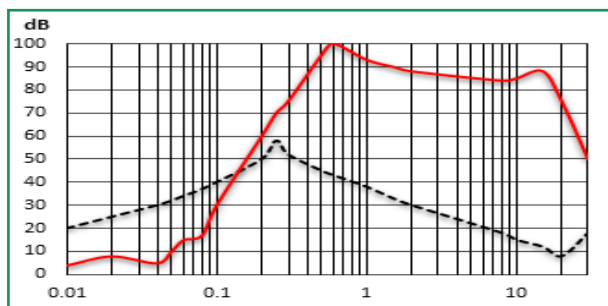
## Standard Version



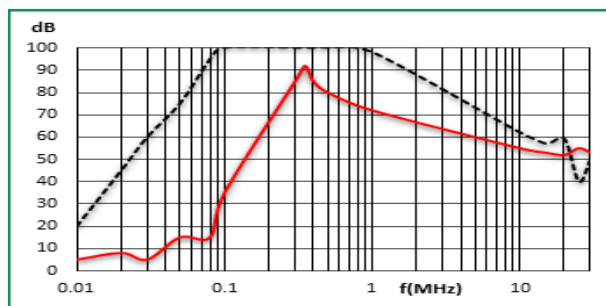
## Safety Version



## Medical Version

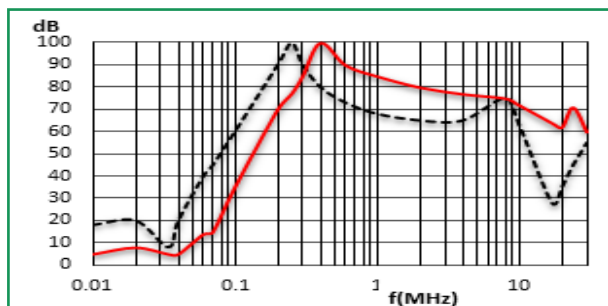


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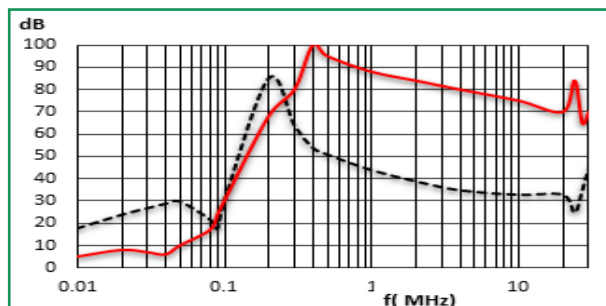


