



NIC COMPONENTS CORP.

70 Maxess Road • Melville, New York 11747

(631) 396-7500 • Fax (631) 396-7575

<http://www.niccomp.com>

Technical Inquiries: tpmg@niccomp.com

POLYMER CATHODE TANTALUM

NTP SERIES: SMT TANTALUM ELECTROLYTIC CAPACITORS

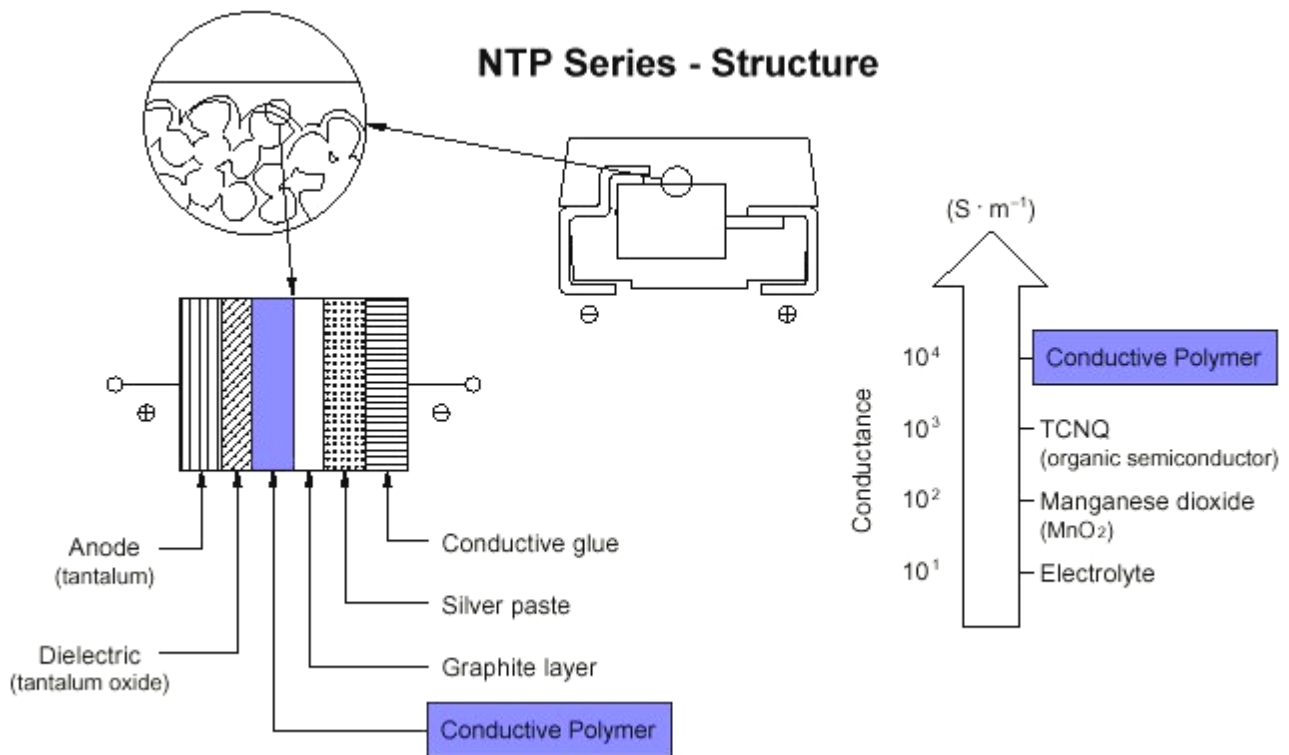
NTP series has the same structure as a conventional chip tantalum capacitor with a low-resistance cathode of conducting polymer as a substitute for manganese dioxide. It features high permissible ripple current and effective noise reduction in a high frequency application with its ultra low ESR (equivalent series resistance).

