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SciSense

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Sense the Storm

www.ams.com/AS3935



AS3935 – Franklin Lightning Sensor IC

- Early warning indication of lightning storm activity within a 40km range
- Provides distance estimation to the head of the storm
- Detects both cloud-to-ground and intra-cloud (cloud-to-cloud) flashes
- Intelligent algorithm provides for false disturber rejection
- Suitable for low power portable devices

We provide innovative analog solutions to the most challenging applications in sensor and sensor interfaces, power management, and wireless.

General Description

The AS3935 is a programmable lightning sensor IC that detects the presence and approach of potentially hazardous lightning activity in the vicinity. It detects intracloud activity as well as cloud-to-ground flashes, often enabling risk to be evaluated for approaching storms. The US National Weather Bureau suggests the 30-30 rule when lightning is imminent (when a flash is seen and the thunder is heard less than 30 seconds later, the storm is within 10 km. Head immediately for a safe shelter. Stay in the shelter for 30 minutes after the last sound of thunder you hear).

The AS3935 detects lightning activity as it approaches from up to 40km away which provides a much longer distance for lightning warning. In addition, the AS3935 identifies and rejects interference signals from common man-made sources such as: fluorescent lighting, microwave oven, switches, etc. Based on scientific research, the distance of the storm activity can be statistically calculated from the measured signals.

This information allows the user to set warning levels appropriate for their specific application. Personal safety can be set at the most conservative alert, whereas equipment protection can balance confidence, signal strength, and battery life. The programmable thresholds, and false disturber rejection, enable current consumption to be optimized in all applications. The flexible IC allows for configurability that allows the part to work both indoors as well as outdoors, just by changing the gain setting in a register.

Portable devices such as GPS, watches, bike computers and hand-helds can monitor the environment to warn of potential lightning strikes. Devices such as weather stations, clocks, golfing and pool equipment can warn of approaching lightning strikes in the area, with a relative confidence. Devices protecting equipment such as UPS for telecom, smart grid systems, medical equipment and computers can switch to battery backed or generator power when strikes threaten the integrity of the power system.

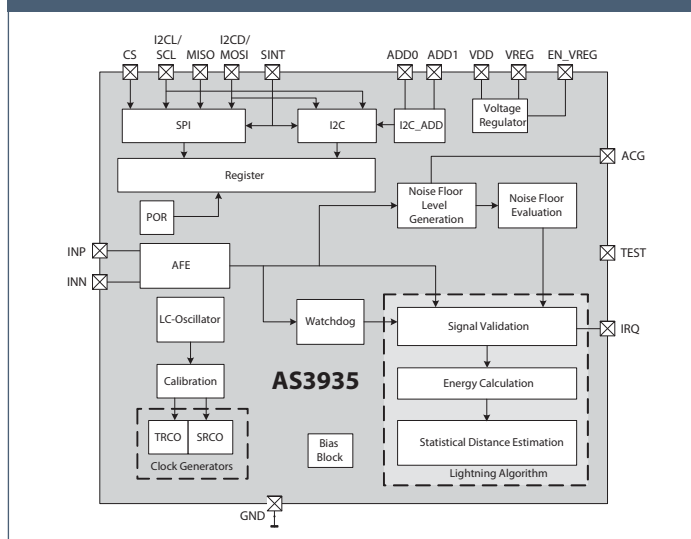
Applications

- Watches
- Golf carts
- Pool safety
- Portable GPS
- Bike computers
- Weather stations
- Sports equipment
- Uninterruptible power supply
- Power line conditioners
- Smart grid systems
- Environmental monitoring systems

Features

- Franklin Lightning Sensor provides early warning indication of lightning storm activity within a 40km range
- Provides distance estimation to the head of the storm
- Detects both cloud-to-ground and intra-cloud (cloud-to-cloud) flashes
- Intelligent algorithm provides for false disturber rejection
- Programmable detection levels enable threshold setting for optimal configurability
- SPI and I²C interface is used for control and register reading
- Automatic antenna tuning
- Supply voltage range 2.4 to 5.5V
- Power-down, listening and active mode
- Temperature range: -40°C to 85°C

AS3935 Block Diagram



AS3935 Awards and Mentions

- Sensors Expo 2012: Gold Award Winner
- EDN's list of "Hot 100 Products 2012"
- Elektra Award: Finalist 2012
- Electronic Product Magazine: "Product of the Year" 2012
- Wireless Design & Development: 2012 Readers Choice Award
- Elektronik Product of the Year 2013
- ACE-Awards: "Ultimate Product" 2013

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