The tantalum capacitor electric parameters

tantalum capacitor manufacturer

The rated voltage

Rated voltage in the dc voltage on the capacitor is said, is decided by the thickness of the dielectric.

The biggest continuous voltage tantalum capacitor

Maximum continuous voltage is maximum allowable voltage in the capacitor can work continuously.It is superposition of dc voltage or dc voltage and ac voltage and the peak.

Maximum continuous voltage depends on the ambient temperature.Tantalum capacitor in a 55 ~ + 85 ° C temperature range, rated voltage is equal to the maximum continuous voltage.

And tantalum capacitor work at + 85 ~ + 125 ° C temperature range, the maximum continuous voltage from linear to two-thirds of rated voltage, rated voltage for tantalum capacitor, VR at 85 ° C and two-thirds of VR is rated voltage at 125 ° C.Under continuous maximum voltage is beneficial to the service life of the capacitor.

The working voltage of tantalum capacitor

Voltage of the tantalum capacitor continuous working voltage VOP works, are not allowed to exceed the maximum continuous voltage.In harsh working conditions (such as possible bus over-voltage, equipment of rectifier transformer is not the appropriate variable ratio, switch equipment produced by repeated overvoltage, high temperature, etc.) should be reduce the working voltage.

Tantalum capacitor surge voltage

Surge voltage is the capacitor can be up to 5 times per hour l minutes under the condition of short work of the maximum (peak) voltage.Surge of electricity are not allowed to appear in the working status of the periodic charge and discharge.Usually, the tantalum capacitor allowed by the surge voltage of 1. 3 times of the rated voltage.If voltage impact transient voltages (even) more than surge voltage value, will result in irreversible damage.If must be applied in such an environment, should the conditions are fully estimate beforehand, to avoid short more than instantaneous voltage and lasted more than a continuous voltage phenomenon.

The polarity of the tantalum capacitor voltage

By dc voltage and ac voltage components and cause any incorrect polarity must be less than or equal to allow the polarity of the voltage.In order to avoid the reliability of the lower, only can appear the voltage in a short time, and is an hour up to five times shorter than l minutes duration.Similar to the maximum continuous voltage tantalum capacitor, can withstand the reverse voltage change with temperature, in different temperature tolerance of solid electrolytic capacitor polarity reverse voltage in case of more polarity reverse voltage applications, with the same rated voltage should be adopted and two of the same rated capacity capacitor can be back to back in series (such as the cathode of the cathode).In this way, complete blocking each polarization direction.To avoid the damage to reverse polarity capacitor charging process, need to diode and a reverse parallel tantalum electrolytic capacitor, the diode of the cathode in tantalum electrolytic capacitor anode, diode of anode cathode of tantalum electrolytic capacitor.The non-polarity or dual polarity connection mode of electric capacity of each half of the single capacitance (the equivalent of two container in series), but in the polarity of tantalum electrolytic capacitor on the voltage or peak voltage does not exceed the maximum continuous voltage ac voltage.The back - back connection can also work in sinusoidal ac voltage

Tel: 86-21-31263693 E-mail: info@sh-jinpei.com website: www.china-jinpei.com

of capacitor.The surface of the condenser temperature is not higher than 10 ° C, more than the temperature rise of the tantalum electrolytic capacitor will result in permanent damage.

The tantalum capacitor voltage

Tantalum capacitor "voltage in" similar to the residual voltage aluminum electrolytic capacitor.As a result of the tantalum capacitor voltage rating is low (usually under 35 v), so the residual voltage compared relatively low (< 0. 5 v), most of the applications of circuit will not have much impact.The residual voltage of electrolytic capacitor are mostly due to the rough and adapt to the anode electrode of a liquid or solid cathode parasitic resistance (ESR) is not on the macro with capacitance formation of the RC equivalent circuit caused in the process of discharge electrodes in the depth of the charge is not discharge in time, again to the end of the discharge of the inside of the capacitor charge balance results again.In all of the electrolytic capacitor, the tantalum electrolytic capacitor of the parasitic resistance is small, therefore, its residual voltage is smaller.

The capacitance of tantalum capacitor

Tantalum electrolytic capacitor of capacitance indicators mainly include: the rated capacitance, electrostatic capacitance, the temperature of the electric capacity, and the frequency characteristics of capacitance and the capacitance tolerance range, etc.

