Application Alley

Automotive - Reed Sensor

Gear Shift Reed Sensor for Trucks

Standex Electronics

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Introduction

More and more electronic control is being used in automobiles and trucks in “drive by wire” implementations, replacing traditional mechanical systems which are highly susceptible to wear. For improved functionality and ease of control, the transmission shifter arm movement in certain trucks is monitored using reliable Reed Sensors.

When battery drain is a concern in automobiles, the magnetically actuated Reed Sensor is the perfect solution since they draw no power when the vehicle is off. The MK16 Reed Sensor, an over-molded hermetically sealed Reed Switch is one of several surface mount sensors which can be used in a gear shifter application.

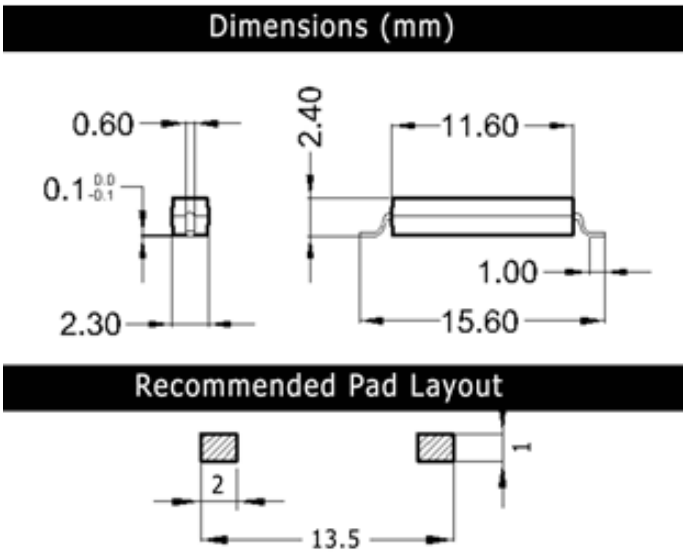

Figure 1. MK16-x-2 Sensor physical layout

Features

- Hermetically sealed
- Rugged overmolded surface mount package
- Dynamically tested contacts
- Reliable switching without wearing parts
- Ability to activate and control two sensors with one magnet
- Ability to handle “under the hood” environment
- Ability to operate -40°C to 130°C
- No operating power required
- Millions of switching operations

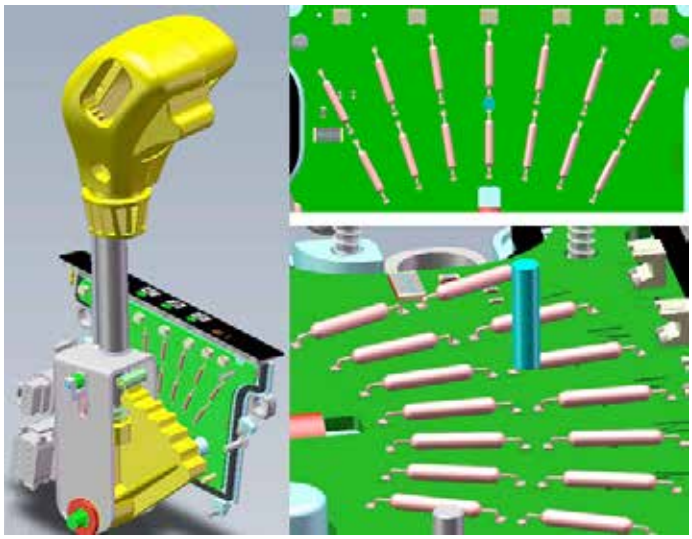

Figure 2. Cut-away of the gear shifter (left) and the sensor matrix top view (top right) and how magnet is centered directly over the sensor pairs.

Applications

- Any truck gear shift requirement requiring computer control
- Any application requiring accurate position placement sensing

Standex Electronics’s Surface Mount Reed Switch Sensors Lead The Way

Truck gear shifts now use Standex Electronics’s surface mounted Reed Sensor to sense the shifter position and send a signal to the micro computer initiating the gear change in the transmission. This approach eliminates the need for all the additional linkage from the transmission to the gear shift. Since the gear shift is one of the most used mechanical systems, its wear is inevitable with subsequent quality problems and ensuing costly repairs. Standex Electronics’s electronic detection eliminates this entire issue.

In addition, Standex Electronics's use of over-molded hermetically sealed reed switches makes it impervious to faulty operation when subjected to various environmental conditions.

In addition, since there could be up to 12 Reed Sensors engaged when the vehicle is in use, there are only two that are activated and drawing a small amount of power at any one time. When the vehicle is off none of the sensors draw any power, insuring any inadvertent battery drain is avoided.

In this application, Standex Electronics's MK16 accomplishes the sensing action when the two Reed Sensors are activated by a samarium cobalt magnet mounted in the gear shift handle. When the gear shift is moved to a new position the magnet will move into the influence of the next pair of Reed Sensors, which when activated will carry out their dual function.

Consult our engineering group with your specific applications.

Dimensions (mm)

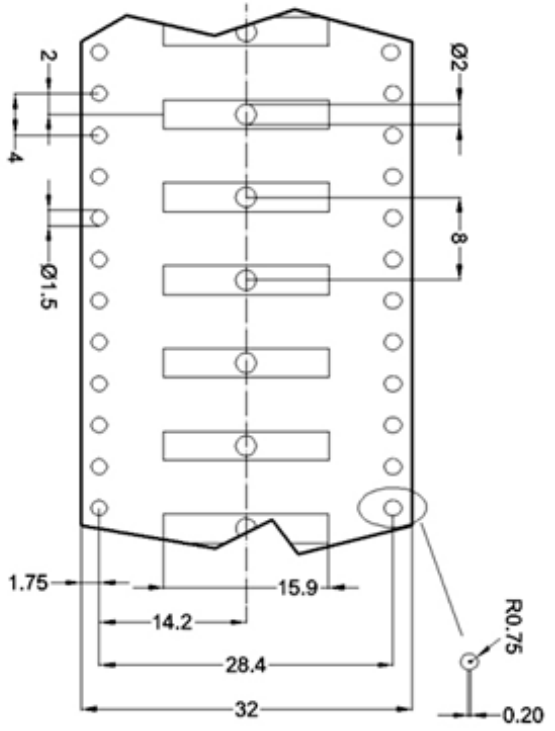

Figure 3. MK16 Tape & Reel

Specifications (@ 20°C) MK16 Series			
	Min	Max	Units
Operate Specifications			
Must close distance	5	15	mm
Must open distance	5	15	mm
Hysteresis	Typical 50%		
Load characteristics			
Switching voltage		200	V
Switching current		0.5	Amps
Carry current		0.5	Amps
Contact rating		10	Watts
Static contact resistance		150	mΩ
Dynamic contact resistance	200		mΩ
Breakdown voltage	230		V
Operate time		0.6	msec
Release time		0.1	msec
Operate temp	-40	130	°C
Storage temp	-50	130	°C

Consider some of the below surface mount options for the gearshift application.

Surface Mount Sensor Series

Series	Dimensions	mm	inches	Illustration
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	

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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