



Application Alley

Automotive- Reed Sensor

Vehicle Power Door Locks Controlled Using A Reed Sensor

Introduction

Power door locks are now designed into 75% of all new cars, and 100% on all full feature models. The power door locks can be opened wirelessly or by placing in a code that is compared electronically to the preset code on the on-board computer. If they match the locks are disengaged. Engaging the lock can be done remotely or by lifting the handle of the car door handle. The Reed Sensor senses this motion and activates the locking motion. Reed Sensors have been an excellent choice carrying out this function in a reliable manner.

- Tens of millions of reliable operations
- Surface mount and through hole packages available
- Cylindrical hole and screw fastening mounting
- Contacts dynamically tested

Applications

- Ideal for sensing the motion of a car door handle rotation associated with power door locks
- Ideal for applications sensing any kind of motion in a host of different configurations

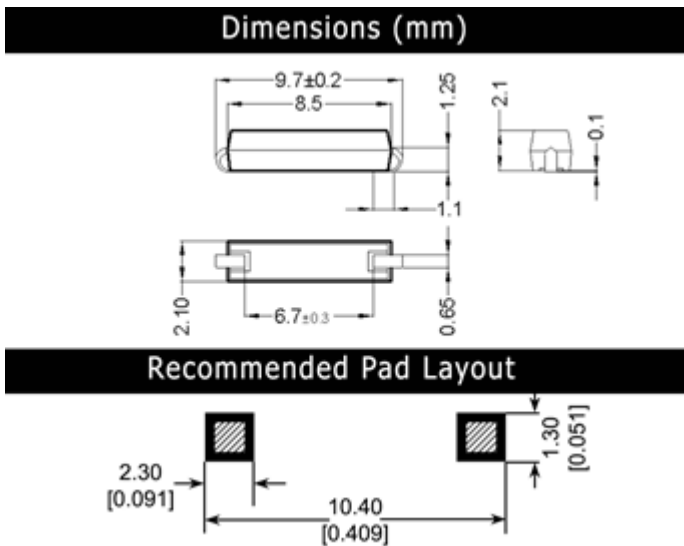


Figure 1. MK17-x-3 Sensor physical layout

Features

- The reed sensors reliably operate between -50°C to 150°C
- Magnet and Reed Sensor are isolated and have no physical contact by typically having the magnet mounted on the handle and the Reed Sensors mounted and positioned to accurately pick up the handle motion
- The reed switch used in the Reed Sensor is hermetically sealed and is therefore not sensitive to rough, wet environments
- The magnet is not affected by its environment

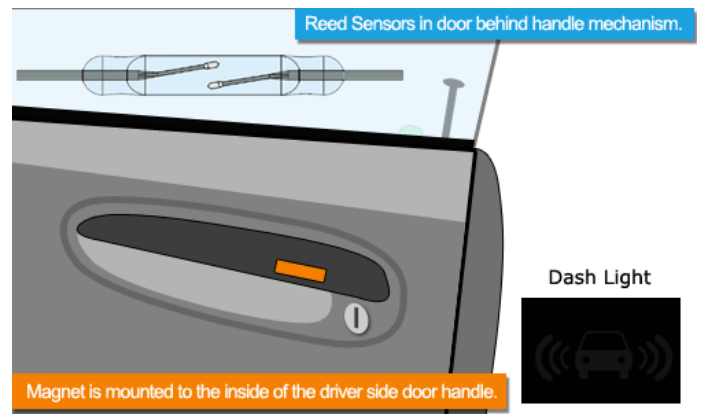


Figure 2. Illustration shows reed sensor in its normally open state. Car lock is unlocked and alarm not activated.

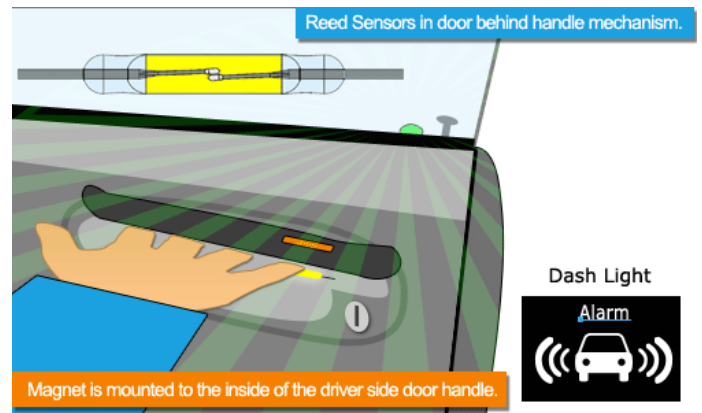


Figure 3. When driver lifts on door handle the reed contacts close sending a signal to the electronics to lock the door and activate the alarm system.

