

**65021**

**HIGH RELIABILITY HALL EFFECT SENSOR  
NON-LATCHING OUTPUT**



07/22/2009

**Features:**

- Wide operating temperature range -55 °C to +150°C
- High magnetic sensitivity
- Low current CMOS Technology
- Wide operating voltage range 3.5 to 24 V
- Chopper stabilized amplifier minimizes amplifier offset resulting in improved temperature stability

**Applications:**

- Solid state switch
- Motor controls
- Speed sensing
- Angular Position sensing
- Linear Position Sensing
- Current Sensing

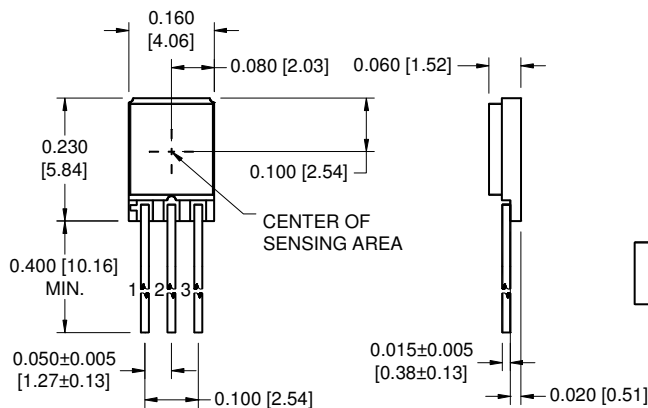
**DESCRIPTION**

The 65021 Hall effect sensor detects the presence of a magnetic field and provides a switch output. It is packaged in a hermetically sealed three pin ceramic package and can be used in many harsh environments. An internal chopper stabilized amplifier eliminates input offset voltages normally associated with bipolar devices resulting in improved operating point stability. The output transistor will be “Switched ON” in the presence of a sufficiently strong South pole magnetic field facing the marked side of the package that meets or exceeds the operate point ( $B_{OP}$ ) of the sensor. The output will be “Switched OFF” as the South pole magnetic field is decreased below the release point ( $B_{RP}$ ) of the sensor.

**ABSOLUTE MAXIMUM RATINGS**

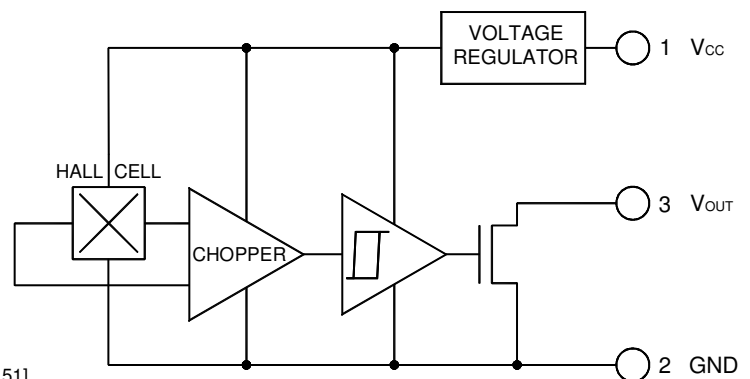
|   |                 |
|---|-----------------|
| Supply Voltage Range .....                                    | 3.5 V to 24.0 V |
| Supply Current (Fault).....                                   | 50 mA           |
| Power Dissipation, @ $T_A = 25^\circ\text{C}$ ( $P_D$ ) ..... | 100 mW          |
| Output Current (Fault) .....                                  | 50 mA           |
| Storage Temperature.....                                      | -65°C to +150°C |
| Operating Free-Air Temperature Range .....                    | -55°C to +150°C |
| Lead temperature (10 seconds, 1/16" from case).....           | +260°C          |

**Package Dimensions**



TOLERANCE: ±0.010 UNLESS OTHERWISE SPECIFIED.  
ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].

**Schematic Diagram**



**65021****HIGH RELIABILITY HALL EFFECT SENSOR, NON-LATCHING SWITCHING OUTPUT**

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**ELECTRICAL CHARACTERISTICS** $T_A = 25^\circ\text{C}$  unless otherwise specified.

| PARAMETER                   | SYMBOL    | MIN | TYP  | MAX  | UNITS         | TEST CONDITIONS  |
|-----------------------------|-----------|-----|------|------|---------------|--|
| Supply Current              | $I_{CC}$  | 0.5 | 2.5  | 5.0  | mA            | $V_{CC} = 12\text{ V}; B < B_{OP}$                                 |
| Saturation Voltage          | $V_{OL}$  |     | 0.3  | 0.5  | V             | $I_{OUT} = 20\text{ mA}, B > B_{OP}$                               |
| Output Leakage              | $I_{OFF}$ |     | 0.01 | 10.0 | $\mu\text{A}$ | $B < B_{OP}, V_{OUT} = 12\text{ V}$                                |
| Output Rise Time            | $T_r$     |     | 0.25 | 1    | $\mu\text{s}$ | $V_{CC} = 12\text{ V}, R_L = 1\text{ K}\Omega, C_L = 20\text{ pF}$ |
| Output Fall Time            | $T_f$     |     | 0.25 | 1    | $\mu\text{s}$ | $V_{CC} = 12\text{ V}, R_L = 1\text{ K}\Omega, C_L = 20\text{ pF}$ |
| Maximum Switching Frequency | $F_{SW}$  |     |      | 10   | KHz           |  |

**MAGNETIC CHARACTERISTICS** $T_A = 25^\circ\text{C}$  unless otherwise specified.

| PARAMETER     | SYMBOL    | MIN | TYP | MAX | UNITS | TEST CONDITIONS                                |
|---------------|-----------|-----|-----|-----|-------|--|
| Operate Point | $B_{OP}$  | 70  | 120 | 150 | Gauss | $V_{CC} = 12\text{ V}, R_L = 1\text{ K}\Omega$ |
| Release Point | $B_{RP}$  | 35  | 70  | 100 | Gauss | $V_{CC} = 12\text{ V}, R_L = 1\text{ K}\Omega$ |
| Hysteresis    | $B_{HYS}$ | 20  | 50  | 70  | Gauss | $V_{CC} = 12\text{ V}, R_L = 1\text{ K}\Omega$ |

**NOTES:**

- Extended temperature performance is obtained with ceramic packaging and assembly processes. High temperature testing is functional switching verification applying a field of greater than 200 G to switch the output on and removing the field to switch output off.

**ORDERING INFORMATION:**

| PART NUMBER | DESCRIPTION |
|-------------|-------------|
| 65021-001   | Commercial  |
| 65021-101   | Screened    |