Tantalum capacitor has a capacity of deviation

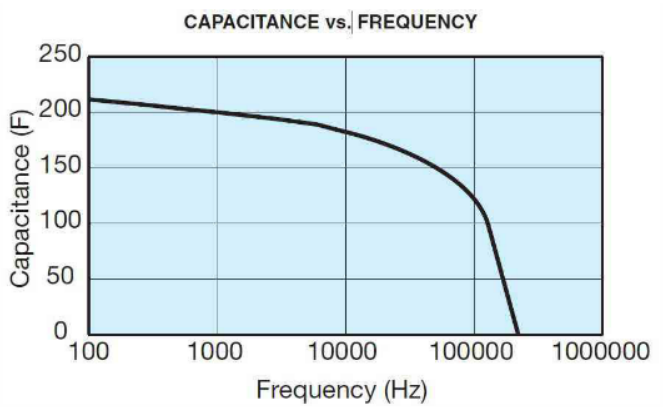
External factors affecting tantalum electrolytic capacitor of capacitance is small, therefore, tantalum electrolytic capacitor tolerance can be made smaller, such as plus or minus 5%, and 10%, plus or minus 20% tolerance are common in the tantalum electrolytic capacitor.

The relationship between the capacitance and temperature tantalum capacitor

Tantalum capacitor of capacitance change with temperature, also is the positive temperature coefficient, the size of its temperature coefficient is directly related to voltage and capacitance value.Usually low voltage and high temperature coefficient of capacitance than high voltage and low temperature coefficient of capacitance.

The relationship between capacitance and frequency tantalum capacitor

Similar to aluminum electrolytic capacitor, tantalum capacitor of capacitance with the increase of the frequency decreases, the reason for this is the same as the aluminum electrolytic capacitor.Curve as shown in the figure



Tantalum capacitance and the frequency of the diagram

Charging and discharging test

JINPEI tantalum capacitor manufacturer should parking charge and inspection before they go out.In 108 the decrease of the capacitor is less than 3% after charge discharge cycles.

The power dissipation of tantalum electrolytic capacitor is allowed

As a result of the tantalum capacitor cathode is manganese dioxide, its resistivity is only about 1/10 of the aluminum electrolytic capacitor cathode electrolyte.Of course with tantalum capacitor ESR is far lower than the rated voltage of the ESR of aluminum electrolytic capacitor.

Tantalum capacitor ac power loss

Superimposed on the solid electrolytic capacitor voltage applied on the capacitor tantalum electrolytic capacitor, and dc voltage.Superposition of dc voltage and ac voltage peak value and can not exceed the maximum continuous voltage.Must not appear not allowed the correct polarity to limit superimposed ac voltage.Through the alternating current and the voltage of capacitor should not exceed the maximum rated tantalum capacitor value, otherwise the tantalum capacitor may because ac current flows through the tantalum capacitor ESR caused by the loss The excessive heat damage or reduce service life.Allow the alternating voltage and/or superposition of alternating current value depends on the ESR and the permissible power attenuation.Also produce pressure drop on the capacitive reactance and impedance, the entire communication stack voltage is the sum of the voltage on capacitor, inductor and ESR.

The maximum permissible power loss of tantalum capacitor

Tantalum capacitor loss basically for ripple current, caused by different package sizes have different power dissipation ability, it is important to note that any device power dissipation is under certain temperature conditions, as temperatures rise, its dissipation ability will decline.

The loss factor of tantalum capacitor

Loss factor of DF with increasing frequency, near the resonance frequency has a very high value, the loss factor of when 100 KHZ About 120 hz 130 times!The relationship between the loss factor with temperature as: 20 ° C is the lowest, less than 20 ° C, loss factor with temperature down and up, higher than 20 ° C, the dissipation factor increases with temperature rise.

Tantalum capacitor leakage current

When tantalum capacitors have a dc voltage on the tantalum capacitor through a low current, the leakage current leakage current/LK increases with voltage and temperature rise, at the same temperature, when the terminal voltage drops to 25% of the rated voltage, leakage current is down to 10% of the rated voltage at;Also, under the same voltage across them, when the temperature rises to 125 ° C, the leakage current increases to 20 ° C at 50 times of leakage current.As the applied voltage continued, leakage current decreases sharply finally reached almost "steady state".

Tel: 86-21-31263693 E-mail: info@sh-jinpei.com website: www.china-jinpei.com

Tantalum capacitor leakage current measurement

On 20 ° C, capacitor with 5 min after the rated voltage, leakage current test.And stability of power supply and l000 Ω series resistance connection, to limit the charging current.Before the applied voltage, the capacitor in the rated temperature stability for 30 min.Store at room temperature without voltage has no impact on the leakage current, only to increase the storage temperature of some influence.This means that the tantalum capacitor can be stored at least 10 years and do not need another update.