



Application Alley

RF Receivers - Reed Relays

RF Receivers (electronic listening devices) Are Ideally Suited For Using RF Reed Relays

Introduction

With the continuous worldwide threat of terrorism, most countries need to be monitoring all electronic communication on a 24/7 basis. Most of this is done with electronic receivers scanning all the RF ranges where potential communication may take place. RF switches are needed to switch from scanner to scanner without affecting the very small signals that are potentially being received. Using RF semiconductors can be very expensive and suffer from inter modular distortion, while electromechanical relays are large, bulky and expensive. Standex Electronics's continually advancing RF reed relays are ideally suited for this application.

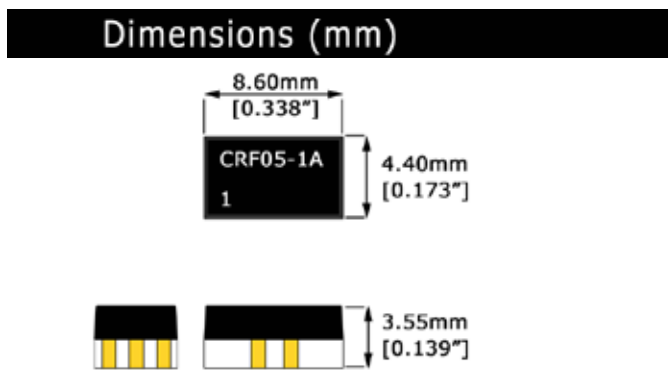


Figure 1. CRF physical layout

Electronic Receivers Use Reed Relays

Today terrorism is the most feared subject in the world. Monitoring world communications can act as a deterrent by supplying potential early warnings preventing potential calamities about to occur. Having sophisticated electronic scanning receivers that have the ability to scan large frequency bands in an efficient manner is a key requirement. To cover these wide frequency ranges RF switches must be employed having the ability to carry the wide range of frequencies without adding any distortion. The main job of the switches is to switch in different filters, which in turn pick off different frequency ranges to analyze. In these cases the RF

signal strength is very small; the frequencies range from DC up to 20 GHz and they need to be scanned continuously, requiring a flat insertion loss over the entire frequency range. Furthermore, minimal circuit resistance is needed so that the small signals received are not lost.

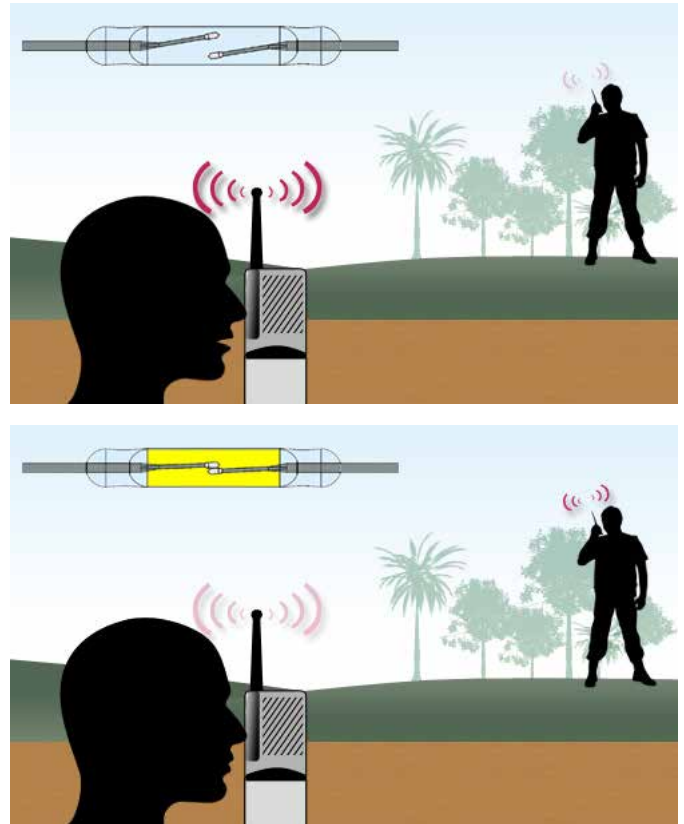


Figure 2. RF signal is received signaling a high terror alert.

