

Reed Switch and Reed Sensor Applications

Introduction

Reading the previous sections on the Reed Switch basics, key parameters, and operational characteristics before delving into this section will give one a better background and more insight into developing requirements for your own applications.

Without question, the Reed Switches' hermeticity lends itself to more switching applications than any other switching device. Its ability to be used as a complete sensing component by itself or the ease of packaging it into special sensing requirements is done without any complicated process or high tooling costs.

There are so many existing and potential applications for Reed Sensors that it would be impossible to discuss them all here. We will however, cover some of the basic applications which we hope, will give insight and help to your application. Once you review this section and some of the sensor specifications offered in this book, please feel free to call our applications department, where qualified engineers will be able to answer questions pertaining to your application. Free samples are always available as well.

Obviously if your application requires one of our standard sensors from our catalog, that is clearly the best approach and the quickest solution to satisfying your design requirement. However, more than half of our shipped sensors are from special requirements. Since many sensing requirements are unique, working with customers on their special applications is expected.

Using the Reed Switch by itself can seem like the simplest approach. However, without proper consideration and precaution it could become disastrous. If you decide to go this route, be sure to read our precautions section. Most important to keep in mind, the Reed

Switch is a glass capsule and is susceptible to breakage. Observing this, and properly mounting the switch in a stress free environment, will prove to be a winning combination. If you do have failures or erratic operation, please discuss your problem with our applications engineering. Many times we have taken over the application and manufactured the entire sensor thereby producing a fault free sensor. In the end, it would have been less expensive having us design and manufacture the entire sensor from the beginning. Keeping this in mind, we really are open to working with you on your application in either manner.

Reed Switch Selection

Initially the most important step is the proper selection of the correct Reed Switch for a given application. If the sensor is simply switching the gate of a transistor or digital gate any Reed Switch will handle that requirement. The question then becomes one of size and cost. Looking through our Reed Switch selection chart will help you arrive at the best choice. If you are switching a load, 'hot' switching a voltage at some current level, care must be taken to select the proper wattage Reed Switch with the corresponding required voltage and current level. Sensors requiring long life times (10's of millions of operations) will need special attention to the load you are switching. If you are switching 5 Volts @ 10 mA or less you will not have a life problem; above this level care must be taken. Talking with our applications engineers and reviewing our life testing section will be helpful.

Reed Sensor Packaging

Usually packaging is the safest approach when developing a Reed Sensor. Carefully protecting the glass to metal seal from potential damage or stress will result

in a fault free application. When packaging the Reed Switch, even when it 'looks' fine, stress may have been induced through bending, cutting, soldering, welding, potting, or encapsulating the Reed Switch, with erratic behavior resulting. Packaging the Reed Switch without inducing any stress is critical to proper operation and long life, whether it is packaged by the user or by the Reed Switch Sensor manufacturer. Collaboration on the application, between the user and the Sensor manufacturer must be carried out in a detailed fashion.

Using our Reed Switch Sensor selector guide will give the user some ideas as to packaging styles and sizes. Special packages with specific connectors or connections are very much a norm. So do not hesitate, to offer your special packaging requirement. Our special packages are far too numerous to show in our Data Book.

When determining the closure and opening distance care must be taken to include the distance within the package as part of the sensing distance. Standard packages offered by MEDER electronic will take this distance into consideration in the design. However, on special packages, keep this distance in mind because it does affect sensitivity.

Plastic packages are easiest to tool and are the least expensive. However, if a rugged enclosure is required, use of a non-ferromagnetic material may be the best approach. Be careful not to include any nickel, iron, or cobalt in the package. They will shunt the magnetic field.

Lead lengths and connectors are wide open with hundreds of possibilities for all potential requirements.

Reed Sensor Mounting

Mounting a Reed Sensor is generally quite open with a multitude of options. However, care must be taken not to mount the sensor on any ferromagnetic material or be within its influence. Keep in mind, magnetic flux lines prefer to travel in ferromagnetic material, which in effect, will have a shunting effect on the magnetic field.

We have shown cases where this effect can be used for positive results in some applications in our operational section, but one must give consideration to magnetic materials in the vicinity of the application. Also, any magnetic components that are also in the vicinity of an application, such as inductors, transformers, toroids, etc. must be given consideration to their influence in the magnetic sensing circuit.

Our Reed Sensors come with an assortment of ways in which to be mounted. Many have simple slots for screw hole mounting; some have double-back sticky tape; some simply screw into panels; others have pins for PCB through hole mounting; others have surface mount 'J' or 'gull' leads for mounting on SMT boards. Variations of the above are available as well, to meet all your application mounting possibilities.

Reed Switch Electrical Connections

All our Reed Sensors are manufactured with an assortment of ways in which to be electrically connected. Most of the popular ways are PCB mount, leads of varying length for soldering, leads with connectors and surface mount soldering. Some lead wires will have an array of terminals available as options for making the electrical connection. Most of our series offer terminals on the leads for quick solderless connections. Surface mount soldering is becoming increasingly popular. Our MK1, MK15, MK16, and MK17 were all designed with that in mind.

Reed Switch Sensing Applications

As stated, the list for different sensing applications is endless. We will make an attempt at presenting some of the more common sensing applications, which we hope will nurture ideas that may offer solutions to your sensing application.

Keep in mind, no external power is required in a Reed Sensor application. The Reed Switch in most cases, once closed will switch the load you require.