8A

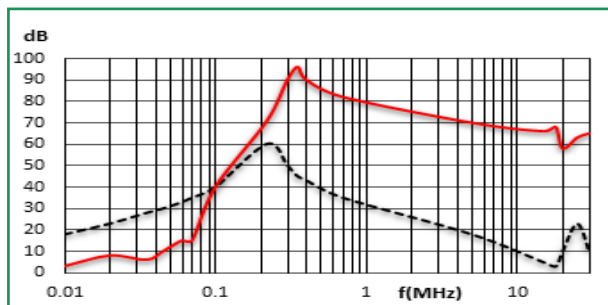
## Standard Version



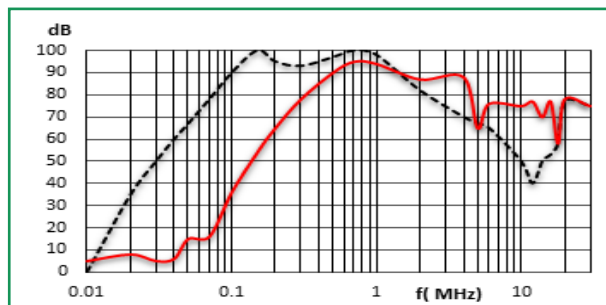
## Safety Version



## Medical Version

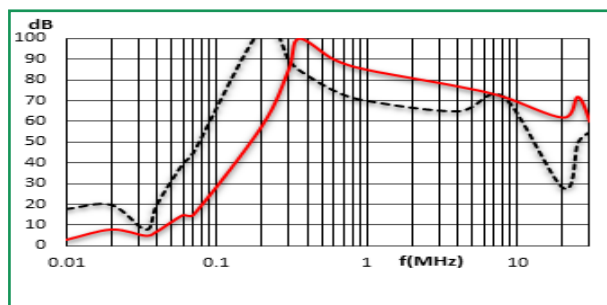


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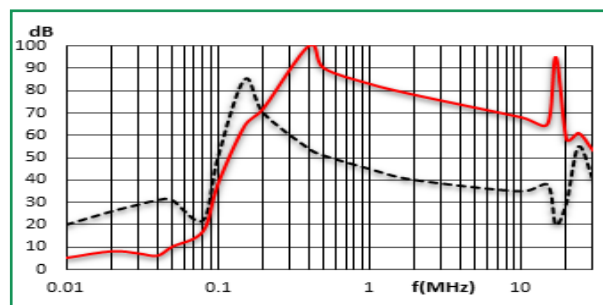


