TAD2143

High-Precision TMR Angle Sensor with Digital Output

⧉TDK

Application Examples

TAD2143 is a potential system solutions for industrial applications such as:

– BLDC motor commutation
– Absolute angle sensor

Features

– TMR sensor with integrated signal processor unit
– Angle error compensation: static compensation and dynamic compensation
– Various and configurable digital outputs:
  – UVW (Hall switch emulation with extrapolator)
  – PWM
  – ENC (encoder mode, ABZ)
  – SPI
– Internal diagnostic capability for high diagnostic coverage
– Continuous in operation self-tests:
  – Magnet loss detection
  – Maximum rotation speed detection
  – Over/undervoltage detection
  – Internal sensor fails
  – Signal processing supervision
  – Register CRC
– Self-teach-in feature for angle errors
– Industrial grade only available

Physical Characteristics

– Wide operating temperature range:
  – T_A = –40 °C to 125 °C
  – T_J = –40 °C to 150 °C
– Wide magnetic-field range:
  – 20 mT to 80 mT (standard range)
  – 80 mT to 120 mT with lower accuracy
– Angle error:
  – ±0.3° (Full rotation at standard range, over lifetime)
  – ±0.7° (Non-full rotation at standard range, over lifetime)
– TSSOP16 package

Benefits

– Fast response, high angular accuracy, and advanced compensation algorithms suitable for fast and accurate motor control applications
– Self-Teach-in Feature allows compensation of system level errors
– Very stable position measurement (over temperature and lifetime) – no need for re-calibration
– UVW mode with extrapolator allows use of same setup (sensor and magnet) for different motor topologies (pole pair numbers)