Locking Power Door Can be Done Reliably Using Reed Sensors

Locking car doors has been a fundamental part of vehicles for the last 100 years. Slowly power door locking was introduced and is now used in the majority of all automobiles. The locking can be done remotely or it can be done by lifting the door handle. Reed Sensors have been shown to be an excellent way of locking the door when the handle is lifted. A magnet is conveniently located in the

moving mechanism of the handle. When this is moved the reed sensor activates sending a signal to the on-board computer in turn locking the door, turning on the interior lights briefly and energizing the alarm with a few short beeps.

Surface Mount Sensor Series				Illustration
Series	Dimensions			
	mm	inches		
MK15	W	2.5	0.098	
	H	2.5	0.098	
	L	19.50	0.768	
MK16	W	2.3	0.091	
	H	2.3	0.091	
	L	15.60	0.614	
MK17	W	2.1	0.083	
	H	2.1	0.083	
	L	9.61	0.378	
MK22	W	2.7	1.060	
	H	2.3	0.091	
	L	15.60	0.614	
MK23-35	W	2.2	0.087	
	H	1.95	0.077	
	L	15.75	0.620	
MK23-66	W	2.2	0.087	
	H	2.7	1.060	
	L	19.60	0.772	
MK23-87	W	2.0	0.079	
	H	2.1	0.083	
	L	15.60	0.614	
MK23-90	W	2.54	0.100	
	H	3.05	0.120	
	L	24.9	0.980	

Specifications (@ 20°C) MK15 & MK06 Series			
	Min	Max	Units
Operate Specifications			
Must close distance	5	25	mm
Must open distance	5	25	mm
Hysteresis	Typical 50%		
Load characteristics			
Switching voltage		200	V
Switching current		0.5	Amps
Carry current		1.5	Amps
Contact rating		10	Watts
Static contact resistance		150	mΩ
Dynamic contact resistance	200		mΩ
Breakdown voltage	320		V
Operate time		0.5	msec
Release time		0.1	msec
Operate temp MK06	-20	85	°C
Storage temp MK06	-20	85	°C
Operate temp MK15	-20	130	°C
Storage temp MK15	-20	130	°C

Dimensions (mm)

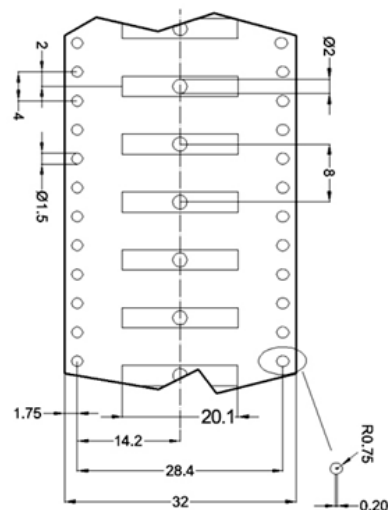
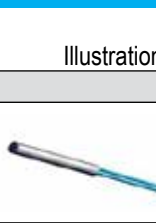
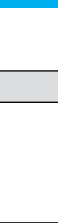

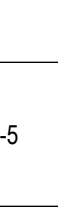


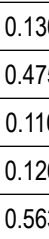
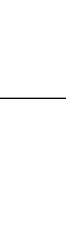

Figure 4. MK15 Tape & Reel

The reed sensor is an excellent choice because it can operate reliably from -50°C to 150°C and represents an economical way to carry out the sensing function. Because Standex Electronics's sensors use hermetically sealed reed switches that are further packaged in strong high strength plastic they can be subject to rough treatment and environmental concerns such as dirt, grease, and moisture without any loss of reliability.

Cylindrical Panel Mount Sensor Series





Series	Dimensions		Illustration	
	mm	inches		
MK03	D	5.25	0.207	
	L	25.5	1.004	
MK14	D	4	0.157	
	L	25.5	1.004	
MK18	D	5	0.197	
	L	17	0.669	
MK20/1	D	2.72	0.107	
	L	10	0.394	

Rectangular Panel Mount Sensor Series

Series	Dimensions		Illustration	
	mm	inches		
MK04	W	13.9	0.547	
	H	5.9	0.232	
	L	23.0	0.906	
MK05	W	19.6	0.772	
	H	6.1	0.240	
	L	23.2	0.913	
MK12	W	14.9	0.587	
	H	6.9	0.272	
	L	32.0	1.260	

Standex Electronics's sensors are packaged for surface mounting as well as through hole mounting. Also, Standex Electronics has cylinder packages and well as screw fastening packages having lead wires for remote attachment to the electronics.

Through Hole Sensor Series

Series	Dimensions		Illustration	
	mm	inches		
MK06-4	W	3.3	0.130	
	H	3.3	0.130	
	L	12.06	0.475	
MK06-5	W	2.8	0.110	
	H	3.2	0.126	
	L	14.30	0.563	
MK06-6	W	3.3	0.130	
	H	4.2	0.165	
	L	17.24	0.679	
MK06-7	W	3.3	0.130	
	H	4.2	0.165	
	L	19.78	0.779	

**Consult the factory for more options not listed above.

Find out more about our ability to propel your business with our products by visiting www.standexelectronics.com or by giving us a hello@standexelectronics.com today! One of our 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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