



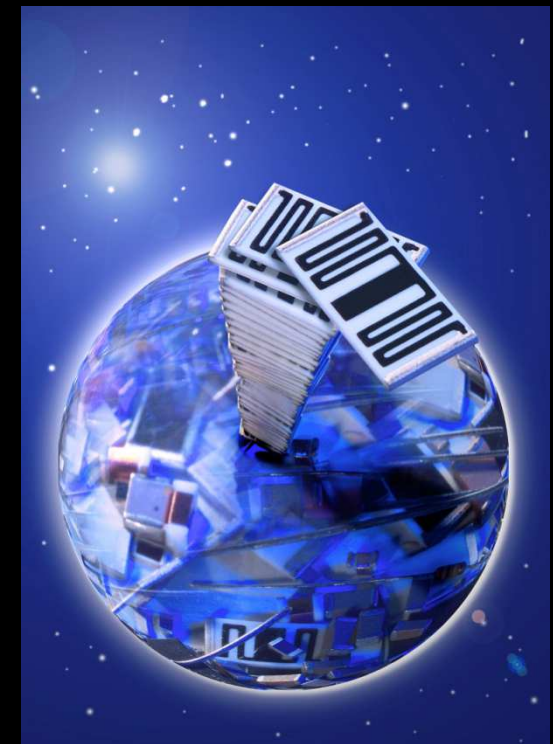
**A World of  
Advanced Resistor  
Technology**

[www.riedon.com](http://www.riedon.com)

# Thick Film Chip Resistors



- ✓ Very High Temperature available
- ✓ High Value Chip Resistors up to 10 TΩ
- ✓ Precision High Value Chip Resistors
- ✓ Power Chip Resistors
- ✓ Trimmable and Standard Chip Resistors



# Why Select **Riedon** Chip Resistors?



- High temperature components available for applications up to **300°C**
- High value resistors with a value range up to **10 Tera-Ohm**
- **Non-magnetic** resistors available
- **High voltage** capability of chip resistors up to 6000V
- Every value is available
- Suitable for lead free soldering as well as **silver epoxy attachment**
- **Whisker free** surfaces - no Tin whiskering
- Suitable for **vacuum applications** – no organics
- **Low VCR** at extreme high values
- **Customized** solutions



# Non-Magnetic Resistors



Riedon chip series CHR, HVC, HVS are absolutely **non-magnetic**.

- These resistors are suitable for the use in strong magnetic fields without restrictions.
- The base of this characteristic is a special termination technology, which does not use magnetic Nickel.
- Typical Applications: computed tomography (CT) and magnetic resonance imaging (MRI)
- *Standard-components use Nickel/Tin-terminals therefore have magnetic characteristic.*





## High Temperature Suitability **up to 300°C**

HVS, CHR, CBR, HVC are available for high temperature applications up to **300°C**

- The base of this characteristic is a special termination technology, which does not use Nickel which limits the continuous working temp. to 160°C, or Tin which limits the peak temperature to 230°C).
- Limiting factors are the interconnection technology and the substrate material for the unit.

*(Standard-components using Nickel/Tin-terminals are restricted to a continuous working temperature of 155°C.)*

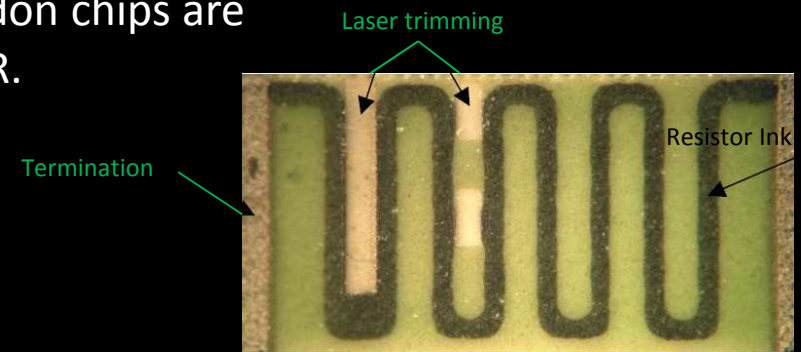


# Low VCR-Values



**Voltage coefficient of resistance** (VCR) is an important characteristic of high voltage thick film resistors. It can be defined as the change in resistance of a component with respect to the voltage applied over a specific voltage range

There are many factors which can influence the VCR: Layout, size, termination material and trimming geometry. Riedon chips are specifically designed to minimize the effects of VCR.





## Suitability for **Silver** Epoxy Attachment

- **CHR, CHS, HVS** are also suitable for lead free and lead containing soldering as well as for **silver epoxy attachment**.
- The attachment with **silver epoxy** is highly reliable (at high temperatures too).
- The base of this characteristic is the special thick film termination, which does not use Nickel and Tin.

