



MPE
Quality, Reliability, Performance

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Product Overview

High Performance Equipment Filters



High Performance Equipment Filters
10/12

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High Performance Equipment Filters

MPE's range of equipment filters has been designed for use within general purpose applications where high performance over a wide range of frequencies is required. Separate ranges are offered for AC & DC applications, switched mode power supplies, and higher current requirements.

High performance is achieved through the use of MPE's proprietary feedthrough capacitors and bulkhead mounting design, which ensure the highest possible filtering performance is achieved up to 1GHz and beyond. The feedthrough capacitors also provide greater immunity of the equipment to high frequency transients than is usually provided by general purpose filters.

Most commercial equipment filters do not use feedthrough capacitors and are not designed for bulkhead mounting, which limits their useful performance above about 1MHz.

Above this frequency, the performance drops off rapidly as the capacitors go into self resonance. This is a severe disadvantage as most EMC specifications require equipment to be compliant to 1GHz & beyond, and filters not using feedthrough capacitors cannot offer sufficient high frequency performance to achieve this.

Switched Mode Power Supply Filters

Based on a wealth of experience gained from testing and supplying filter solutions for numerous types of switched mode power supplies over a number of years, MPE has developed a range of mains input equipment filters specifically for switched mode power supplies.

These filters feature all of the benefits of the high performance filters previously described but also incorporate the circuitry required to provide effective suppression under the special impedance conditions presented by the switched mode power supply for both modes of interference.

MPE's standard range of filters has a mains input rating of 240V 50/60Hz with current ratings of 1A, 3A, 6A, 10A, and 15A.

Insertion loss performance is quoted both in the usual 50 ohm system and also in a 0.1/100 ohm system so as to provide a more realistic indication of the likely performance which will be achieved with the filter connected in circuit.

The 0.1/100 ohm test is derived from BS 6299/CISPR 17 as a worst case test method for power line filters, but is equally appropriate for SMPS filters.

MPE utilise high quality feedthrough capacitors to ensure the highest possible filtering performance is achieved up to frequencies of 1GHz and beyond.

MPE's filters also provide a greatly improved immunity of the switched mode power supply against mains borne interference, and have ultra low leakage current for where there may be capacitance limitations for use on portable equipment. Further to this, the bulkhead mounting design of the MPE filters facilitates interfacing with shielding of the switched mode power supply to help prevent radiated interference.

These filters are also suitable for other applications which may have a low source of load impedance. To offer the best performance, the filters should be connected so that their inductive end faces the lower impedance. (N.B. The inductive end of the filter is marked "To SMPS")

High Current Equipment Filters

MPE's range of high current equipment filters is suitable for a wide variety of EMC applications where high performance filtering of single phase or three phase AC mains lines is required. The filters incorporate feedthrough capacitors to give excellent high frequency performance. They are designed for either bulkhead or chassis mounting for optimum flexibility although maximum performance will only be achieved when bulkhead mounted. Self-healing metallised plastic film capacitors are used for maximum reliability and safety. This range of filters is intended for use in a permanently earthed application.



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Overview

The graphs below show the measured performance of two typical DC filter circuits. The circuits are identical apart from the fact that Figure 1 uses feedthrough capacitors, so is representative of the MPE high performance filters, Figure 2 uses two-terminal capacitors of the same value, so is representative of most other general purpose commercial filters. The graphs clearly show the dramatic benefit in performance offered by the MPE filters above 1MHz.

Figure 1 -
Performance of MPE filters

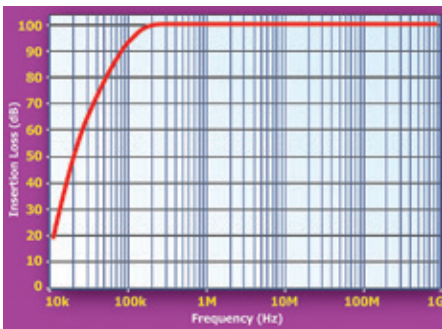
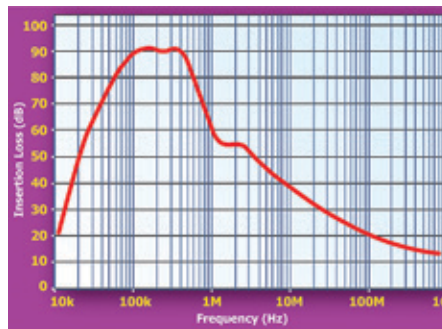


Figure 2 -
Performance of similar commercial filters



Product Range Overview: see website for full range

Description	Part Number	Current Rating IR (A) @50°C	Maximum Heat Dissipation (W)	Length	Major Dimensions (mm)		Weight (g)
					Width	Depth	
DC Filter	DS26780	1	0.15	51	51	32	170
DC Filter	DS26782	6	3.5	64	56	38	260
DC Filter	DS26784	15	4.5	88	60	38	440
AC Filter	DS26770	1	0.15	51	51	32	170
AC Filter	DS26772	6	3.5	64	56	38	260
AC Filter	DS26774	15	4.5	88	60	38	440
Switched Mode PSU Filter	DS26760	1	0.3	64	56	38	275
Switched Mode PSU Filter	DS26762	6	3.5	88	60	38	455
Switched Mode PSU Filter	DS26764	15	6.5	112	76	38	750
High Current Single Phase	DS29000	10	2	105	85	50	0.75 (kg)
High Current Single Phase	DS29002	32	5	130	85	50	1 (kg)
High Current Single Phase	DS29004	100	24	220	110	85	2.5 (kg)
High Current Three Phase	DS29016	100	60	300	180	90	7 (kg)

* Current derating between 50°C and 85°C $I @ 85 = IR \sqrt{(85 - \theta)^{35}}$

All filters are RoHS compliant

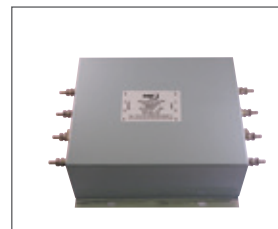
The above represents only a very small selection of the MPE product range. Many other variations are available and details of the full range can be found within the product section of the MPE website www.mpe.co.uk.



DC Filter



SMPS Filter



High Current 3 Phase Filter

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Benefits

- Feedthrough capacitors utilised throughout
- Unrivalled high frequency performance
- Greatly improved equipment immunity
- Seal-healing capacitor technology utilised throughout
- The highest levels of reliability
- Tested to 2250V proof voltages for safety (AC versions)
- Symmetric and asymmetric filtering modes