PFC Series TaNFilm® Chip Resistors

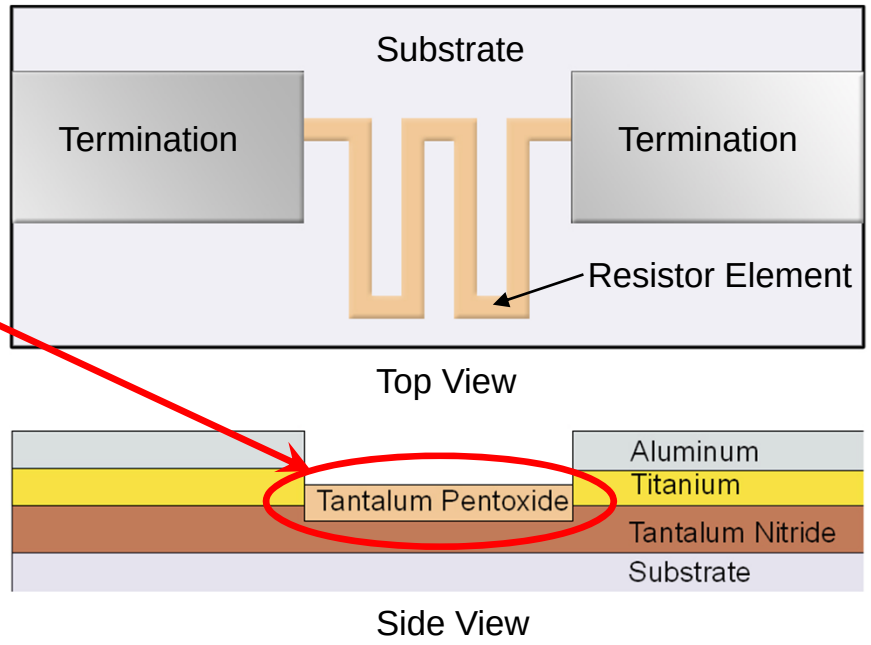
Precise, Stable, High Reliability, Moisture Resistant Resistor Solutions

Benefits of TaNFilm® PFC Resistors

Inherent Moisture Advantage over Nichrome Films

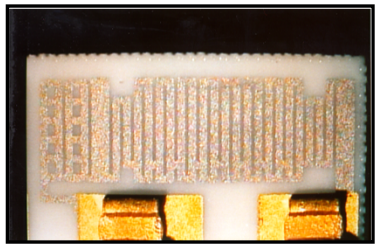
The Solution

- Tantalum Nitride (TaNFilm®) Grows a Natural Protective Layer that Prevents Corrosion in Moisture
- This Protective Layer Grows Without Outside Processing
- TaNFilm ® is Naturally Robust in Humid Environments
- Tantalum Nitride Films do not Depend on External Coatings or Packaging to Prevent Moisture Corrosion

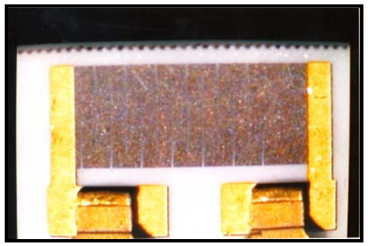


Nichrome Films Dissolve in Water with a Voltage Applied

Before

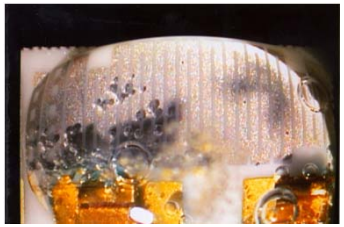


NiChrome



TaNFilm®

During



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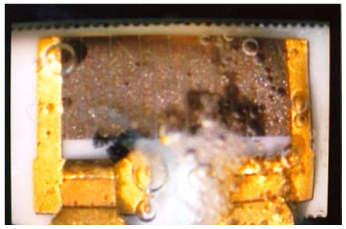
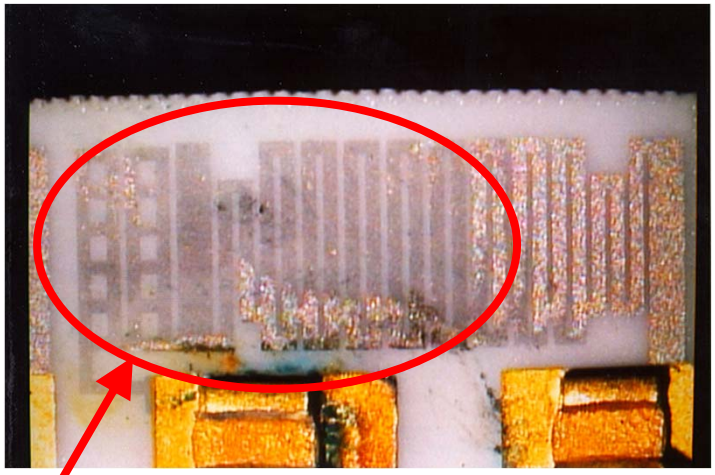
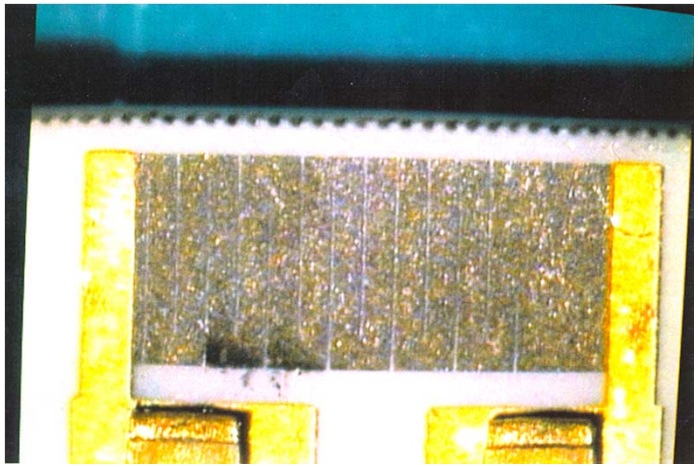