Features:

- Small size (the same as conventional chip)
- Ultra Low ESR/low impedance
- Suitability for surface mounting
- High permissible ripple current

Applications:

- DC / DC converter
- Voltage Regulators (VRM)
- Suppression of oscillation for general purpose regulator
- Video camera
- Portable cassette / CD player
- Personal phone
- AV gaming consoles





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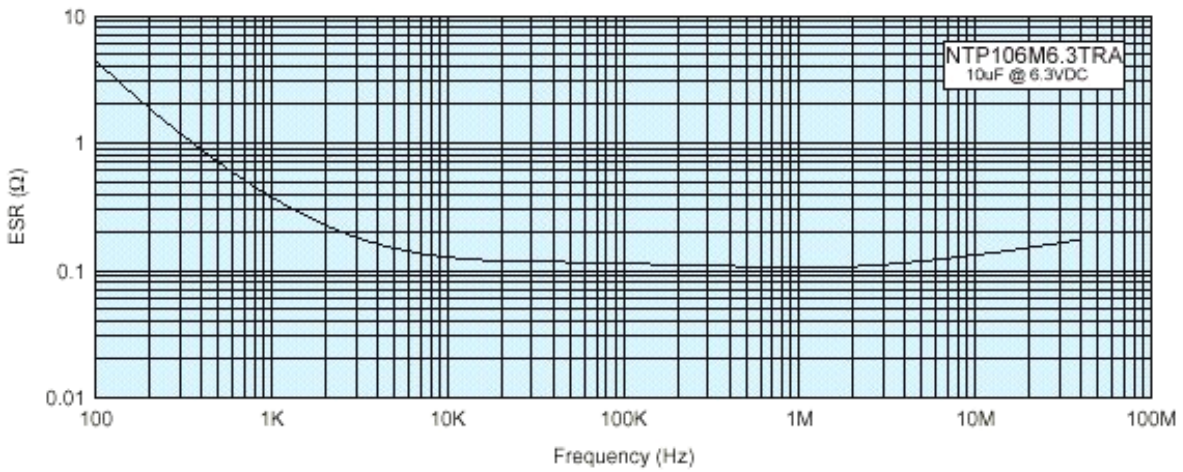
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FREQUENCY CHARACTERISTICS

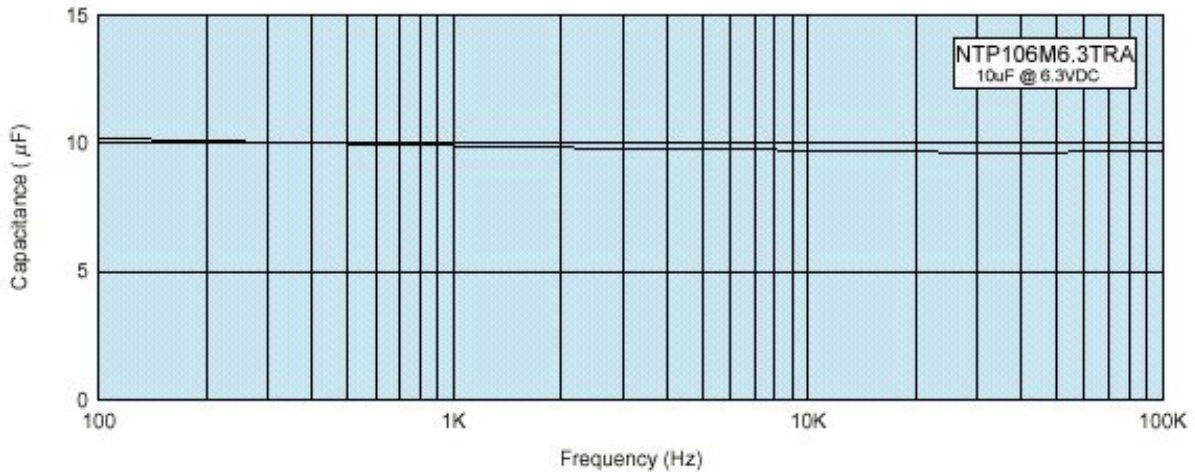
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ESR-frequency characteristics



Capacitance-frequency characteristics (Reference data)





