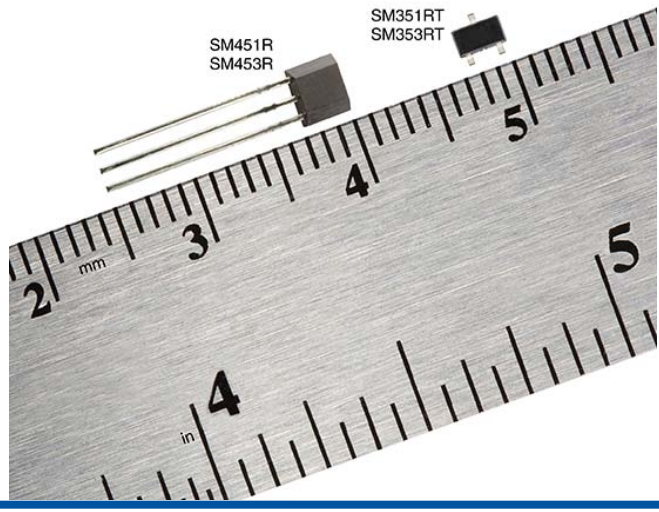
Product Training Module: Magnetoresistive Sensor ICs Standard Power Series

High Sensitivity. Standard Power. Durable.

Honeywell

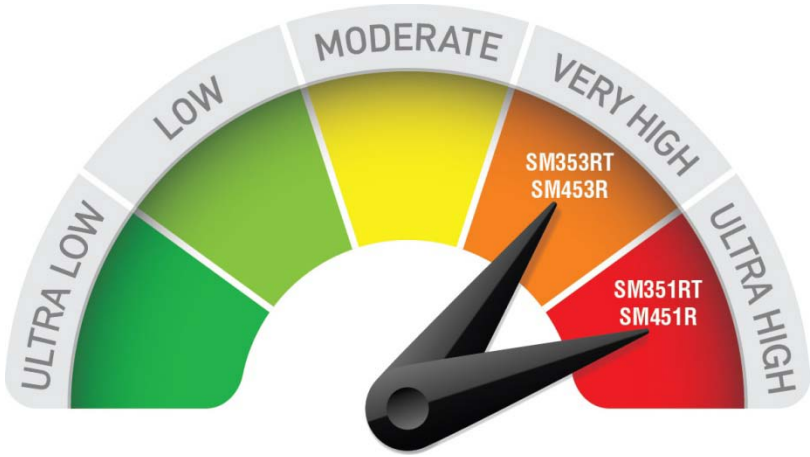
Summary of Contents

- **In this training module, you will learn the following about Honeywell's Magnetoresistive Sensor ICs, Standard Power Series**
  - Overview of the new product
  - Key features and benefits to design engineers
  - Competitive overview versus MR sensors and reed switches
  - Potential applications
  - Where to obtain product information



Introduction

- **Magnetoresistive Sensor ICs, Standard Power Series, consist of the following products:**
  - SM351RT, SM451R: provide ultra high sensitivity, 11 Gauss max operate
  - SM353RT, SM453R: provide very high sensitivity, 20 Gauss max operate

