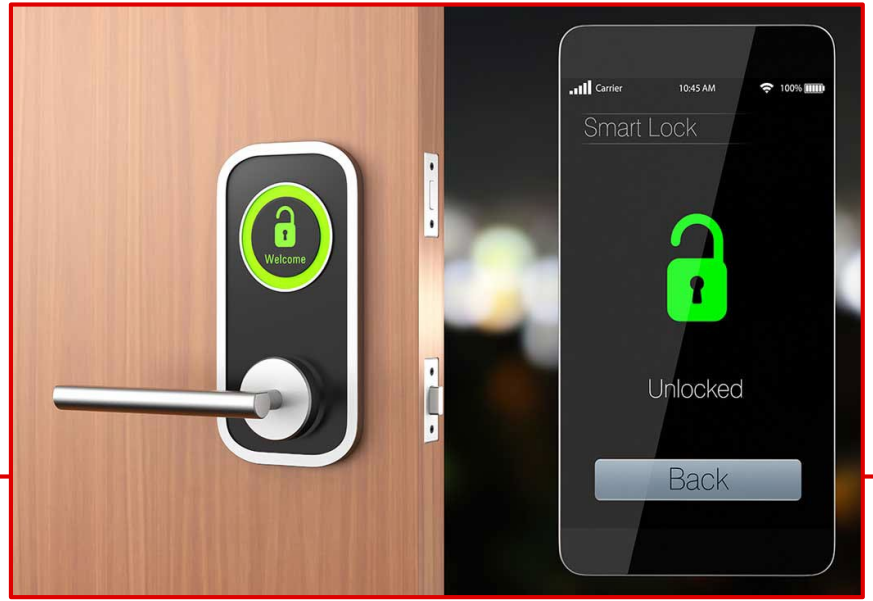
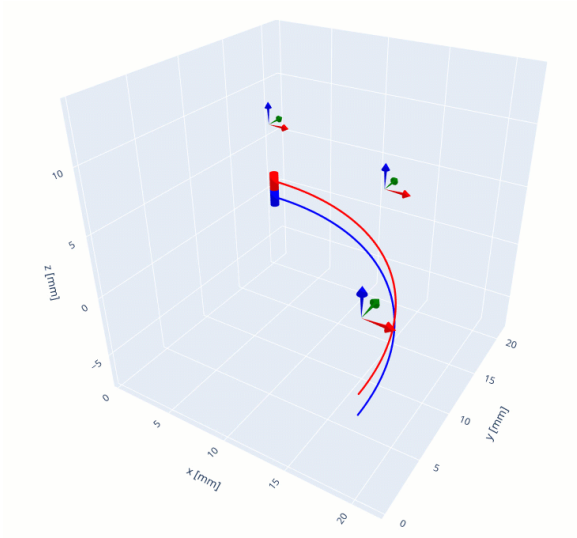
Designing with Hall-effect sensors

Electronic Smart Locks



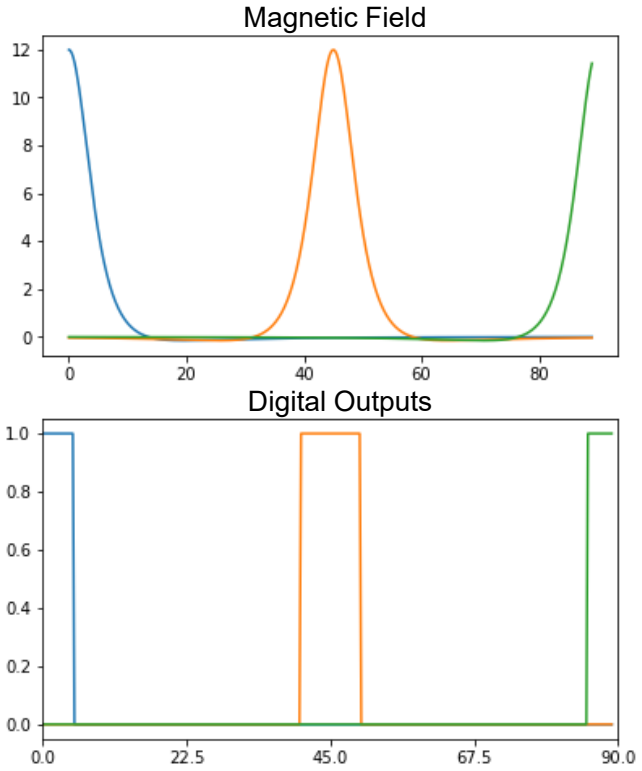
- Low power implementation to minimize battery drain
- Robust/reliable sensing
- Small form factor implementation