*(Standard-components using Nickel/Tin-terminals are not suitable for the use of conductive epoxie)*



# Whiskerfree Surfaces



Thick film terminals (**CHR, CHS, CHM**) are whisker free:

- The surface of the termination does not contain Tin and therefore it can not generate Tin-whiskers. *Pure Tin surfaces generate whiskers under certain conditions*
- This is characteristic which is required in many aerospace applications





# High Vacuum Suitability



Riedon chip resistor series are free of outgassing.

- Standard-components are coated with a polymeric material which can out gas in vacuum are not suitable for the use of conductive epoxies, carbon film resistors show this behavior too. The resistors do not contain any organic material.





## Value Range up to 10 Tera-Ohm

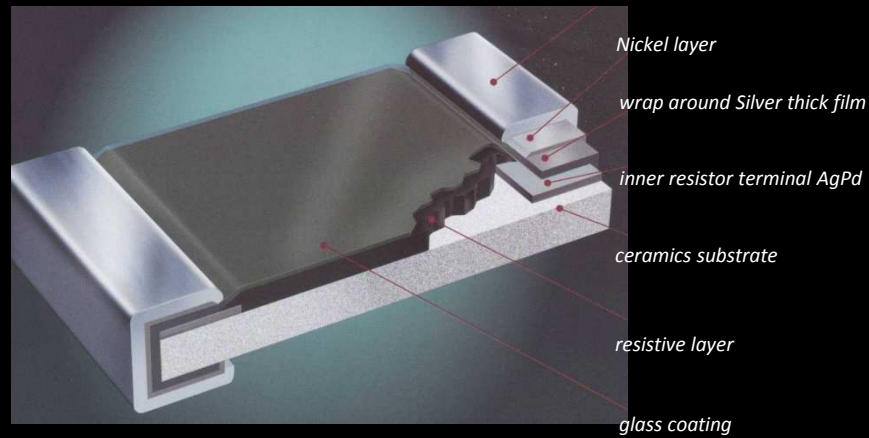
- The **value range** is our core competency: Series HVC and HVS
- Riedon delivers high value resistors up to **10 Tera-Ohm**. Many other Manufacturers deliver a value range up to 10 MΩ only.



# Termination & Construction

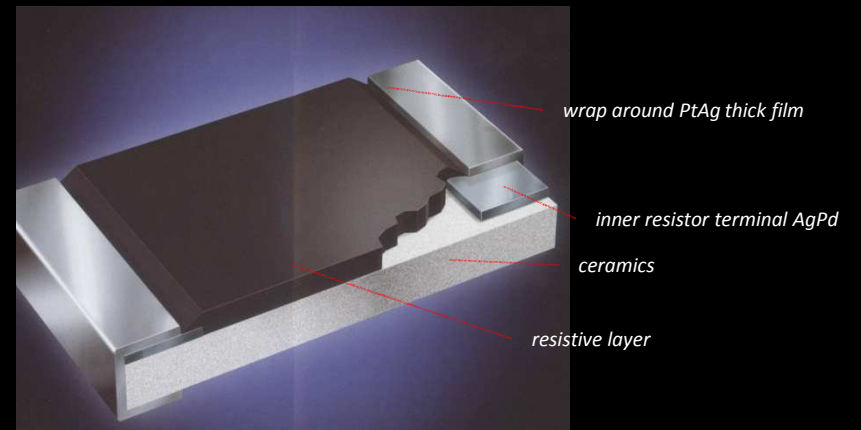


## Chip resistors with Ni-barrier layer *matte Tin*



Series: **CRW, CRS**  
 Layers: thick film Silver  
 Nickel barrier layer (galvanic)  
 matte Tin (galvanic)

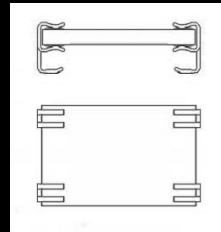
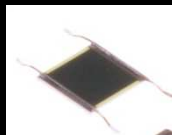
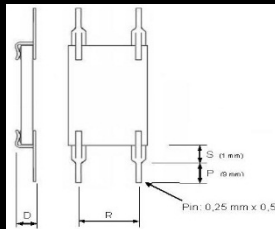
## Chip resistors with thick film termination



Series: **CHR, HVS, HVC**  
 Layers: thick film Platinum/Silver

# Custom Specific Resistors

Riedon specializes in providing customized solution for non-standard specs.



For more information & questions?

- ✓ Call us at (626)-284-9901
- ✓ Email us [Sales@riedon.com](mailto:Sales@riedon.com)
- ✓ Tweet us @riedonresistors
- ✓ Comment on our Blog:  
<http://riedon.com/blog/>