10A

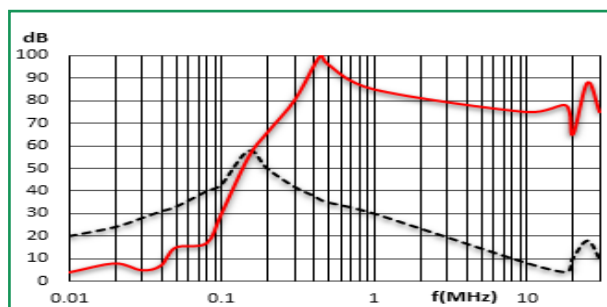
Standard Version



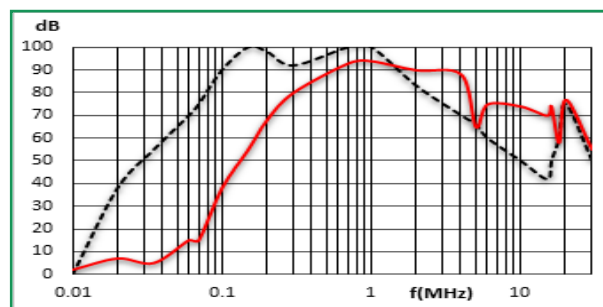
Safety Version



Medical Version

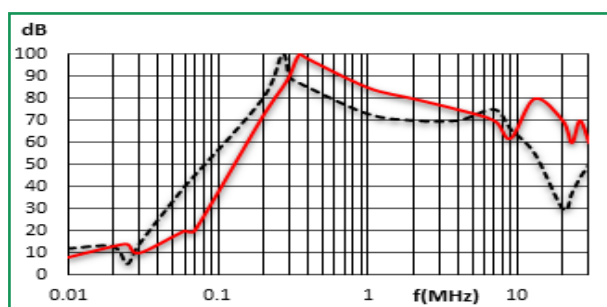


Enhanced Performance

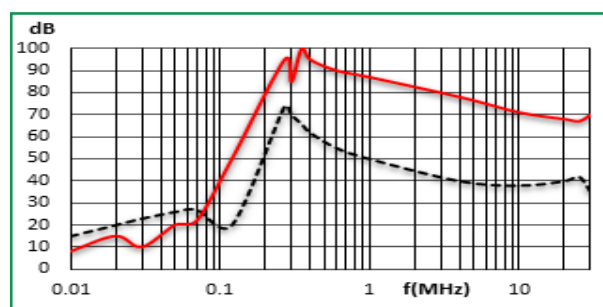


12A

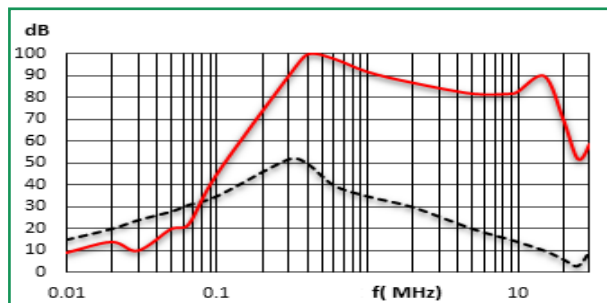
Standard Version



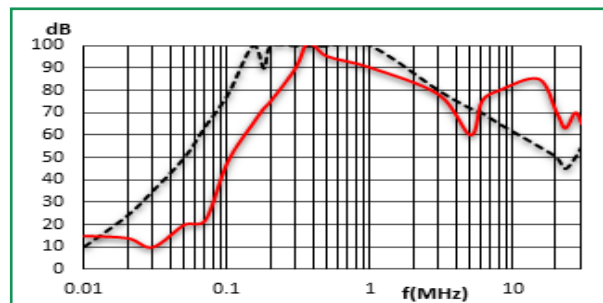
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Medical Version

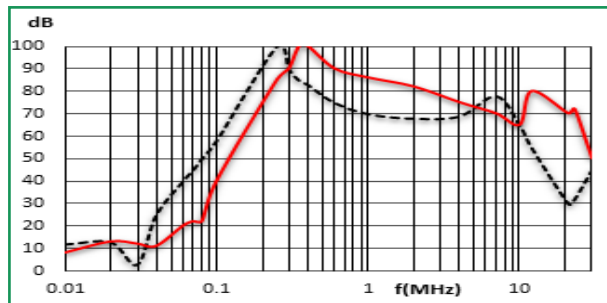


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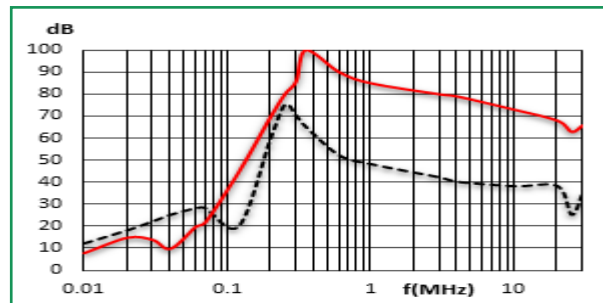


16A

Standard Version

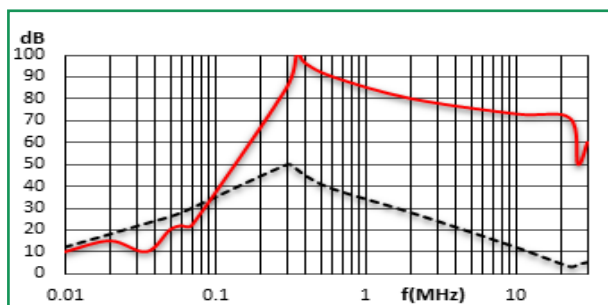


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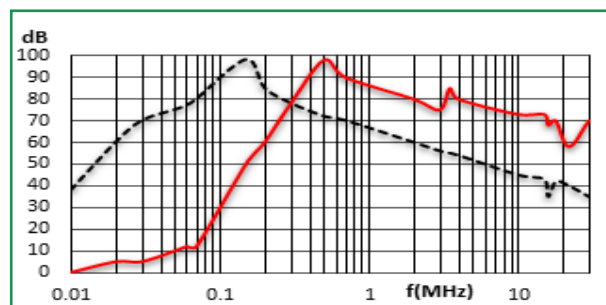




