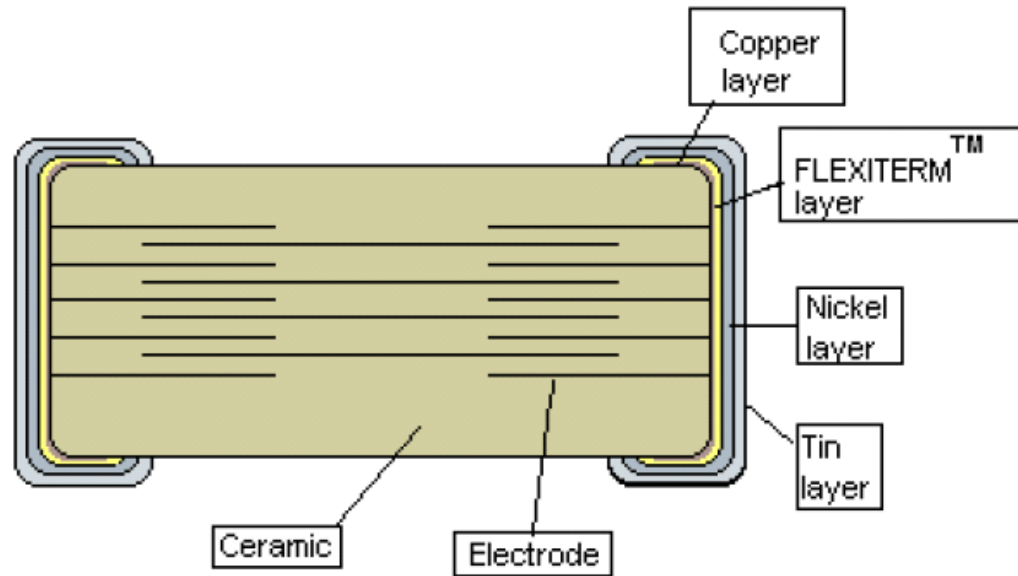


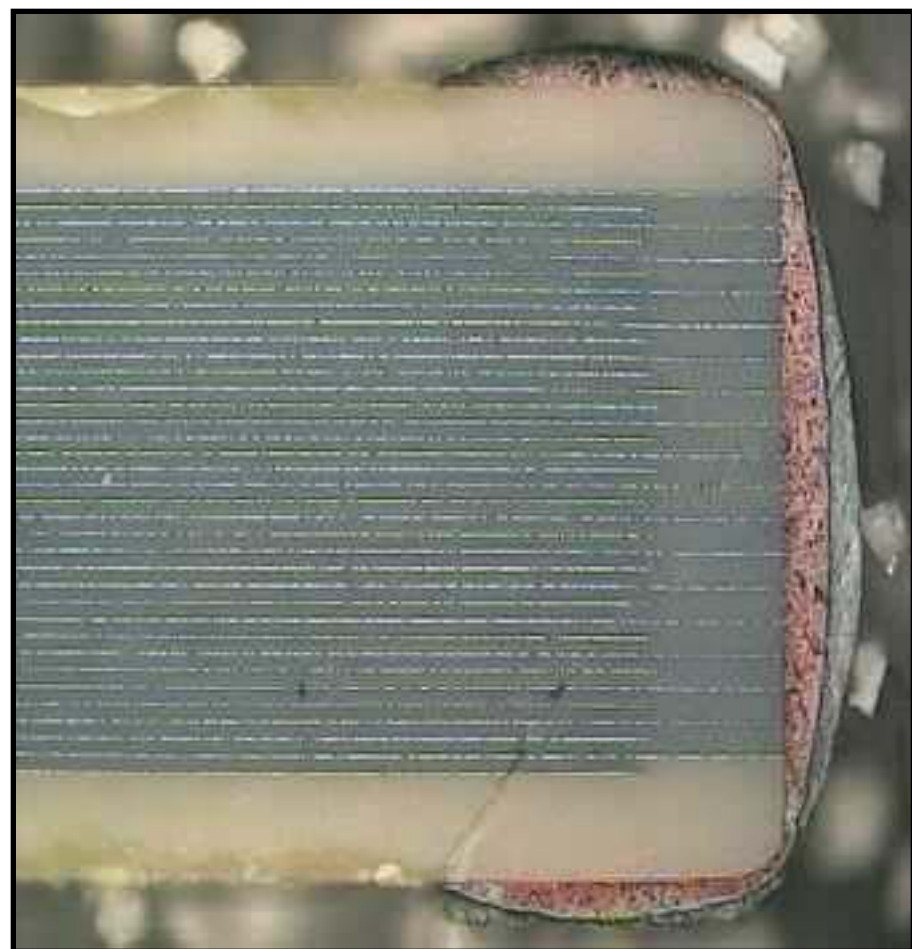


FLEXITERM® and FLEXISAFE™ are products that work by preventing the failure from occurring

AVX FlexiSafe Capacitor



Cascade electrode design



Standard capacitor post flexure
Cracked capacitor - Failure



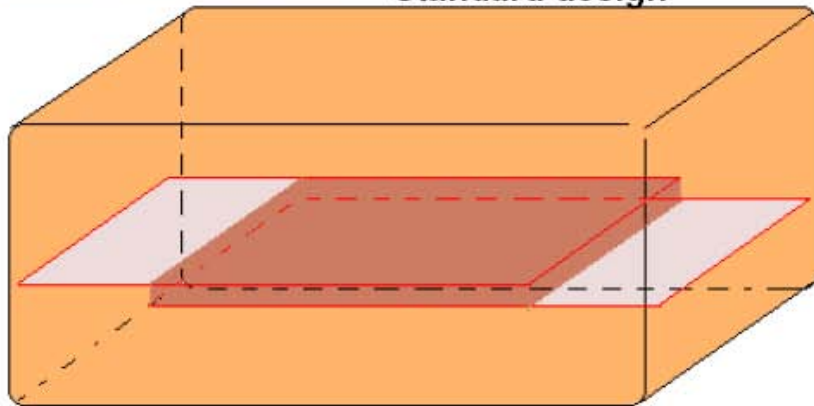
FlexiSafe capacitor post flexure
Conductive epoxy stress relief

