High-Resolution GMR Wheel Speed and Distance Sensor IC

FEATURES AND BENEFITS

- **High-resolution measurement** for enhanced ADAS accuracy, such as for automated parking
- **GMR technology** delivers high magnetic sensitivity for large air gaps and low-jitter switching
- **SolidSpeed Digital Architecture** provides robust, adaptive performance for high output accuracy and full pitch vibration immunity
- **Integrated solution** includes the IC and a protection capacitor in a single overmolded package
- **ISO 26262 ASIL B(D)** with integrated diagnostics and certified safety design process (pending assessment)

PACKAGE:

2-Pin SIP
(suffix UB)

Not to scale

DESCRIPTION

The A19360 is a magnetic sensor integrated circuit (IC) that uses giant magnetoresistance (GMR) technology to encode the speed and direction of rotating ring magnets. Innovative algorithms generate additional events per magnetic cycle while staying robust to air gap variation, to provide high-resolution rotational data that can be used for accurate distance measurement. The A19360 is compatible with standard ring magnets used in automotive braking systems, and Allegro programs each IC according to the characteristics of the magnet used.

The A19360 is available in two resolution options (4 or 8 events per cycle) and two protocol options (Pulse Width or AK Protocol). The 4-event AK Protocol option uses 28 mA speed pulses for every event and operates continuously throughout the full frequency range using standard bit truncation at higher speeds. The 8-event AK Protocol option uses 14 mA speed pulses for high-resolution events and features an automatic crossover to standard-resolution at higher speeds, maximizing the available bandwidth of the two-wire interface.

The A19360 was developed in accordance with ISO 26262 as a hardware safety element out of context, rated ASIL B(D) (pending assessment) for use in automotive safety-related systems when integrated and used in the manner prescribed in the applicable safety manual and datasheet.

The A19360 is provided in a 2-pin SIP package (suffix UB) that is lead (Pb) free, with tin lead frame plating. The UB package includes an IC and protection capacitor integrated into a single overmolded package, with an additional molded lead-stabilizing bar for robust shipping and ease of assembly.