Medical Version

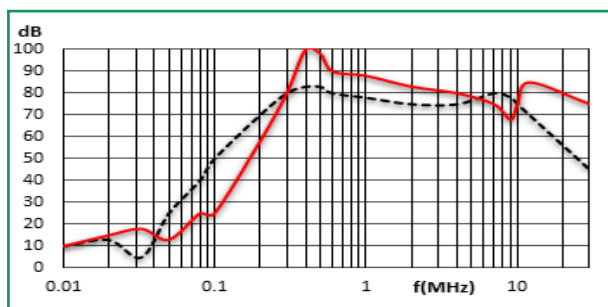


Enhanced Performance

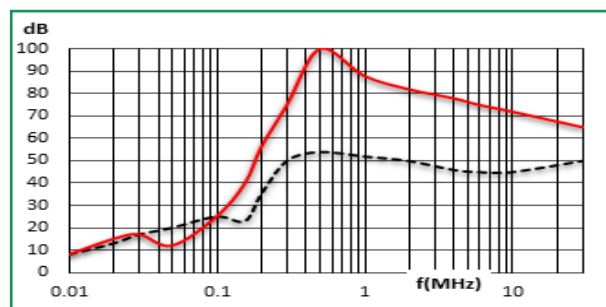


20A

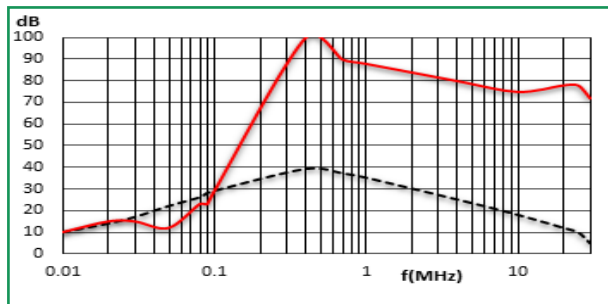
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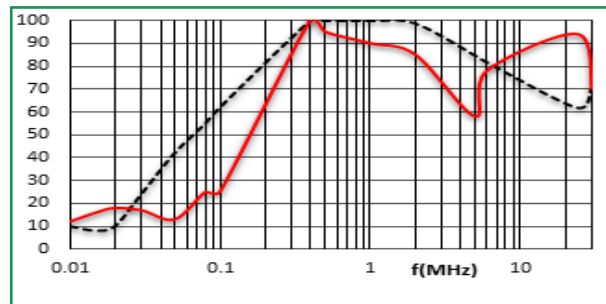
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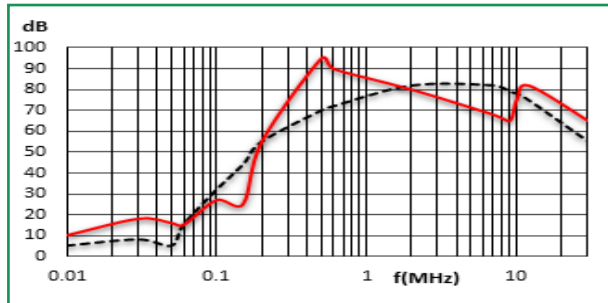