Features

- High reliability
- Ideal RF characteristics
- Ideal for carrying fast digital pulses with skew rates less than 20 picoseconds.
- Ability to carry RF signals from DC up to 20 GHz (SRF)
- 50 Ω characteristic impedance
- Switch to shield capacitance < 0.5 picofarads
- Dielectric strength across the contacts 200 volts

- Contacts dynamically tested
- Surface mounted
- Very low profile
- BGAs available
- Rugged thermoset over-molded packaging
- Qual-shield arrangement
- Dielectric strength across the contacts 200 volts

Specifications (@ 20°C) CRF Series



	Min	Typ	Max	Units
Coil characteristics				
Coil resistance	135	150	165	Ω
Coil voltage		5.0		V
Pull-In			3.75	V
Drop-Out	0.85			V
Switch characteristics				
Contact rating			10	Watts
Switching voltage			170	V
Switching current			0.5	Amps
Carry current			0.5	Amps
Static contact resistance			250	mΩ
Dynamic contact resistance			250	mΩ
Dielectric from voltage across the contacts	210			V
Dielectric from voltage coil to contacts	1500			V
Insertion Loss (@ the -3 dB down point)			7	GHz
Operate time			0.1	msec
Release time			20	μsec
Operate temp	-10		100	°C
Storage temp	-55		125	°C

Applications

- Ideal for use in electronic receivers particularly when scanning from DC up to 20 GHz.
- Any applications where frequencies up to 20 GHz are involved.

Semiconductors switches create a problem when switching in the filters, producing inter modular distortion. This has to be dealt with by adding more circuitry and cost. Electromechanical relays can potentially do the job, but are very large and costly. Standex Electronics's RF reed relays are ideal for this application. The CRF series has a flat insertion loss up to 7 GHz; and the new SRF series has a flat insertion loss out to 20 GHz; both of which, add no distortion and maintain a low contact resistance. They have also been tested with one milliwatt of RF power for over 2.5 billion operations with fault free operation.

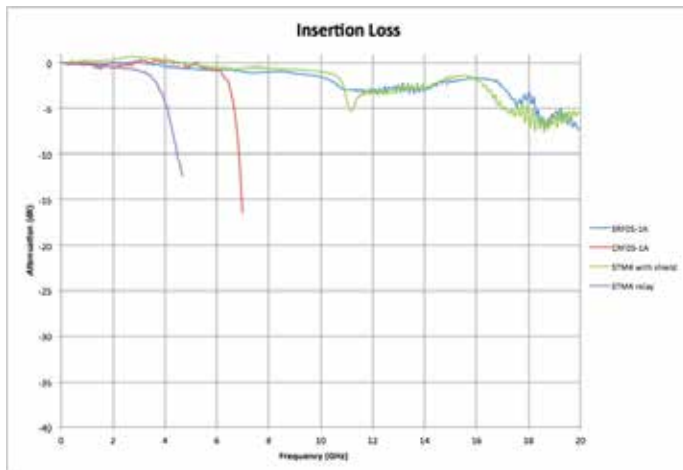
Surface Mount RF Reed Relay Series

Series	Dimensions			Illustration	
	mm	inches			
SRF	W	4.0	0.157		
	H	3.2	0.126		
	L	7.5	0.295		
CRF	W	4.4	0.173		
	H	3.5	0.137		
	L	8.6	0.338		

Standex Electronics's reed relays use hermetically sealed reed switches that are further packaged in strong high strength thermoset molding compound, and can therefore be subject to various environments without any loss of reliability.

The reed relay is an excellent choice because it can operate reliably over a wide temperature range, and represents an economical way to carry out billions of switching operations.

Insertion Loss



Find out more about our ability to propel your business with our products by visiting www.standelectronic.com or by giving us a hello@standelectronic.com today! One of our brilliant engineers or solution selling sales leaders will listen to you immediately.

About Standex Electronics

Standex Electronics is a worldwide market leader in the design, engineering, and manufacture of standard and custom electro-magnetic components, including magnetics products and reed switch-based solutions.

Our magnetics offerings include planar, current sense, and conventional low- and high-frequency transformers and inductors. Reed switch-based solutions include Meder, Kent, and KOFU brand reed switches, as well as a complete portfolio of reed relays, and a comprehensive array of fluid level, proximity, motion, water flow, HVAC condensate, hydraulic pressure differential, capacitive, conductive and inductive sensors.

We offer engineered product solutions for a broad range of product applications in the transportation, automotive, medical, test and measurement, military and aerospace, aviation, HVAC, appliance, security and safety, and general power and industrial markets.

Standex Electronics has a commitment to absolute customer satisfaction through a partner, solve, and deliver approach. With a global organization that offers sales support, engineering capabilities, and technical resources worldwide – we implement customer driven innovation that puts the customer first.

For more information on Standex Electronics, visit us on the web at standexelectronics.com.

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