

# APPLICATION NOTES: Reed Switch Plating versus Performance

When manufacturing reed switches HSI Sensing takes great care when selecting internal and external plating material to ensure it functions properly in the final application. Each material has its own unique set of benefits that change the way a reed switch performs.

## Internal Contact Material

HSI Sensing offers four internal contact options:

### R – Rhodium

- Rhodium, a noble metal contact material, is intended for low to midrange power level circuits (.01 watts to 25 watts)
- High durability and wear resistance
- Rhodium contacts are mechanically capable of up to billions of cycles under normal operating conditions
- Rhodium has a higher power rating than Ruthenium
- HSI recommends Rhodium contacts for applications that remain closed for long periods of time

### D – Durel

- This is a dissimilar contact design. Diffused copper plating paired with treated 52 alloy that HSI Sensing designates as Durel
- Durel is intended for very low power level circuits (less than 1 watt)
- Contacts using Durel can go into the millions of cycles
- HSI recommends Durel contacts for applications that are in the normally open state.

### W – Tungsten

- Solid Tungsten contacts
  - Highest power level contact material available (3 watts to 200 watts)
  - High voltage rating
  - Rated for switching inductive and capacitive loads
- Coated Tungsten contacts
  - High power level coating (1 watts to 50 watts)
  - Highest voltage rating
- Tungsten contacts have high durability and wear resistance
- Intended for midrange to high power level circuits
- Tungsten contacts within a vacuum atmosphere can switch up to 200 Watts, 10,000 Volts DC, or 3 Amps
- Tungsten contacts can go into the millions of cycles

- Tungsten contacts within a pressurized gas atmosphere can switch up to 100 Watts, 500 Volts or 3 Amps
- HSI recommends Tungsten contacts for applications that remain closed for long periods of time

#### **F – Rhodium over Copper**

- Proprietary process for Radio Frequency applications

To ensure that you are getting the best plating or coating for your application, please consult individual product specification sheets and then HSI Sensing staff. Actual contact performance may vary depending on the switching power load.

### **External Lead Preparation**

The coatings we provide to the external leads are RoHS compliant. To ensure that you are getting the best external preparation for your application please contact HSI Sensing staff. HSI Sensing offers four external lead preparation options:

#### **T – Tin**

- Applied for excellent solderability
- Resists oxidation

#### **G – Gold**

- Applied for excellent solderability
- Resists oxidation
- Recommended for welding applications

#### **FT – Tin over Copper**

- Recommended for Radio Frequency applications
- Tin plating applied to prevent copper oxidation
- Applied for excellent solderability

#### **O – Clean (52 Alloy base metal)**

- Recommended for welding applications