

SPOTLIGHT on RFI Capacitors

Models for every need and budget

What is the IEC950 push test?



During safety agency testing each component of an SMPS will be pushed with a calibrated probe. Many conformally coated devices such as ceramic Y capacitors may be bent during this test.

The power supply components and their insulation capability are evaluated after the push test. If a ceramic Y capacitor without an approved insulation touches the chassis or another component, the power supply may not obtain the agency approval.

Power supply designers typically employ one of two remedies.

Insulated sleeving

An insulating sleeve of approved material is placed over the ceramic Y capacitor, at higher total cost.



Keep-out zones

An open area is left around the ceramic Y capacitors, creating a footprint penalty.

1

Three kinds of Y caps

Evox Rifa now offers Y capacitors in all the major dielectrics. Metallized paper (PME series) offers the best self healing and resistance to flammability. It does not bend over during the push test (see sidebar).



Metallized film (PHE842) is a more economical capacitor, yet is self healing. Meets agency requirements and does not bend over.

Ceramic disk (ERK, ERO and ERP) for applications requiring the lowest cost. Best for designs where self healing is not required and the mechanical layout is suitable for the push test. Safety agency approved.



2

PHE840 X2 cap now smaller

Now series PHE840 is offered in substantially smaller sizes – in many cases with smaller leadspacings compared to other capacitors. For high-power designs series PHE840 is available up to 10 μ F. Plus, the low-loss construction is ideal for high frequency drives and avionics.



3

X caps for industrial voltages

Evox Rifa offers several different series for industrial voltages up to 760VAC. Choose from metallized paper or metallized film depending on the particular requirements.

Both are agency approved and self healing. See chart on the reverse side of this paper.



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SMD Y2 capacitor

Evox Rifa offers series SMP253 for surface mount applications. Made of metallized paper, SMP253 provides excellent self healing and resistance to solder heat.



RFI Capacitor Selector Chart

Common X Capacitors

Series	Operating Voltage	Class	Max. Temp °C	C-value range		Dielectric	Self healing?	Comments
				Min.	Max.			
PME271M	275 VAC	X2	110	0.001uF	0.6uF	Impreg. paper	Yes	Excellent flame resistance.
PME285	275 VAC	X2	110	0.001uF	0.1uF	Impreg. paper	Yes	Excellent flame resistance.
PHE840	275/280 VAC	X2	105	0.01uF	10uF	Polypropylene	Yes	Small size, cost effective, meets agency flammability requirements.
PME271E	300 VAC	X1	110	0.01uF	0.22uF	Impreg. paper	Yes	Excellent flame resistance.
PHE840E	300 VAC	X2	105	0.01uF	10uF	Polypropylene	Yes	Small size, cost effective, meets agency flammability requirements.
PHE841	330 VAC	X1	100	0.01uF	2.2uF	Polypropylene	Yes	Small size, cost effective, meets agency flammability requirements.
PME278**	440 VAC	X1	110	0.001uF	0.15uF	Impreg. paper	Yes	Excellent flame resistance.
PHE844	440/480 VAC	X1	105	0.1uF	2.2uF	Polypropylene	Yes	Small size, cost effective, meets agency flammability requirements.
PME264	660 VAC	X2	85	0.001uF	0.1uF	Impreg. paper	Yes	Excellent flame resistance.
PHE845	760 VAC	X1	105	0.01uF	1.0uF	Polypropylene	Yes	Small size, cost effective, meets agency flammability requirements.

** European approvals only. Suitable for N. American industrial applications at 440VAC because approvals are not required on the capacitor itself. Agency testing on the equipment covers the capacitors too.

Common Y Capacitors

Series	Operating Voltage	Class	Max. Temp °C	C-value range		Dielectric	Self healing?	Comments
				Min. uF	Max. uF			
PME271Y	250 VAC	Y2	100	0.001uF	0.1uF	Impreg. paper	Yes	Excellent flame resistance and high self healing voltage.
PME289	250 VAC	Y2	100	0.001uF	0.022uF	Impreg. paper	Yes	Excellent flame resistance and high self healing voltage.
PHE842	250 VAC	Y2	100	0.001uF	0.0047uF	Polyester	Yes	Cost effective, meets agency flammability requirements.
ERO610	250 VAC	Y2	125	0.001uF	0.012uF	Ceramic disk	No	Cost effective, meets agency flammability requirements. Will bend during IEC push test. *
PME271Y A-E	300 VAC	Y2	115	0.001uF	0.15uF	Impreg. paper	Yes	Excellent flame resistance and high self healing voltage.
PME291	300 VAC	Y2	115	0.001uF	0.022uF	Impreg. paper	Yes	Excellent flame resistance and high self healing voltage.
ERK610	300 VAC	Y2	125	33pF	4700pF	Ceramic disk	No	Cost effective, meets agency flammability requirements. Will bend during IEC push test. *
PME294	440 VAC	Y1	115	470pF	4700pF	Impreg. paper	Yes	Excellent flame resistance and high self healing voltage.
ERP610	500 VAC	Y1	125	33pF	4700pF	Ceramic disk	No	Cost effective, meets agency flammability requirements. Will bend during IEC push test. *

* Ceramic Y capacitors will bend during the **IEC950 push test**. See other side. Also see the brochure **Spotlight on Power Supplies**, available from Evox Rifa or at www.evoxrifa.com.