Enhanced Performance

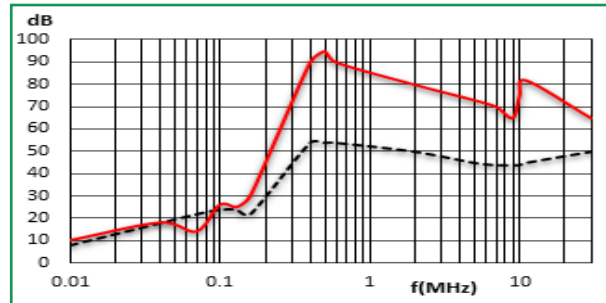


30A

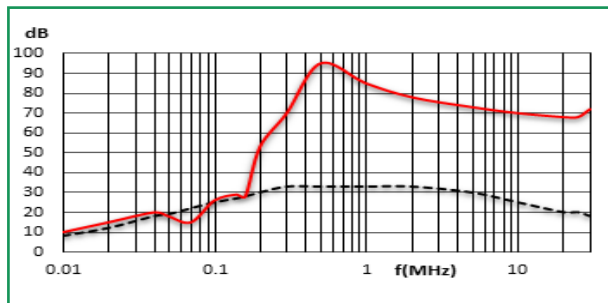
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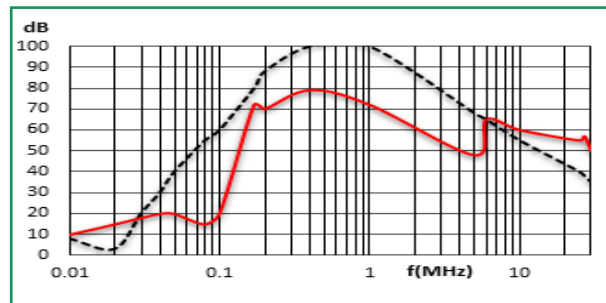
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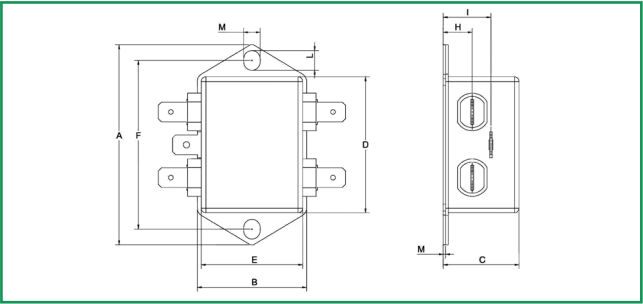
Medical Version



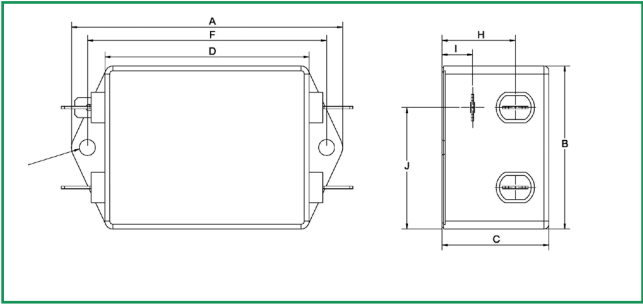
Enhanced Performance



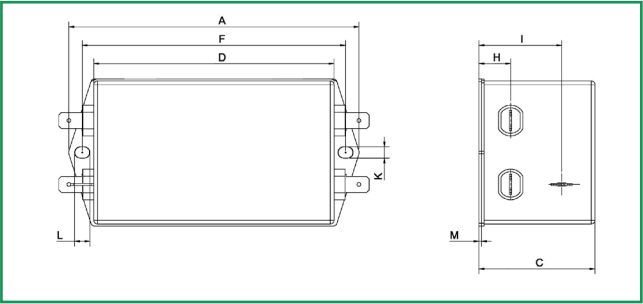
Mechanical Drawing:



