

X2 RFI Capacitors

Corona Effect

Vishay F1772

Features

- Used to satisfy EMC requirements
- Protect the device connected to the mains from surges on the mains side.
- Suppress grid-related interference to the device from the mains power lines.

X2 capacitors are intended for use as **interference-suppression capacitors parallel to the mains**.

Capacitors parallel with the mains



In some cases, these components are employed as voltage dividers or cold series resistors in the circuit.

Capacitors in series with the mains



Time and time again, after a relatively short life span of 1 to 2 years, increased capacitance decrease is recorded in modern X2 capacitors caused by the so-called corona effect.

The capacitance decrease is caused by ionization, which means that the air enclosed in the winding element becomes ionized and consequently more conductive. This allows partial discharges on the metallized surface of the film, which in turn results in local vaporization of the metallization. If this process is repeated significantly, the result is a measurable loss of capacitance.

The use of capacitors parallel to the mains results in a reduction in the component's ability to suppress interference. When they are used in series, the result is usually complete failure of the application.

This effect is influenced by factors including:

- the climatic ambient conditions such as humidity and temperature
- the status of the power supply (spikes)
- the voltage
- the construction of the capacitor
- the effective operating time



The F1772 range from Vishay is perfectly suited to preventing the corona effect.

The capacitor has an internal series connection, which divides the voltage. Consequently, only around 110 VAC arise per capacitor section.*

This creates sufficient stability and ionization is no longer possible. It is thus ideally suited for use as a voltage divider or an interference-suppression capacitor parallel to the mains in applications which place high demands on capacitance stability over time, for example.

Applications:

- Control panels for white goods and home appliances, e.g., timer applications
- Applications where the capacitor is employed in voltage dividers or power supplies.
 - Heating and furnace control systems
 - Building services engineering
- Energy meters
- Medical technology
- Industrial applications in which 24-hour operation can be assumed and in which components are still expected to function for many years.

*Note:

Due to ever-increasing cost pressure and the required small dimensions, standard X2 capacitors do not feature this internal series connection. However, they satisfy all the required and specified requirements on an X2 capacitor within the specified limits, including in terms of C stability. Nevertheless, these types do not protect against the corona effect.

Checklist

If the following terms occur in combination with X2 RFI capacitors, it is recommended to use the Vishay F1772 with internal series connection:

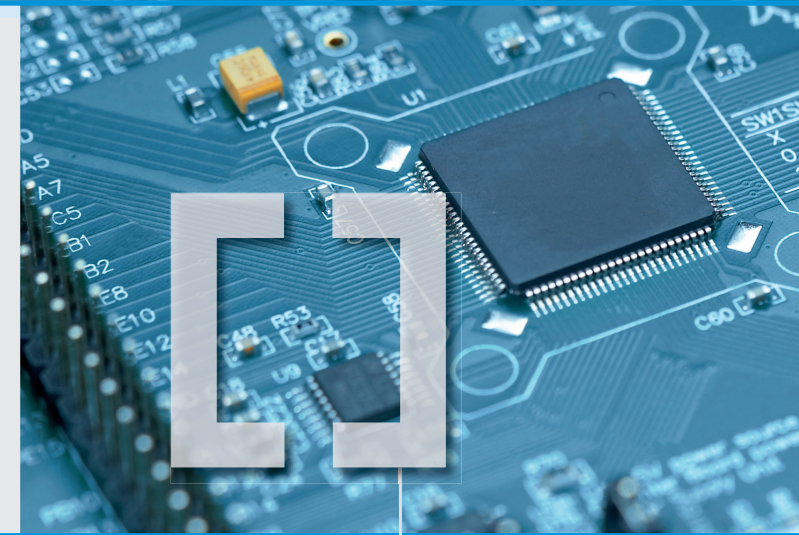
- Capacitance loss/decrease
- Corona effect
- In series with the mains
- Voltage divider
- Cold series resistors
- 24-hour operation

Sample kits available

Further information available online at:

www.rutronik.com

www.vishay.com



Ordering Code:

F1772 – 4 47 – 2000

Series

Multiplier (nF)	
0.1	2
1	3
10	4
100	5

Packaging (loose)

Code	Code details	Tolerance
2004	4 – 1 mm	10%
2000	6 – 1 mm	10%
2015	15 – 1 mm	10%
2030	30 + 5 mm	10%

Also available with 20% tolerance

Capacitance (numerically)

Packaging (Taped on reel)

Code	Code details	Tolerance
2290	H: 16.5 mm	20%
2291	H: 18.5 mm	20%
2900	H: 16.5 mm	10%
2901	H: 18.5 mm	10%

Please contact us:

Denis Bittigkoffer

Tel. +49 7231 801 – 418 | Fax +49 7231 801 – 444

E-Mail: denis_bittigkoffer@rutronik.com

Petra Ackermann

Tel. +49 7231 801 – 439 | Fax +49 7231 801 – 466

E-Mail: petra_ackermann@rutronik.com

Stefan Sutalo

Tel. +49 7231 801 – 408 | Fax +49 7231 801 – 416

E-Mail: stefan_sutalo@rutronik.com

Jürgen Geier

Tel. +49 7231 801 – 410 | Fax +49 7231 801 – 413

E-Mail: juergen_geier@rutronik.com

Rutronik Elektronische Bauelemente GmbH
Industriestr. 2 | 75228 Ispringen | Germany

Committed to excellence

F1772 Series

X2 RFI capacitors with internal series construction based on polyester dielectric

Rated voltage of 310 VAC

Max. application temperature of 110°C



Consult | Components | Logistics | Support

www.rutronik.com