Application Alley

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Automated Test Equipment - Reed Relays

Pulsed High Current Testing Applications use Reed Relays

Standex MEDER ELECTRONICS

Custom Engineered Solutions for Tomorrow

Introduction

When Test Equipment and Automatic Test Equipment (ATE) systems are used to test discrete semiconductors they often require a switching device that can carry high-pulsed currents that do not distort the pulsed current. These pulsed currents are used to verify the device under test can handle high and/or surge currents without any degradation in performance. The high current pulse verifies that the chip is adequately bonded to its substrate. Also, at the same time, high voltages may be needed to hold off high switching voltages as well. Using reed relays achieves the goal of billions of successful pulsed operations.

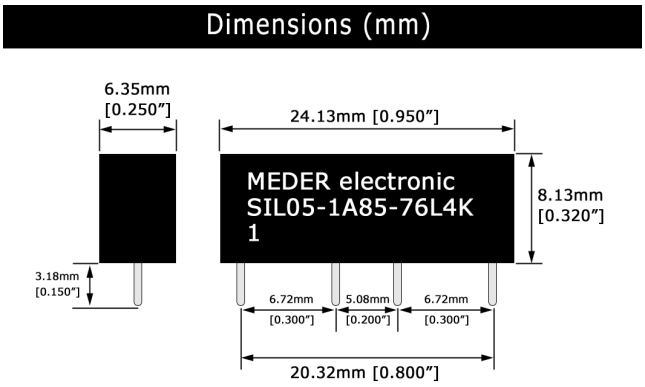


Figure 1. SIL HV Physical layout

Features

- In excess of 1 billion operations including pulsed carry currents
- Small Size
- Ability to carry pulsed currents up to 5 Amps
- Ability to Switch up to 1000 Volts
- Dielectric strength across the contacts 3000 volts
- Round leads allow for better adherence when socketed
- Contacts dynamically tested

Applications

- Ideal for testing power discrete semiconductors like power fets, mosfets, power transistors, etc.

ATE Designers Choose Reed Relays to Pulse High Currents

When testing discrete semiconductors, particularly power devices (Fets, mosfets, etc), high current testing is a very important factor. Also, since multiple tests take place for each component, requiring different voltages, currents and detection devices, isolation from each is critical. So choosing the correct switching device can go a long way to making a successful system. Since the switching device is constantly being turned on and off hundreds of millions of operations over the course of its life, reliability of the switching device is essential as well. Electromechanical devices do well for carrying high currents, but begin to wear mechanically after 1 million operations. Semiconductor switching devices generally cannot support both high currents and high voltages in one chip, and therefore, eliminate itself from these kinds of switching requirements. For these reasons designers have turned to Standex-Meder's reed relays containing one or more reed switches for meeting the above requirements.

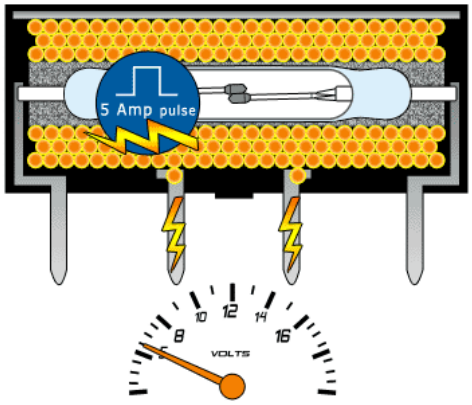


Figure 2. Depicts a perfect square wave pulse of 5 Amps traveling across the closed reed switch contact surface.

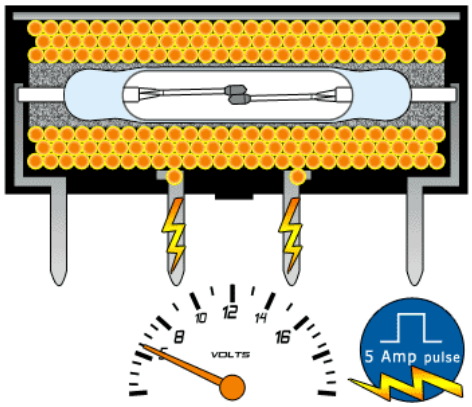
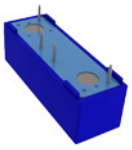


Figure 3. The 5 Amp pulse remains undistorted when it passes completely through the reed relay's switch.

Standex-Meder's SIL HV Series was designed for this very requirement. This series can switch low level signals well into the billions of operations as well as carry high current pulses for an equal number of times. The SIL HV Series can carry 3 amps continuously and can carry 5 amp pulsed currents for up to 5 milliseconds through the relay with no distortion to its leading or trailing edge. For the higher pulsed currents, it is recommended to wait at least 5 msec after the coil has been energized before applying the high pulsed current. The pulsed currents allow the designer to determine the integrity of the chip and to make sure it is properly placed on its substrate for efficient operation.

Specifications (@ 20°C) SIL HV Series				
	Min	Typ	Max	Units
Coil Characteristics*				
Coil resistance	198	220	242	Ohms
Coil voltage		5		Volts
Pull-In max.			3.0	Volts
Drop-Out min.	0.5			Volts
Load characteristics				
Contact rating			100	Watts
Switching voltage	0		1000	Volts
Switching current	0		1.0	Amps
Carry current	0		3.0	Amps
Max carry current for 5 Ms			5.0	Amps
DC contact resistance		150	150	mΩ
Dynamic contact resistance		200	200	mΩ
Breakdown voltage	3000			Volts
Operate time		0.5	0.75	msec
Release time		50	100	µsec
Operate temp	-20		85	°C
Storage temp	-30		100	°C
*Coil parameters will vary by 0.2% / 1 °C				

This reed relay series can also switch up to 1000 volts, and has a dielectric strength of 3000 volts minimum, because Standex-Meder uses an evacuated reed switch.

Through Hole Reed Relay Series				
	Dimenstions	mm	inches	Illustration
Series				
SIL HV	W	6.35	0.250	
	H	8.13	0.320	
	L	24.13	0.950	
LI	W	10	0.394	
	H	10.4	0.409	
	L	30	1.181	

Through Hole Reed Relay Series				
	Dimenstions	mm	inches	Illustration
Series				
SIL	W	5.08	0.394	
	H	7.8	0.394	
	L	19.8	1.299	
BE	W	10	0.394	
	L	10	0.394	
	H	33	1.299	

Standex-Meder's reed relays use hermetically sealed reed switches that are further packaged in strong high strength plastic, 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.

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

About Standex-Meder Electronics

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

Our magnetic offerings include planar, Rogowski, current, and low- and high-frequency transformers and inductors. Our reed switch-based solutions include Meder, Standex and OKI 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 spectrum of product applications in the automotive, medical, test and measurement, military and aerospace, as well as appliance and general industrial markets.

Standex-Meder Electronics has a commitment to absolute customer satisfaction and customer-driven innovation, with a global organization that offers sales support, engineering capabilities, and technical resources worldwide.

Headquartered in Cincinnati, Ohio, USA, Standex-Meder Electronics has eight manufacturing facilities in six countries, located in the United States, Germany, China, Mexico, the United Kingdom, and Canada.

For more information on Standex-Meder Electronics, please visit us on the web at www.standexmeder.com.

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