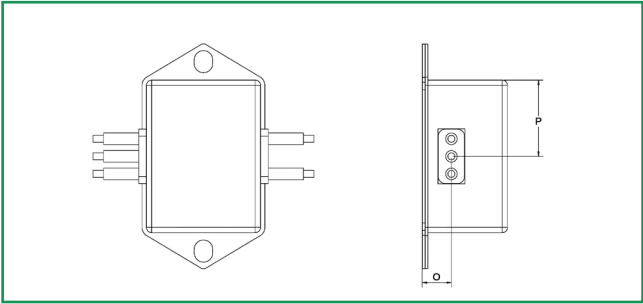
Connection style -04, 1A types



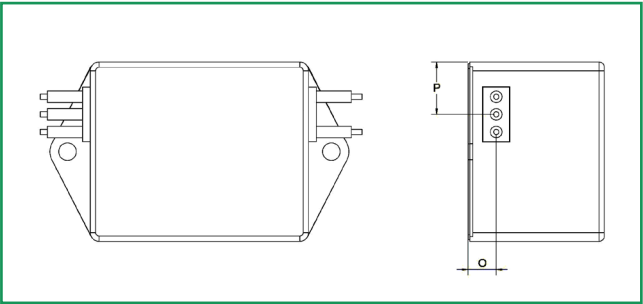
Connection style -04, 3A to 6A types



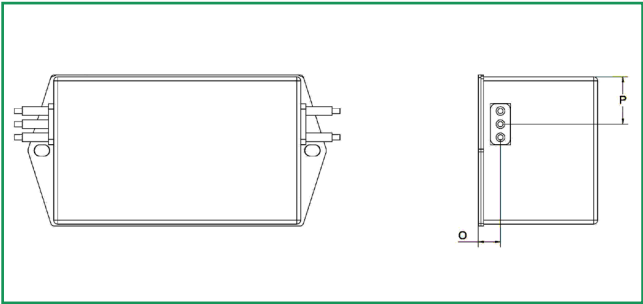
Connection style -04, 8A to 30A types



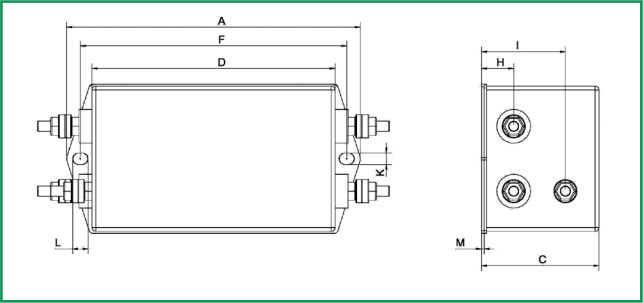
Connection style -05, 1A type  
(same dimensions as style -04)



Connection style -05, 3A to 6A types  
(same dimensions as style -04)



Connection style -05, 8A to 30A types  
(same dimensions as style -04)



Connection style -01, 10A to 30A types



Mechanical dimensions:

	1A	3A	4A	6A	8A	10A	12A	16A	20A	30A
A	71±1	85±1	85±1	85±1	113.5±1	113.5±1	113.5±1	113.5±1	113.5±1	113.5±1
B	46.6±1	51±1	51±1	51±1	57.5±1	57.5±1	57.5±1	57.5±1	57.5±1	57.5±1
C	22.3±1	32.5±1	32.5±1	32.5±1	45.4±1	45.4±1	45.4±1	45.4±1	45.4±1	45.4±1
D	50.5±1	64±1	64±1	64±1	94±1	94±1	94±1	94±1	94±1	94±1
E	44.5	-	-	-	56	56	56	56	56	56
F	61	75	75	75	103	103	103	103	103	103
H	10.8	21.5	21.5	21.5	12.4	12.4	12.4	12.4	12.4	12.4
I	16.8	9	9	9	32.4	32.4	32.4	32.4	32.4	32.4
K	5.3	5	5	5	4.4	4.4	4.4	4.4	4.4	4.4
L	6.3	-	-	-	6	6	6	6	6	6
M	0.8	0.8	0.8	0.8	1	1	1	1	1	1
Connection Style-04	-	-	-	-	-	-	-	-	-	-
N	6.3x0.8	6.3X0.8	6.3X0.8	6.3X0.8	6.3X0.8	6.3X0.8	6.3X0.8	6.3X0.8	-	-
Connection Style-05	-	-	-	-	-	-	-	-	-	-
O	8.3	8.3	8.3	8.3	8.4	8.4	8.4	8.4	-	-
P	14	14.9	14.9	14.9	18	18	18	18	-	-
AWG Type Wire	AWG 20	AWG 20	AWG 20	AWG 18	AWG 18	AWG 18	AWG 16	AWG 16	-	-
Wire Length	140	140	140	140	140	140	140	140	-	-
Connection Style-01	-	-	-	-	-	-	-	-	-	-
N	-	-	-	-	-	M4	M4	M4	M4	M4
Recommended torque (Nm)	-	-	-	-	-	1.2-1.3	1.2-1.3	1.2-1.3	1.2-1.3	1.2-1.3
Recommended torque (Nm)	-	-	-	-	-	1.5-1.7	1.5-1.7	1.5-1.7	1.5-1.7	1.5-1.7

All dimensions in mm;Tolerance according: ISO 2768-c