Key factors for rotational sensing in **electronic smart locks**

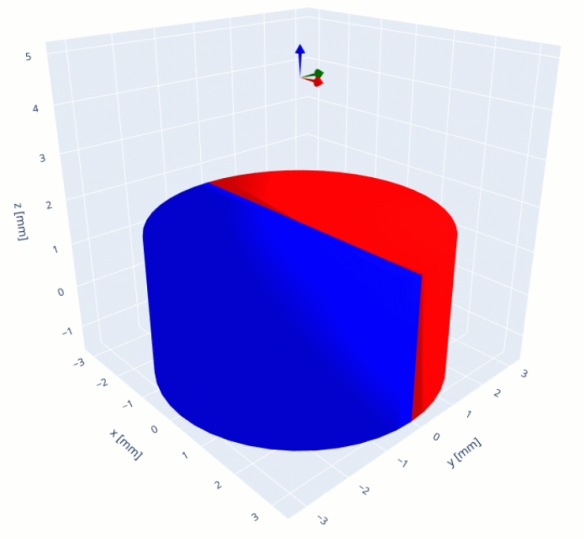


Hall-effect switch

- Uses multiple Hall-effect switches to determine different rotational positions
- Magnet moves in an arc around the center shaft of the lock

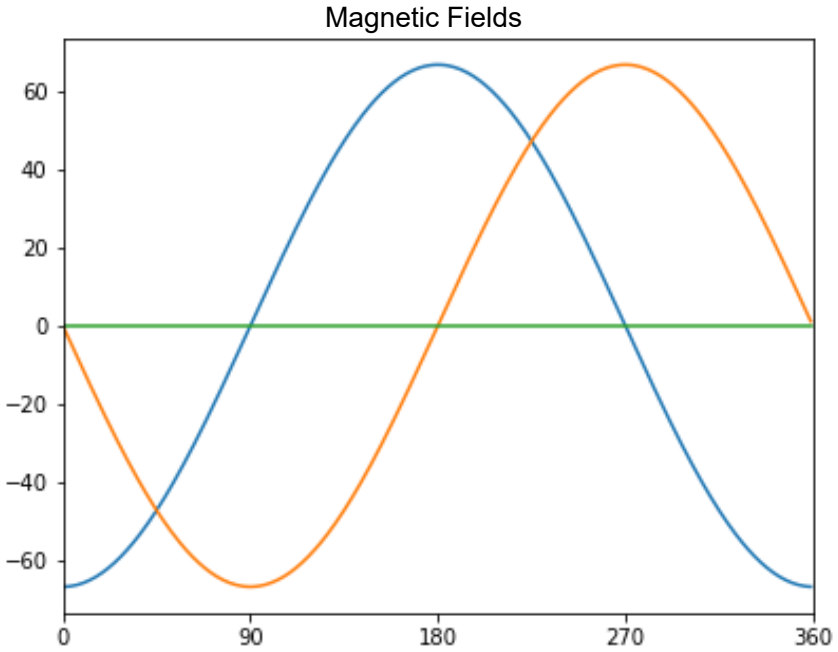


Texas Instruments

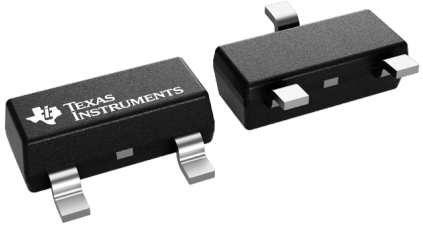


3D linear Hall sensor

- Uses a single Hall-effect sensor
- Magnet can be offset from the center shaft through a gear
- Gear ratio can provide a higher range of rotation than the center shaft alone



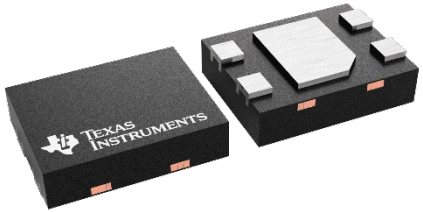
Texas Instruments



DRV5032

Ultra low-power Hall-effect switch

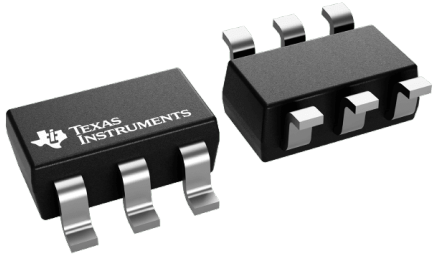
- 5Hz and 20Hz versions available
- 0.54 µA average Icc for 5Hz version
- SOT-23, X2SON, and TO-92 packages
- Different magnetic threshold options available
- Open-drain and push-pull output options



TMAG5231

Low-power Hall-effect switch

- 10Hz, 20Hz, and 216Hz versions available
- SOT-23 and X2SON packages
- Different magnetic threshold options available
- Omnipolar response with push-pull output



TMAG5273

Low-power linear 3D Hall-effect sensor

- Programmable sensitivity range and temperature compensation over I2C interface
- Three Hall-effect elements detect complete magnetic field vector
- Built in CORDIC provides angle output over I2C
- Low power wake-and-sleep mode minimizes current consumption

Insert demo video

To learn more, visit
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