Surface Mount Capacitors

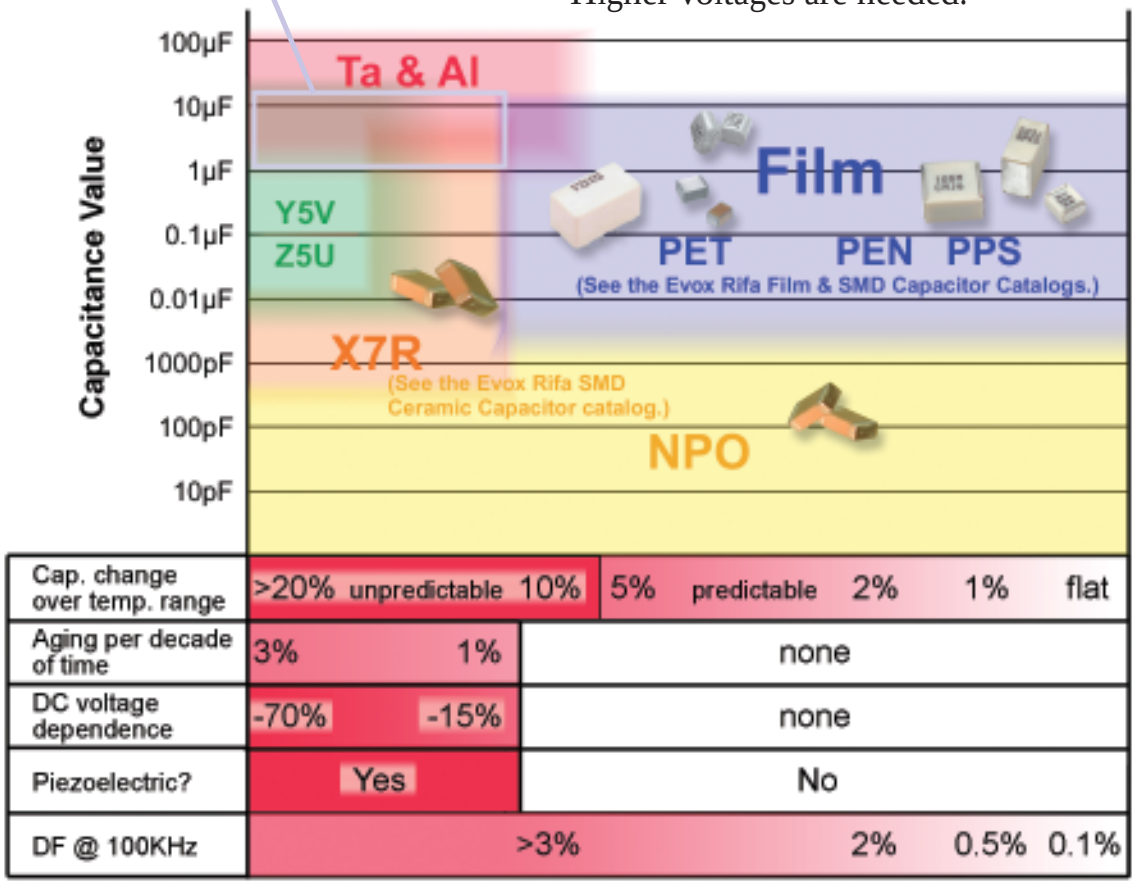
Dielectrics and technologies

Which dielectric is right for your application?

Use the chart below as a handy guide by first locating your tolerance for instability on the horizontal axis. Then move upward vertically to the capacitance value range of interest.

Film capacitors may also be used in place of ceramics or tantalums if:

- The risk of short-circuit or fire must be minimized.
- There are problems with thermal stress cracking using larger ceramics.
- Higher voltages are needed.



EVOX RIFA Evox Rifa, Inc. 300 Tri-State International Suite 375 Lincolnshire, IL 60069 Tel: 1 847 948 9511
Fax: 1 847 948 9320 Email: service@evox-rifa.com Web: www.evox-rifa.com/n_america

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Dielectrics and technologies

Avoid these common pitfalls

when specifying SMD capacitors

Reduce your footprint

Evox Rifa boxed SMD film capacitors can be packaged on tape for either

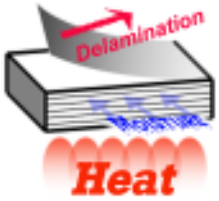
horizontal or vertical mounting. When mounted vertically the required footprint is reduced considerably. For example a capacitor of size 4036 becomes 4022. That's a footprint reduction of nearly 40%.

Need an SMD X or Y cap?

Check out the Y2 capacitor SMP253 with complete safety agency approvals. Made of metallized impregnated paper, SMP253 exhibits excellent self-healing properties to minimize the risk of short circuit. An SMD X2 will be released in Q1 '03.

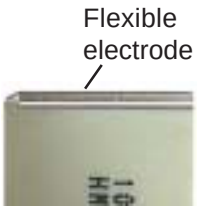
Choose the type carefully

In lower C-values (typically <1000pF) NPO ceramics offer the smallest footprint. In larger C-values an NPO ceramic may neither be as cost-effective nor as small as a film capacitor. If a film cap is chosen one must select between wound and stacked construction. Larger stacked film capacitors may delaminate; that is, the layers may peel off with heat and moisture. They are also more sensitive to the environment. Where these problems exist use a wound film capacitor. Otherwise a stacked type offers an economical and size efficient option.



Thermal expansion stress

In the larger sizes ceramic capacitors (or their solder joints) may crack due to lower coefficients of thermal expansion compared to the PC board. Evox Rifa boxed SMD film capacitors have flexible electrodes to minimize thermal expansion stress.



Performance issues

Compare the electrical specifications of different SMD capacitors carefully. For example some capacitors are specified with lower values of insulation resistance. Others specify less margin between the rated voltage and the breakdown voltage. In many applications the lower specs are not a problem, but it pays to be sure.

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