

# SPOTLIGHT on Power Supplies

## Capacitor Application and Selection

### Snap-in Electrolytics

105°C: PEH532, PEH534, PEH536  
85°C: PEH506



### Timing & gen. purpose

Leaded film: MMK, PFR5  
SMD film: MMC, GMC, GMW, SMC, SMW, ERS  
SMD ceramic: ERC



### X2 capacitors

PHE840 up to 10 $\mu$ F  
High-rel: PME271M  
SMD: SMP255 Q1'04  
X1 caps and voltages to 760VAC available.



### Y2 capacitors

Paper: PME271Y, PME289  
Film: PHE850  
Ceramic: ERO610  
SMD: SMP253  
Y1 caps and voltages to 500VAC available.



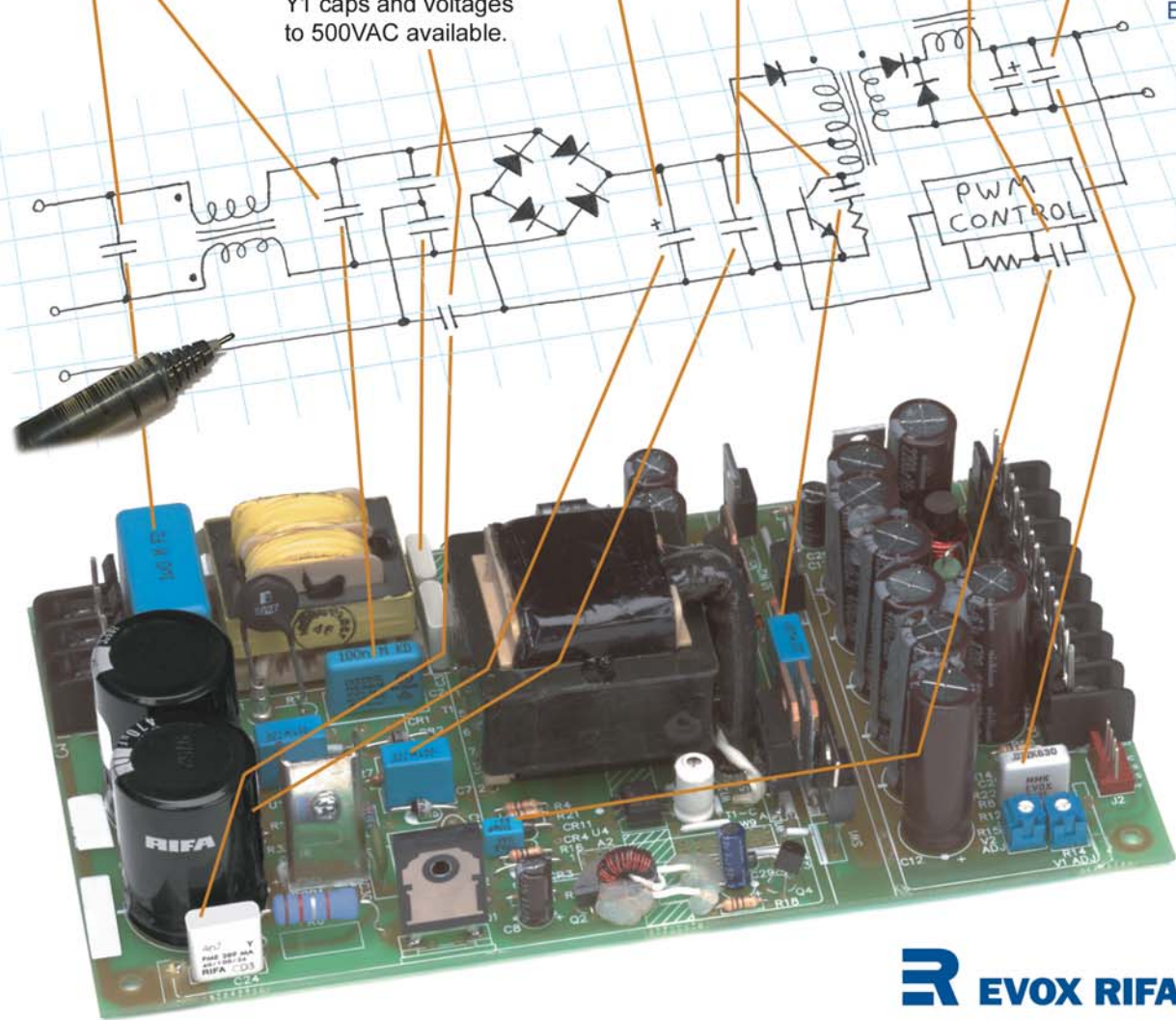
### High frequency coupling/snubbing

Leaded film: PHE426, PHE450  
SMD film: SMC, GPC, SMW, ERS



### Output filter high frequency

Leaded film: MDK, MMK  
SMD film: MDC, MMC, GMC, GMW, ERS



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## Four ways to reduce your footprint

### 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 Keepout zones

If the power supply has open areas around the Y capacitors they may be eliminated with Evox Rifa film or paper types. Encapsulated in boxes, these Y capacitors do not bend in the IEC950 push test.



Photo showing keepout zone which may be eliminated with Evox Rifa Y capacitors.



The insulating box of most Evox Rifa Y capacitors has been tested by UL. In many applications an insulating sleeve is not required even when the capacitor is positioned very near other devices.

### 2 Use reduced-size X2 caps

New 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 $\mu$ F. Plus, the low loss design is ideal for high frequency drives and avionics.



### 3 Choose the correct AC caps



Evox Rifa offers several different series for high frequency coupling and snubbing. Choose the correct model for minimum size in the application. Ask an Evox Rifa sales engineer for assistance or download the free PCCad software from [www.evox-rifa.com](http://www.evox-rifa.com).

### 4 Go surface mount

Evox Rifa offers a broad range of SMD caps for SMPS using wound film, stacked film and MLCC – plus an SMD Y2 cap now and an X2 cap coming in Q1 '04!

