

# REDROCK™ RR120 TMR DIGITAL SENSOR



## RedRock™ RR120 TMR Digital Sensor

The RedRock 120 Series is an integrated digital magnetic sensor ideal for use in medical, industrial, automotive and consumer switching applications. Based on patented Tunneling Magnetoresistance (TMR) technology with CMOS process, the RR120 Series can function even in low magnetic fields with large air gaps. The RR120 Series provides high sensitivity with low power consumption in a small footprint package.

### Features

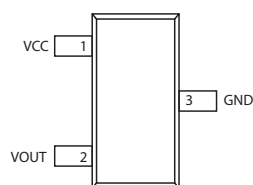
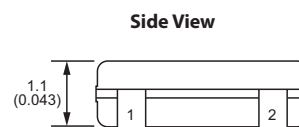
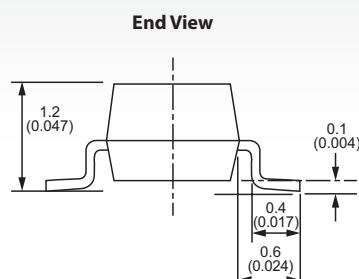
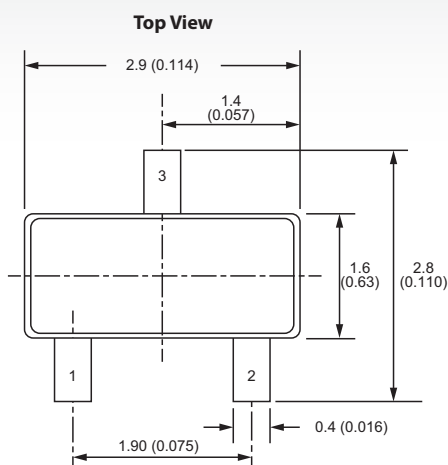
- ▶ High sensitivity
- ▶ Stable temperature performance
- ▶ Resistant to mechanical stress
- ▶ Low power consumption
- ▶ High frequency performance
- ▶ Logic output for design flexibility
- ▶ REACH Compliant
- ▶ RoHS Compliant 

### IDEAL APPLICATIONS

- ▶ Door or lid closure detection
- ▶ Smart phones, tablets and laptops
- ▶ Bare glass reed switch replacement
- ▶ Motor controllers
- ▶ Proximity detection
- ▶ Open-close detection
- ▶ Water, electric and gas meters
- ▶ Fluid level detection
- ▶ “Wake-Up” functionality

## DIMENSIONS

in Millimeters (Inches)



### Ordering Information

| Part Number              | RR120-A X 1 X-X 0 | Package             |
|--------------------------|-------------------|---------------------|
| Model Number             |                   | 0 - SOT-23          |
| Magnetic Sensitivity (G) |                   | Special Feature     |
| A - Op = 30    Rel = 15  |                   | 0 - N/A             |
| Temp Rating (°C)         |                   | Sensitivity Pattern |
| 1 - Industrial (-40~+85) |                   | 0 = Omnipolar       |
| Power Rating             |                   | 1 = Unipolar        |
| 1 - Default Value        |                   |                     |

Distributed by:



