

AH59

COMPLEMENTARY OUTPUT HALL EFFECT SWITCHES

These sensor are an integrated Hall sensor with output driver designed for electronic commutation of brushless DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and complementary open-collector drivers for sinking large current loads. An internal band-gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range. If a magnetic flux density larger than threshold Bop, DO is turned on (low) and DOB is turned off (high). The output state is held until a magnetic flux density reversal falls below Brp causing DO to be turned off (high) and DOB turned on.

FEATURES

- One chip hall sensor.
- 4.5V to 20V supply voltage.
- 350mA (avg) output sink current.
- Build in protection diode for chip reverse power connecting.
- 20° to 85° operating temperature.CC
- Low profile SIP-4L packages.
- ESD rating: 2000V (Human body model).

TYPICAL APPLICATIONS

- Dual-coil Brushless DC motor.
- Dual-coil Brushless DC fan.
- Revolution Counting.

ABSOLUTE MAXIMUM RATING

| Parameter | Symbol | Value | Unit |
|------------------------------|-----------------------|-----------|------|
| Supply voltage | Vcc | 24 | V |
| Reverse VCC polarity voltage | VRcc | -24 | V |
| Magnetic flux density | B | Unlimited | G |
| IO | Continuous | 350 | mA |
| | HoldOutput ON current | 500 | mA |
| | Peak (start up) | 600 | mA |
| FG ON Current (continudus) | | 20 | mA |
| Power dissipation | IF | 500 | mW |
| Operation temperature | Pd | -20 ~ 85 | °C |
| Storage temperature | Ta | -50 ~ 150 | °C |
| | Tetg | | |

ELECTRICAL CHARACTERISTICS

TA=25°C

| Parameter | Symbol | Test condition | Type and Value | | | Unit |
|---------------------------|--------|---------------------|----------------|------|-----|------|
| | | | min | typ | max | |
| Supply Voltage | Vcc | | 2.5 | - | 24 | V |
| Low supply voltage | VCE | Vcc=4.5V Io=100mA | -- | 0.4 | -- | V |
| Output saturation voltage | VSAT | Io=50mA | -- | 0.35 | 0.6 | V |
| Output leakage current | IoL | VCE=14V | -- | 0.1 | 10 | µA |
| Supply current | Icc | Vcc=20V Output open | -- | 12 | 16 | mA |
| Switch time differential | Δt | RL=820Ω CL=20pF | -- | 3.0 | 10 | µs |

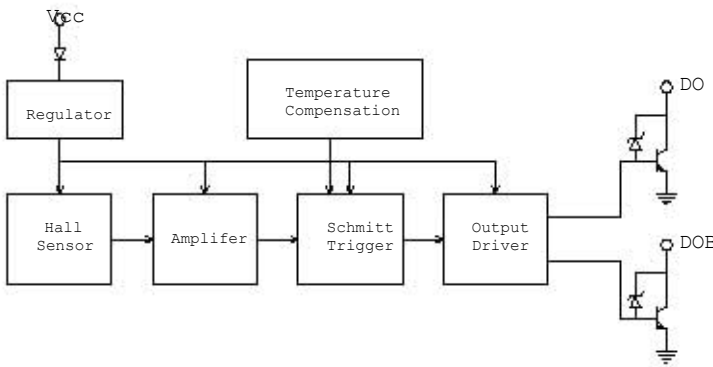
MAGNET CHARACTERISTICS

Ta=25

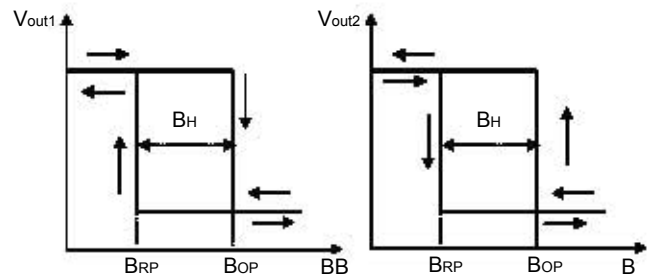
| Parameter | Symbol | AH58 | | | AH59 | | | AH68 | | | Unit |
|---------------|--------|------|-----|-----|------|-----|-----|------|-----|-----|------|
| | | min | typ | max | min | typ | max | min | typ | max | |
| Operate Point | BOP | - | - | 20 | | | 8 | | | 15 | mT |
| Release Point | BRP | 2 | - | - | -8 | | | -15 | | | mT |
| Hysteresis | BH | 5 | - | - | 4 | | | 5 | | | mT |

NOTE: 1mT=10GS

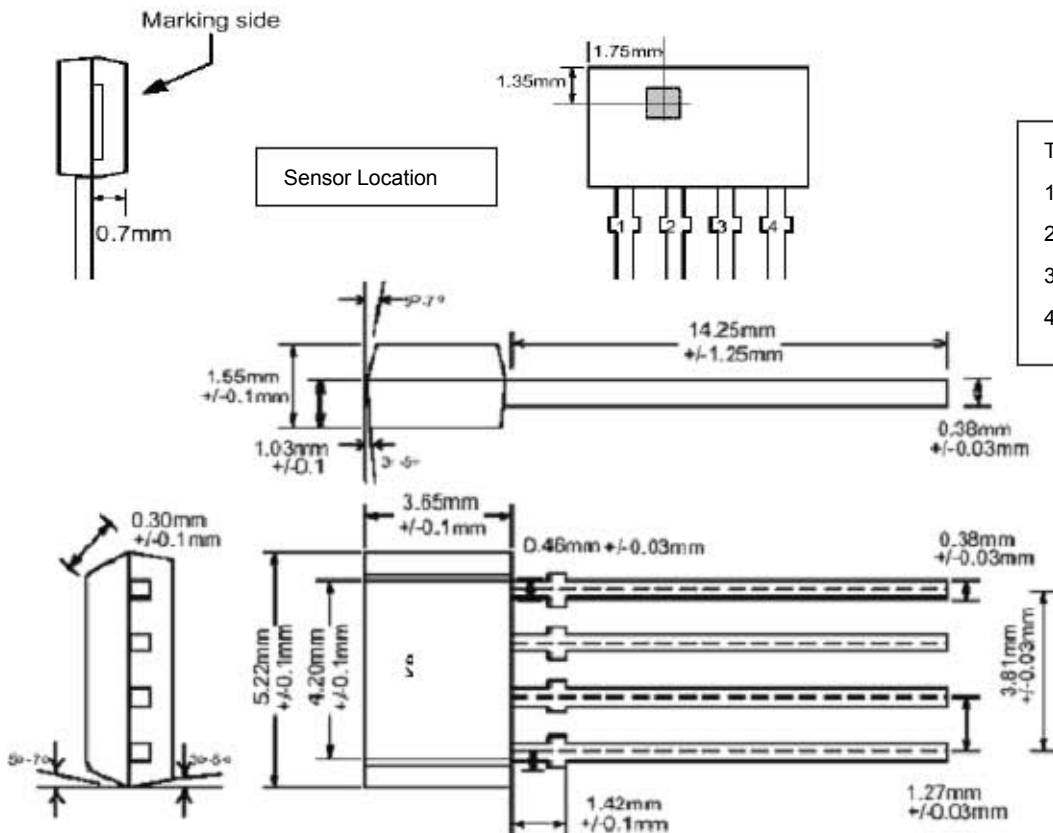
BLOCK DIAGRAM



MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS



DIMENSIONS (in: mm)



- TO-94 PACKAGE
1. Vcc
 2. Output 1
 3. Output2
 4. GND