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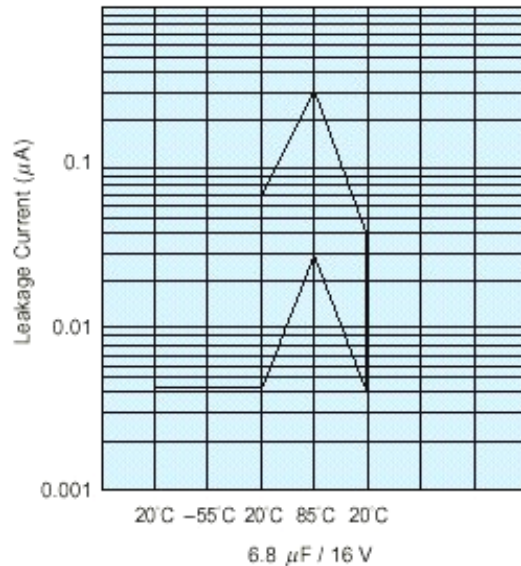
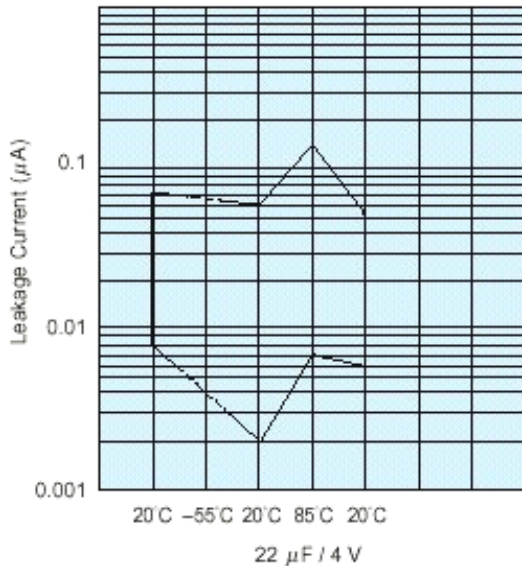
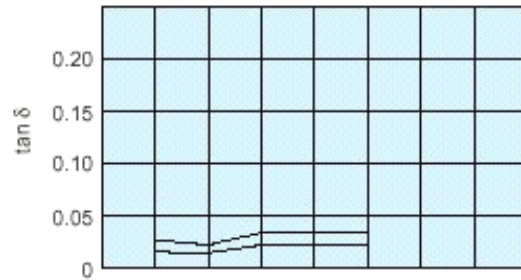
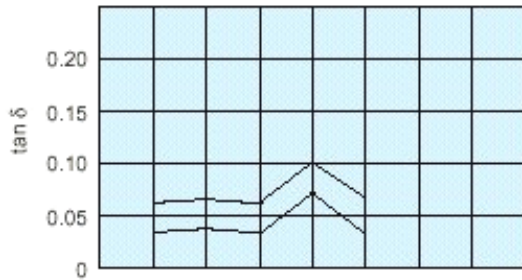
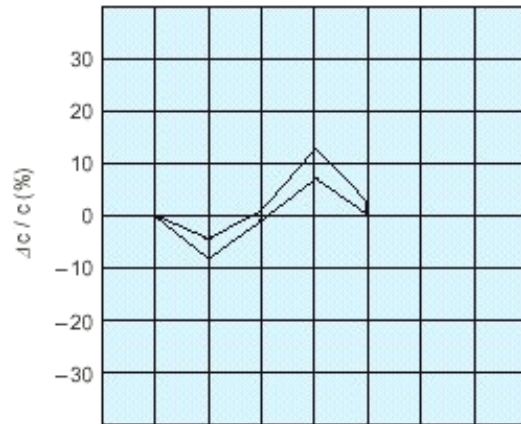
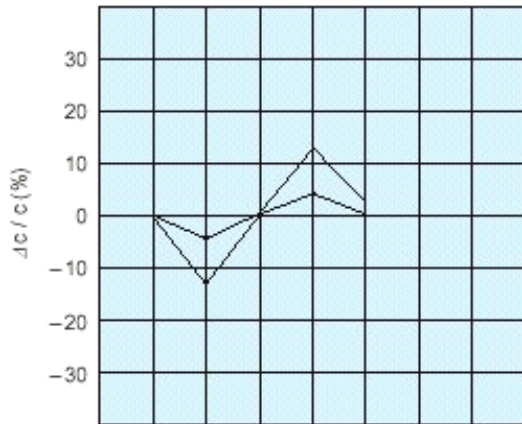
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TEMPERATURE CHARACTERISTICS

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B2 Case



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**POLYMER CATHODE TANTALUM
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Most failures are the result of large leakage current or short circuit.
It is recommended the following be taken into consideration when designing the circuit.