rev. 0915016

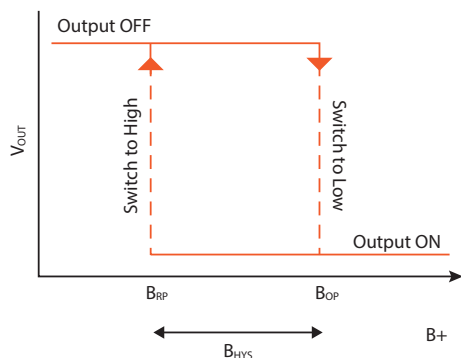
# REDROCK™ RR120 TMR DIGITAL SENSOR

| REDROCK™                                      |                   | RR120 |       |      |
|-----------------------------------------------|-------------------|-------|-------|------|
| Parameters                                    | Units             | Min   | Typ   | Max  |
| <b>OPERATING CHARACTERISTICS<sup>1</sup></b>  |                   |       |       |      |
| Operate Sensitivity                           | G                 | 20    | 30    | 40   |
| Release Sensitivity                           | G                 | 8     | 15    | 25   |
| Hysteresis                                    | %                 |       | 50    |      |
| Operate Time                                  | nS                |       | 600   |      |
| Release Time                                  | nS                |       | 600   |      |
| <b>ELECTRICAL CHARACTERISTICS<sup>1</sup></b> |                   |       |       |      |
| Supply Voltage                                | V <sub>CC</sub>   | 2.7   | 3.0   | 3.3  |
| Average Current Drain                         | nA                |       | 350   | 400  |
| Output Voltage (High) <sup>2</sup>            | V <sub>OUTH</sub> |       | 2.7 V |      |
| Output Voltage (Low) <sup>2</sup>             | V <sub>OUTL</sub> |       | 0.2 V |      |
| <b>ABSOLUTE ENVIRONMENTAL RATINGS</b>         |                   |       |       |      |
| Operating Temperature: Industrial             | °C                | -40   |       | 85   |
| Storage Temperature                           | °C                | -55   |       | 150  |
| Soldering Temperature (3 cycles, 1 min.)      | °C                |       |       | 260  |
| Operating Magnetic Field                      | G                 |       |       | 100  |
| ESD Level (HBM)                               | V                 |       |       | 4000 |

## Notes:

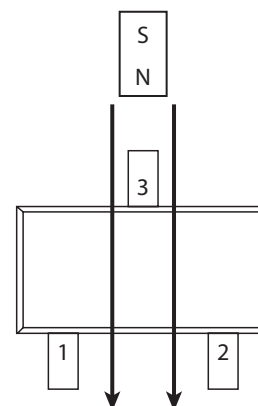
1. All characteristics as measured at 25°C
2. See "Output Behavior vs. Magnetic Field" below for more details.

## OUTPUT BEHAVIOR VS. MAGNETIC FIELD

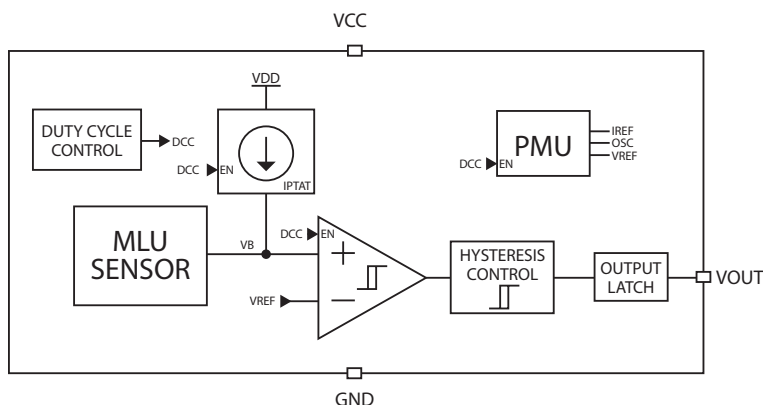


| Characteristic              | Conditions   | Output |
|-----------------------------|--------------|--------|
| North Pole                  | $B > B_{OP}$ | Low    |
| Null or Weak Magnetic Field | $B < B_{RP}$ | High   |
| South Pole                  | $B > B_{OP}$ | High   |

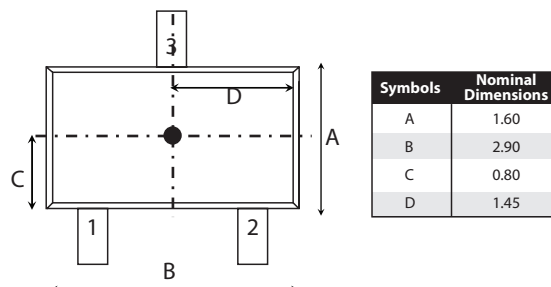
## SENSOR POLARITY DIAGRAM



## RR120 DIGITAL FUNCTION BLOCK DIAGRAM



## MLU SENSOR LOCATION DIAGRAM



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