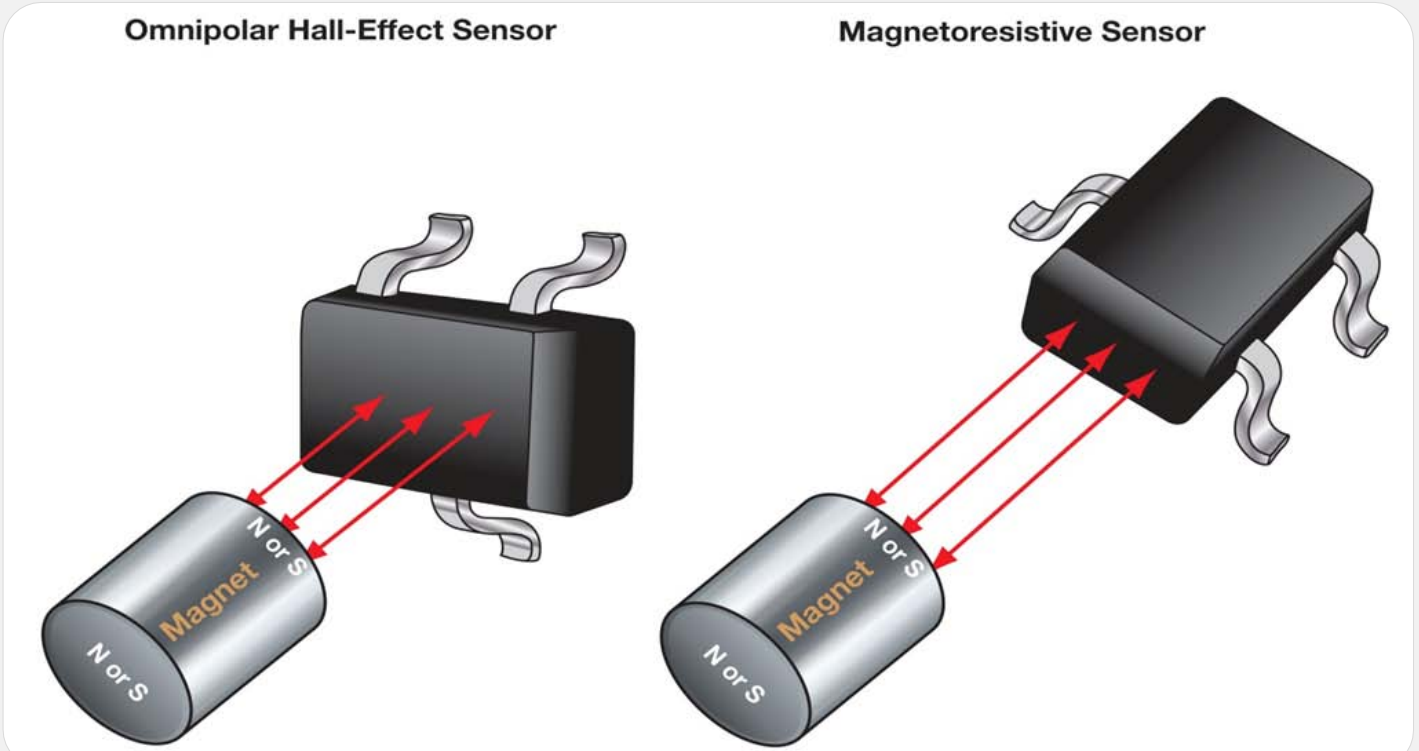


High Sensitivity

Value to Customers

- **The Standard Power Series offer design flexibility**
  - ✓ High sensitivity allows for increased air gap
  - ✓ Standard power 3 to 24 Vdc supply voltage range for potential use in a wide range of applications
  - ✓ SOT-23 surface mount or flat TO-92 3-pin package options
  - ✓ Omnipolar sensing activates with either pole from a magnet
  - ✓ Savings from the use of low-cost magnets
  - ✓ Temperature range: -40 ˚C to 85 ˚C [-40 ˚F to 185 ˚F]
  - ✓ RoHS-compliant materials: Meets Directive 2002/95/EC

Theory of Operation Hall versus MR



MR senses in the parallel plane and has higher sensitivity than Hall-effect sensing

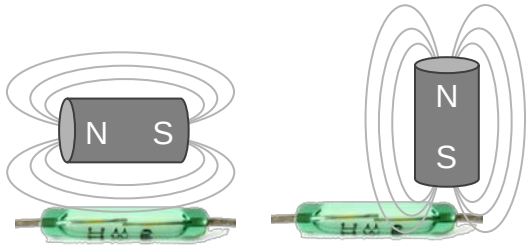
Standard Power versus Hall-effect

- Standard Power Series' higher sensitivity can allow the ability to sense air gaps two times the distance of Hall-effect sensor ICs
- Improves design flexibility
- Helps to reduce application costs by utilizing smaller or lower strength magnets

Can Allow Ability to Sense Air Gaps 2X the Distance

Standard Power versus Reed Switches

- Standard Power Series are smaller, more durable and reliable at the same sensitivity and essentially the same cost
- Ideal for powered applications where previously only reed switches could be used due to large air gap needs



Gauss = AT

Gauss is more sensitive than AT

Sensitivity

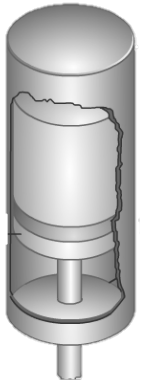
Quality

broken glass

Smaller, more Reliable and Durable at the Same or Better Sensitivity and Essentially the Same Cost

Potential Industrial Applications

- High frequency flow sensing in HVAC, water, fuel meters, and gas utility meters
- Anti-tamper detection in water, electric, and gas utility meters
- Liquid level detection
- Motor RPM sensing
- In-cylinder position sensing



Potential Medical Applications

- RPM sensing in exercise and rehabilitation equipment
- Magnetic interrupt in exercise and rehabilitation equipment
- Absence/presence detection in infusion pumps
- Position sensing of medication dispensing cabinet drawers
- Incline position sensing in hospital beds

Potential White Goods Applications

- Lid, door and drawer position detection
- Fluid flow detection
- Liquid level detection

About Honeywell Sensing and Control's Products

- **For more information about all of Honeywell Sensing and Control's sensor and switch solutions, visit sensing.honeywell.com**