TaNFilm®

Gone in 60 Seconds



NiChrome



TaNFilm®

Gray Area - Nichrome Film Dissolved.
Open Circuit in <60 seconds!

Benefits of TaNFilm® PFC Resistors

Inherent Moisture Advantage over Nichrome Films

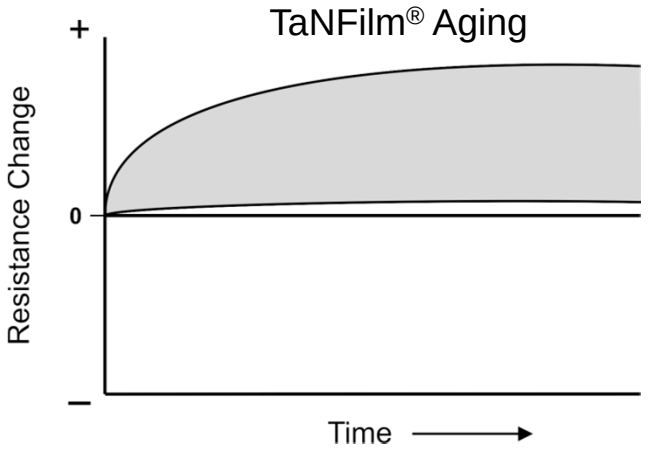
- External PC Board Coatings are Often Added in an Effort to Improve Nichrome Chip Resistor Moisture Performance
- TaNFilm ® Reduces the Need for External PC Board Coatings
  - Lowers PC Board Assembly Cost
  - Reduces Process Steps
- Reduced Risk of Warranty and Field Repairs
- Failed Nichrome Chips are Expensive to Replace in the Field
- Quality Perception is Impacted when a Product Fails Due to Nichrome Moisture Corrosion
- TaNFilm ® Provides Reduced Liability Risk for Life Critical Applications

Benefits of TaNFilm® PFC Resistors

Predictable Film Aging

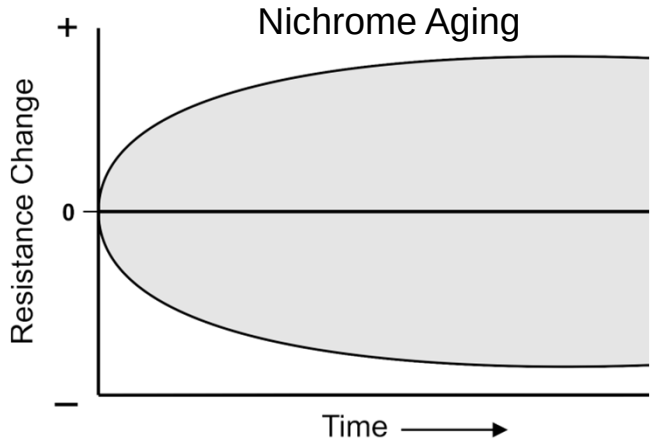
The Sole TaNFilm ® Aging Mechanism is the Growth of a Natural Protective Oxide Layer on the Film Surface

- Tantalum Nitride Resistors Predictably Shift Higher in Resistance as they Age Resulting in:
  - Less Expensive Designs Thanks to Reduced Uncertainty
  - Simpler Product End of Life Calculations
  - Easier Determination of Product Stability Specifications



Nichrome Aging is Complex and has many Mechanisms including Oxidation, Grain Boundary Variations, Grain Growth, and Alloying of the Nickel and Chromium

- Nichrome Resistors may Shift Either Higher or Lower in Resistance as They Age Resulting in:
  - More Expensive Designs due to Aging Uncertainty
  - Difficult Product End of Life Calculations
  - Complex Determination of Product Stability Specifications



