The influence of environment on tantalum capacitor

tantalum capacitor manufacturers

Because of the facts of reliability and electrical parameters change with temperature, must be limited capacitor can withstand the climate conditions.The climate of the most important factor is to allow the lowest and highest temperature and humidity conditions.

Temperature range

Condenser temperature range between the lower and higher temperature of the environment, in which the capacitor is more according to its working climate category.Of tantalum capacitor in - 55 ~ + 125 ℃ temperature range, between - 55 ~ + 85 ℃, the maximum continuous voltage Vcont can be equal to rated voltage VR, regardless of the other specific qualifications.At 85 ℃ upwards, voltage decreases.

The minimum allowable working temperature Tmin (lower temperature)

Since each single capacitor type allowed capacitance, or the decrease of the electrolysis and the conductivity of the semiconductor layer lead to the increase of impedance, lead to a lower temperature.The temperature dropped to a lower temperature will not affect the service life.

Maximum allowable working temperature Tmax (higher ambient temperature)

Higher environmental temperature is the maximum permissible temperature, temperature in the condenser can work continuously in the state allows the electronic load.If more than the limit, capacitor may early failure.More than a high ambient temperature to allow a short time.But because the allowable time depend on the electronic load, so after finish this application S + M components must be considered.

Damping thermal conditions

Allow damping heat condition of tantalum capacitor by the corresponding climate type of IEC 68-1, provided by the corresponding IEC68-2-3 test.

IEC climate

Respective IEC climate environment of capacitor allow climate strength is given.According to IEC 68-1, climate, the environment is made up of three groups of Numbers.

For example: 55/125/56.

Group 1: lower ambient temperature (temperature) said, according to IEC68-2-1 test - A test temperature (cold).

Group 2: the more high temperature (temperature) said according to the test IEC68-2-2 B (dry) test temperature.

3 groups: the number of days, according to IEC682-2-3 I + 2 at 93% / 3% relative humidity test Ca (damp heat, steady state) tolerance and 40 ℃ ambient temperature.

Temperature storage and transmission

Tantalum capacitor is stored fallen below 80 ℃, a high storage temperature should not exceed the rated temperature range.

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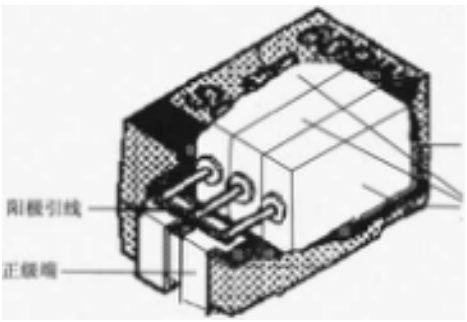
Multi-anodic tantalum capacitor

Although the tantalum capacitor ESR than electrolytic capacitor to reduce close to an order of magnitude, but users still hope to be able to have lower ESR tantalum capacitor.Tantalum capacitor ESR or unsatisfactory is the root of the original for electrolytic capacitor as much as possible in order to obtain high capacitance and the corrosion of foils or way to get more of porous electrode area, but it is inevitably exists the depths of the electrode to the electrode terminal high ESR.For lower ESR, must reduce the depths of the electrode to the electrode leads to the distance.We know, a number of small capacity of shunt capacitor ESR than with a capacity of a single capacitor ESR much smaller, so you can imagine, if a tantalum electrolytic capacitor encapsulation has multiple capacitors in parallel, it can not reduce the ESR?In fact, is to do so.JINPEI tantalun capacitor manufacture of LOW ESR tantalum capacitor is such structure, the following figure, tantalum capacitor encapsulation, there are three tantalum capacitor anode blocks, such as 330uF / 10 v LOW ESR of monomer, the ESR will reach 100 ~ 150 mΩ, and use three 330uF/ 10 v low ESR monomer in parallel, the ESR is 330 / u/v 4 1/3 of the monomer, which is 30 ~ 50 m Ω, of course, the extremely low ESR, such as the use of advanced technology, its low ESR can do much more, and so the 4 v rated voltage tantalum capacitor ESR can be as low as 10 mΩ.Polymer aluminum electrolytic capacitor so much (minimum of 7 mΩ).

From multiple anodic tantalum electrolytic capacitor and extremely low ESR characteristics of tantalum capacitor can see that their ESR than the "standard" negative extreme tantalum capacitor is much lower, and the rated current is much higher.Therefore, in the selection of tantalum capacitor is the need to pay attention to the right choices as required, and can't be a tantalum capacitor.



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