FLEXISAFE™

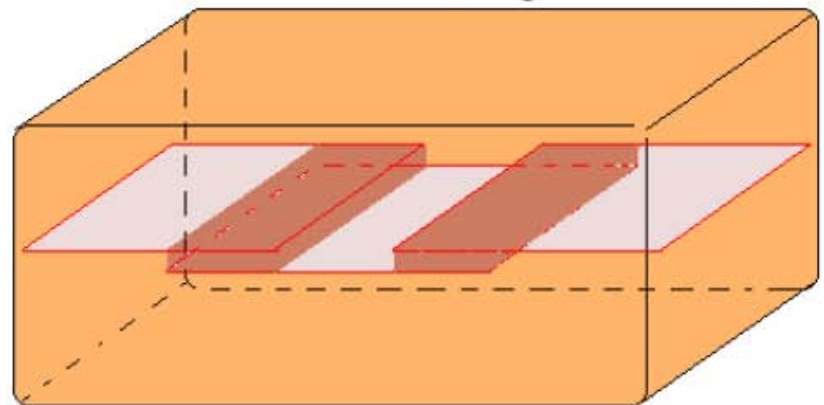
The Technology.

- The cascade design for the FLEXISAFE range of components results in an approximate reduction of the capacitance capability of the MLCC of a factor of 4.
- Half of the capacitance is lost because the electrode plate area is reduced.

Standard design

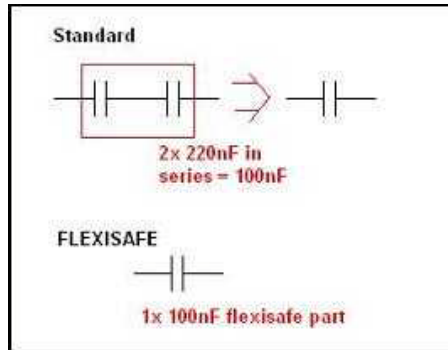


Cascade design



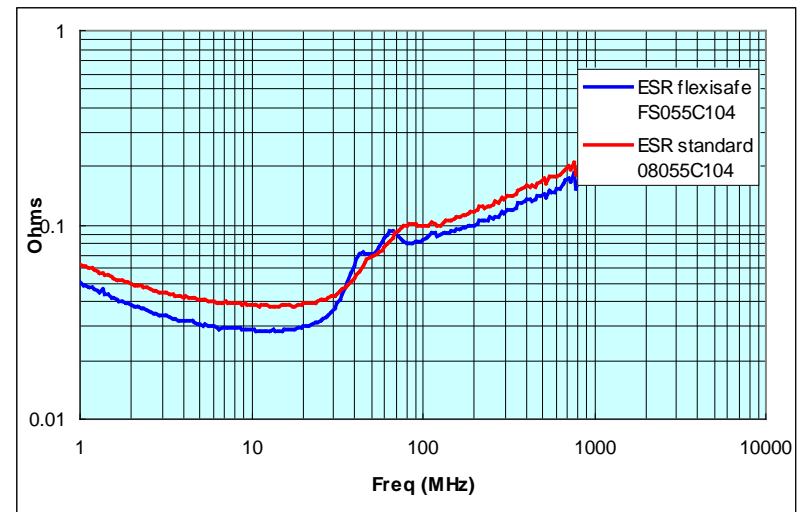
- Because 2 capacitors are now in parallel, there is also a resultant further reduction in the capacitance by a factor of 2.

Additional FlexiSafe Benefits:



2x 220nF in series	Flexisafe 100nF
ESL	ESL
1.579nH	0.855nH
1.450nH	0.783nH
1.405nH	0.764nH
1.408nH	0.858nH

- Lower ESR than 1 standard component.





FlexiSafe can eliminate failures caused by:

Thermal stress

- Thermal stress damage from soldering
- Severe thermal gradient or soldering iron contact

Mechanical damage

- Experience shows >95% of the components returned for analysis

Electrical damage

- Electrical damage from irregular circuit occurrence
- Electrical damage from customer MM or CDM ESD strike



FlexiSafe can eliminate failures caused mechanical issues:

- MLCCs located close to the edge of PCBs
- ICT pin induced board flexure
- Board flexure during PCB assembly into fixtures / cases etc.
- Insertion / removal of PCBs from connectors etc.
- PCB thermal expansion / contraction causing mechanical damage to the MLCC.



Summary: FlexiSafe Capacitors

- Suppliers must consider that there is no 100% guaranteed safe solution for components in direct battery applications.
- However, with the development of FLEXITERM® and FLEXISAFE™ technologies, a supplier would be able to provide the customer with an improvement in safety over the accepted “2 capacitor in series” solution.
- FLEXI technology has already proven to provide excellent protection against flexure and thermally induced mechanical damage. Data base available.
- A single FLEXISAFE™ capacitor reduces the amount of board space required, and reduces placement costs. A performance study is available.