Benefits of TaNFilm® PFC Resistors

Outstanding Anti-Sulfuration Performance

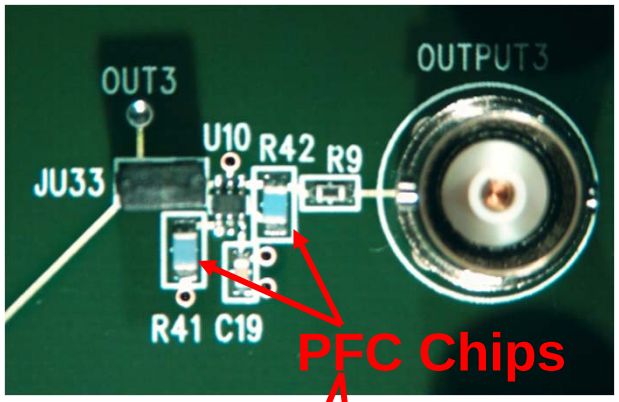
- Silver is Highly Reactive to Sulfur
- PFC Chip Resistors Contain ***no*** Silver
- PFC Series Passes Modified ASTM B-809 Sulfur Testing
- 1,000 Hours at 105°C Flowers of Sulfur
- Excellent Alternative to Silver Bearing Thick Film Chips
- Retain all of the Precision and Stability of TaNFilm®
- Without the Risk of Sulfur Corrosion and Reactivity

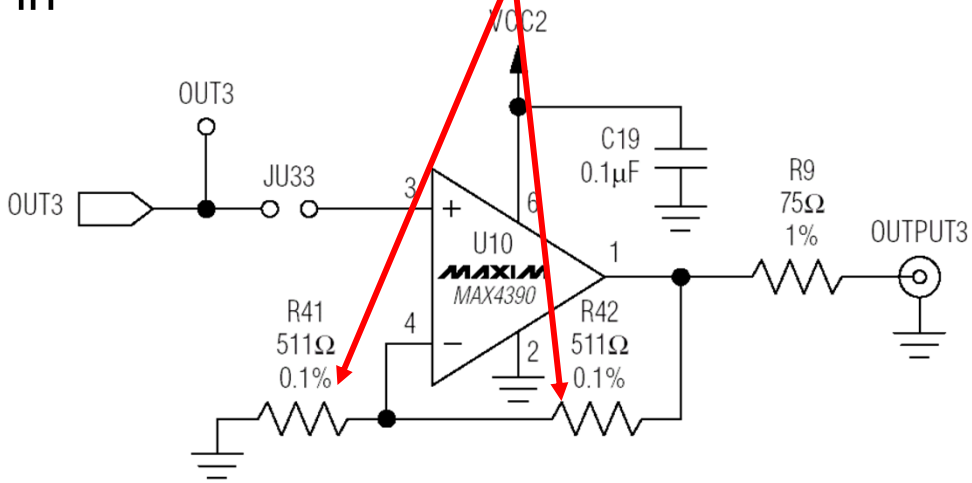
Typical Application

Precision Amplifier Gain Control

Customer Benefits:

- Precise, Accurate Gain Control
- Stable Amplifier Gain over Time And Temperature
- Suitable for Outdoor Applications in Humid Environments



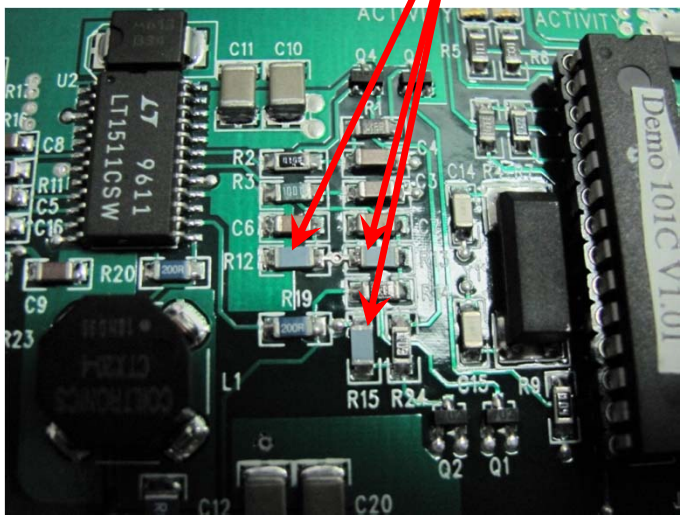


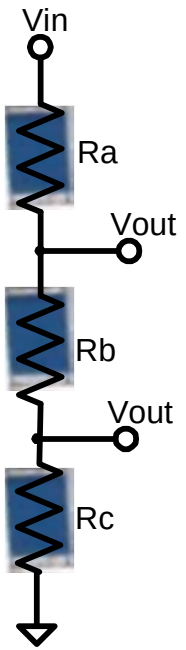
Typical Application

Precision Voltage Divider - VRM

Customer Benefits:

- Precise, Stable Output Voltage Feedback
- Ohmic Values selected for Exact Nominal Required for Desired Voltages
- Suitable for Outdoor Applications in Humid Environments





PFC Series Thin Film Chip Resistors

Tantalum Nitride - PFC Series

- Sizes Available – 0402, 0603, 0805, 1206, 1505, 2010, 2512
- Non-EIA Values Available
- Tolerances to ±0.02%
- Temperature Coefficients to ±10ppm/°C