1. Circuit design

(1) Failure rate

The failure rate depends upon applied voltage and operating temperature. Use the following formula for estimating field failure rate:

$$\lambda = \lambda_0 (V/V_0)^3 \cdot 2^{(T-T_0)/10}$$

λ : Maximum field failure rate

λ_0 : Basic failure rate (1% per 1000 h)

T : Operating temperature

V : Applied voltage of actual use

T₀: +85°C

V₀ : Rated voltage

(2) Permissible ripple current

Permissible ripple current shall be derated as follows

a. **Temperature:**

Per [NTP Specification](#): Ripple Current Correction Factors

****RIPPLE CURRENT TEMPERATURE CORRECTION FACTOR**

Temperature	25°C	85°C	105°C
Correction Factor	2.50	2.25	1.0

b. **Frequency**

1 MHz Rating value

500 kHz 0.9 times rating value

100 kHz 0.75 times rating value

(3) Reverse voltage

Do not apply reverse voltage since the capacitors are polarized.

(4) Derating

Apply appropriate voltage to the capacitors according to the failure rate estimation.

It is recommended that the applied voltage be less than 50% of the rated voltage.

(5) PCB Processing

Recommended Land Patterns and Reflow Soldering Conditions: [Per NTP Specification](#)

[continued]

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<http://www.niccomp.com>Technical Inquiries: tpmg@niccomp.com**POLYMER CATHODE TANTALUM****NTP SERIES: SMT TANTALUM ELECTROLYTIC CAPACITORS****Cleaning:** (immersion cleaning, rinse cleaning, brush cleaning, shower cleaning, vapor cleaning, and ultrasonic cleaning)

If cleaning is carried out with emphasis placed only on cleaning effect, however, the marking on the electronic component cleaned may be erased, the appearance of the component may be damaged, and in the worst case, the component may be functionally damaged. It is therefore recommended that the NTP series be cleaned under the following conditions:

[Recommended conditions of flux cleaning]

- (1) Cleaning solvent Chlorosen, isopropyl alcohol
- (2) Cleaning method Shower cleaning, rinse cleaning, and vapor cleaning
- (3) Cleaning time 5 minutes max.

Ultrasonic cleaning

This cleaning method is extremely effective for eliminating dust that has been generated as a result of mechanical processes, but may pose a problem depending on the condition. As a result of an experiment conducted by the factory, it was confirmed that the external terminals of the capacitor were cut when it was cleaned with some ultrasonic cleaning machines. The cause of this phenomenon is considered metal fatigue of the capacitor terminals that occurred due to ultrasonic cleaning. To prevent the terminal from being cut, decreasing the output power of the ultrasonic cleaning machine or decreasing the cleaning time may be a possible solution. However, it is difficult to specify the safe cleaning conditions because there are many factors involved such as the conversion efficiency of the ultrasonic oscillator, transfer efficiency of the cleaning bath, difference in cleaning effect depending on the location in the cleaning bath, the size and quantity of the printed circuit boards to be cleaned, and the securing states of the components on the boards. It is therefore recommended that ultrasonic cleaning be avoided as much as possible. If ultrasonic cleaning is essential, make sure through experiments that no abnormality occurs as a result of the cleaning.

Precautions

- (1) Do not apply excessive vibration and shock to the capacitor.
- (2) The solderability of the capacitor may be degraded by humidity. Store the capacitor at (-5 to +40°C) room temperature and (40 to 60% RH) humidity.
- (3) Exercise care that no external force is applied to the tape packaging. If the packaging material is deformed, the carrier tape may not feed properly.