

# Automotive Sensor Products

## Seat Belt Buckle Sensor – Hall



### General Description

The sensor detects whether the seat belt buckle is latched or unlatched, allowing the passenger safety system to determine the optimum airbag deployment. It is also used as an input to the electronic park brake and the unbuckled warning system.

### Operation

#### Basic Principle

The sensor is in a pre-defined single logic output state. When the seat belt buckle thorn moves from an unlatched to a latched position the magnetic circuit will be complete, activating the Hall Effect sensor, which would switch the logic (current) output levels to the customer's electrical interface.

#### Packaging Options

Custom packaging can be provided to meet any need, please contact Littelfuse Engineering for details.

### Features

- ♦ Magnetically operated position sensor
- ♦ Integrated in seat belt buckle
- ♦ Two logic output states (low and high)
- ♦ Operates when the thorn in the seat belt buckle moves from an unlatched to a latched position
- ♦ Choice of cable length and clips
- ♦ Choice of connector and terminals
- ♦ Ability to customize logic output states to customer needs

### Benefits

- ♦ Robust construction makes this sensor well suited to harsh environments
- ♦ Non-contact, Hall Effect technology

### Applications

- ♦ Vehicle Occupant Safety Systems

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### Functional Characteristics

| Parameter                |                        |         |  |
|--------------------------|------------------------|---------|--|
| Type                     |                        |         |  |
| Hall Effect Sensor       |                        |         |  |
| Logic                    |                        |         | Bi-state   |
| Electrical               |                        |         |  |
| Voltage                  | Operating              |         | 3.75V <sub>dc</sub> / 24V <sub>dc</sub> RMS<br>32 V <sub>dc</sub>                        |
|                          | Overvoltage Protection | Max.    |  |
| Current                  | Switching Low          | Typ.    | 5.0mA <sub>dc</sub> / 6.9mA <sub>dc</sub><br>12.0mA <sub>dc</sub> / 17.0mA <sub>dc</sub> |
|                          | Switching High         | Typ.    |  |
| Resistance               | Circuit                | Max.    | 73.5Ω  |
|                          | Isolation              | Max.    | >20MΩ  |
| Environmental/Mechanical |                        |         |  |
| Temperature              | Operating              | Celsius | -40° to +85°   |
|                          | Storage                | Celsius | -40° to +140°  |
| Shock                    | 11ms ½ Sine            | Max.    | 20g  |

### Littelfuse

Website: [www.littelfuse.com](http://www.littelfuse.com)  
 Sales Support: [ALL\\_Autosensors\\_Sales@littelfuse.com](mailto:ALL_Autosensors_Sales@littelfuse.com)  
 Technical Support: [ALL\\_Autosensors\\_Tech@littelfuse.com](mailto:ALL_Autosensors_Tech@littelfuse.com)

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