



Aluminum Electrolytic Capacitors

Vibration resistance and mounting notes

Date: December 2010

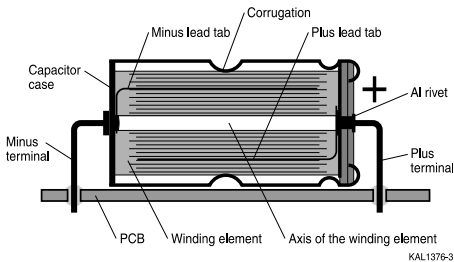
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Vibration resistance

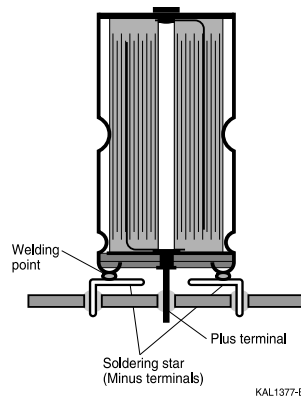
The low-voltage and high-voltage-series of axial-lead and soldering star capacitors (except electronic ballast series B43697, B43698, B43699) provide high vibration stability by means of a construction with extra robust leads (\varnothing 1.0 mm) and with a strong internal fixation of the winding element in the capacitor can.

Basic construction

Axial-lead capacitor



Soldering star capacitor



The winding element is fixed in the can by compression in axial direction between can base and cover disk and additionally by a corrugation of the can wall. This double fixation of the winding element prevents the movement of the winding element in the can and thus protects the internal electrical connections against rupture (open circuit) under high vibration load. Welded connections between the internal lead tabs of the winding element and the capacitor case or the aluminum rivet in the cover disk additionally contribute to both the vibration stability and the reliability of the internal electrical contact.

Soldering star capacitors provide high vibration stability even without additional clamping on the PCB thanks to the robust soldering star (negative terminals) welded to the capacitor case.

Mounting notes

Axial-lead capacitors

The vibration resistance of axial-lead capacitors is specified according to international standard IEC 60068-2, test Fc. The test method requires the mounting of the capacitor by its wire leads at a distance of 6 ± 1 mm from the case with additional clamping by the case. The specified maximum acceleration (10 ... 20 g) and displacement amplitude refers therefore to the vibration resistance of the capacitor body under standardized rigid mounting conditions. When the capacitor is mounted without any fixation on the PCB or in case of high vibration applications with the common fixation on the PCB using special holders, potting or gluing, this will lead to additional

vibration between the wire leads and the capacitor body as well as between the wire leads and the PCB. This additional vibration along with potential resonance depends strongly on the mounting conditions and the PCB design. Therefore, the maximum vibration resistance of the PCB with mounted components or the complete device should be verified separately by the user. Special axial-lead capacitor designs with increased vibration resistance are available on request.

Soldering star capacitors

The soldering star capacitors are designed for mounting in an upright position on a PCB without special holders. As the internal construction (construction except the terminals) is identical with the construction of the axial-lead capacitors, the same vibration specification values apply for the capacitor in the IEC vibration test specification. The vibration resistance in mounting position without a holder is however remarkably higher than that of axial-lead capacitors due to the stiff and robust solder star terminals. As with the axial-lead capacitors the vibration resistance of the complete PCB and the device has to be verified separately by the user. In applications where the soldering star capacitor is additionally glued to the housing cover of the device, it must be noted that this connection generates additional forces to the capacitor case which could also negatively affect the vibration resistance in some cases. This possible effect should be considered in the design of the PCB and the device. In general we recommend to simulate or test the vibration resistance of the PCB/device in the early stage of development in order to ensure the right design of the device with the selection of the proper capacitor type.