

RedRock™ Microfabricated Reed Switch – Technical Tips

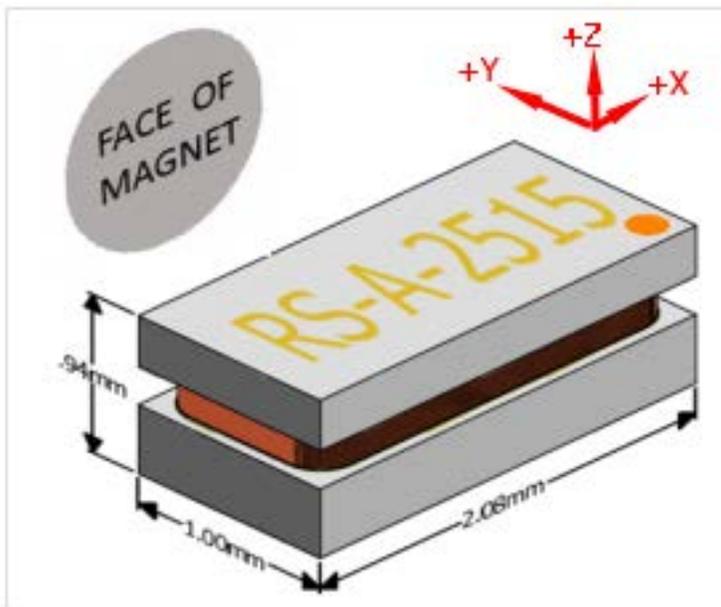
If you want to operate a RedRock switch using a magnet pointing down at the top of the switch, where should you position the magnet? This Technical Tip will tell you how.

Background

The RedRock RS-A-2515 is a microfabricated reed switch that is closed using a permanent magnet. Figure 1 shows the recommended orientation of the magnet pole in relation to the switch. The switch is not polarized and a North or South pole will work equally well. However, some applications require that the magnet be positioned above the switch (+Z direction in Fig. 1), rather than to the side. The switch can certainly be operated with the magnet placed like this, though the magnetic sensitivity will be slightly less and the magnet will need to be brought closer to the switch to make it close.

Tip

To achieve the maximum sensitivity and therefore ensure the biggest closure distance, DO NOT position the magnet directly above the switch. Instead, offset the magnet a few millimeters in the +Y or -Y directions. Figure 2 shows the most sensitive “hot spots”. In the example shown, a cylindrical NdFeB Type N42 magnet 8 mm in diameter closed the switch at a distance of 7 mm above the top of the switch, when the center of its face was offset 6 mm from the center of the switch. Adjusting the magnet’s position a couple of mm in the +X or -X positions in addition to the 6 mm Y-shift can gain even higher sensitivity.



Note that when the magnet was placed directly above the switch, it had to get within 4 mm before the switch closed, indicating a considerable drop in sensitivity at that position.

Fig. 1. Standard orientation of a permanent magnet used to close a RedRock switch.

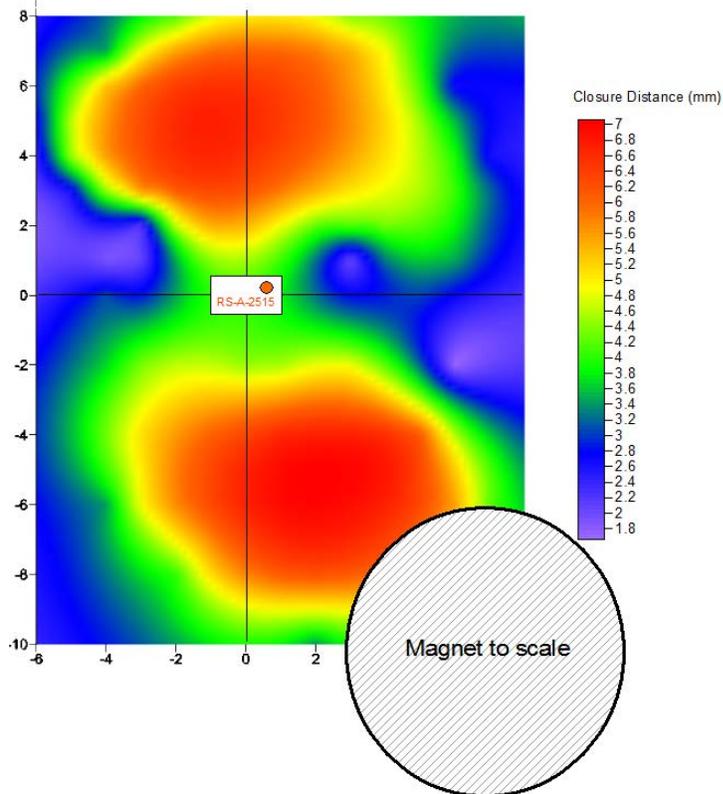


Fig. 2 “Hot Spots” for positioning a magnet to obtain the maximum closure distance above the RS-A-2515 switch. X and Y scales are in mm. Red indicates positions of highest sensitivity, where the maximum operation distance between the magnet and the switch is achieved.

Conclusions

This Tech Tip will help you find the most sensitive position to place a magnet relative to the RedRock switch. Your results may vary from what we show here, depending on the size, shape and type of magnet you want to use, so it’s always best to experiment to find the best position before freezing your design. In case of any difficulty, contact us describing your application, and if possible send us a sample of the magnet you are using. We’ll map the sensitivity of the switch using your magnet and tell you the best place to position it.

For further information contact redrock@cotorelay.com

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