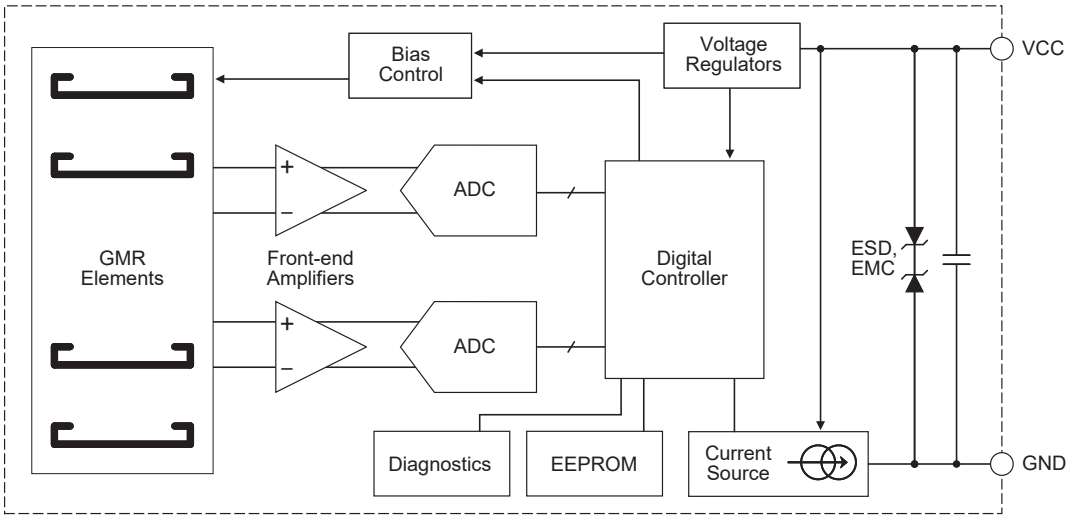


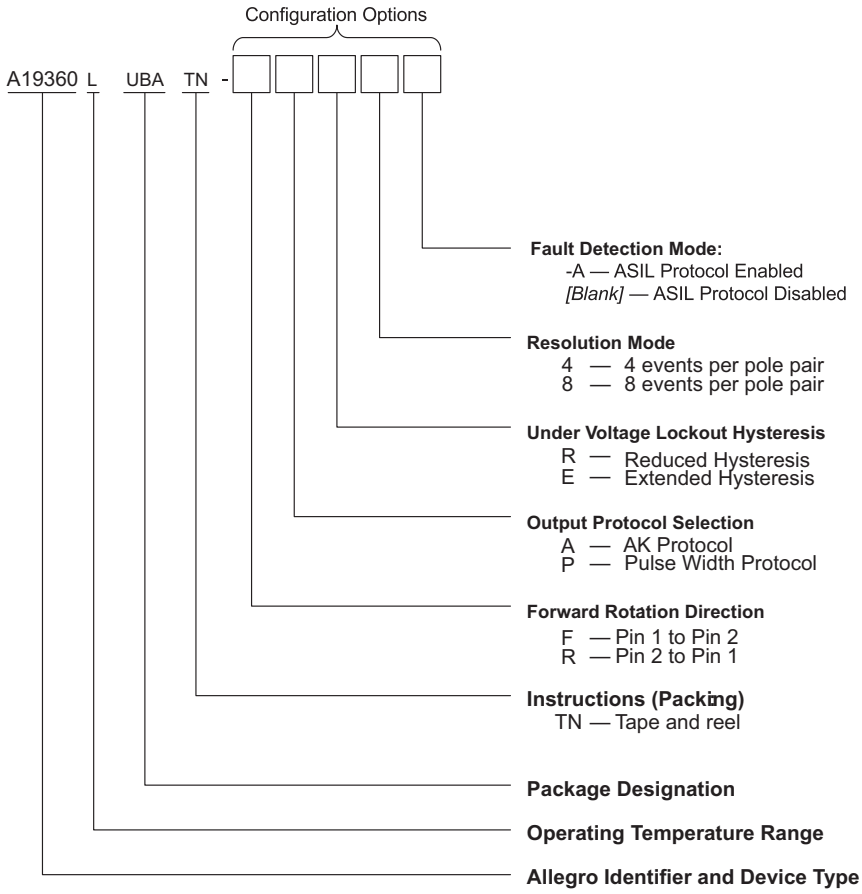
Figure 1: Functional Block Diagram

SELECTION GUIDE*

Part Number	Packing
A19360LUBATN-FAE4-A	Tape and Reel, 4000 pieces per reel

* Not all combinations are available. Contact Allegro sales for availability and pricing of custom programming options.

Complete Part Number Format



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SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Notes	Rating	Unit
Supply Voltage	V_{CC}	Refer to Power Derating section; potential between pin 1 and pin 2	28	V
Reverse Supply Voltage	V_{RCC}		–18	V
Operating Ambient Temperature	T_A		–40 to 150	°C
Maximum Junction Temperature	$T_{J(max)}$		175	°C
Storage Temperature	T_{stg}		–65 to 170	°C
Applied Magnetic Flux Density	B	In any direction	500	G

INTERNAL DISCRETE CAPACITOR RATINGS

Characteristic	Symbol	Test Conditions	Value	Unit
Nominal Capacitance	C_{SUPPLY}	Connected between pin 1 and pin 2 (refer to Figure 3)	2.2	nF

PINOUT DIAGRAM AND LIST

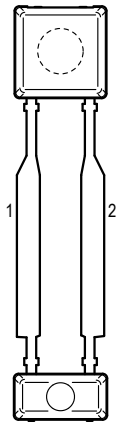

Figure 2: Package UB, 2-Pin SIP Pinout Diagram

Table 1: Pinout List

Pin Name	Pin Number	Function
VCC	1	Supply Voltage
GND	2	Ground

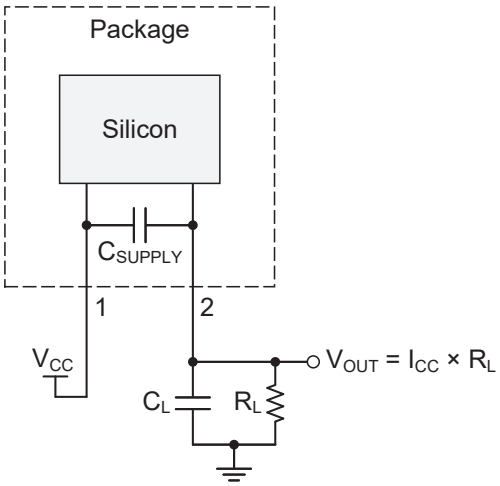

Figure 3: Typical Application Circuit

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