To request the full datasheet, please visit www.intersil.com/products/isl6296a

FlexiHash™ For Battery Authentication

ISL6296A

The ISL6296A is a highly cost-effective fixed-secret hash engine based on Intersil's FlexiHash™ technology. The device's authentication is achieved through a challenge response scheme, which is customized for low-cost applications where cloning via eavesdropping without knowledge of the device's secret code is not economically viable. When used for its intended applications, the ISL6296A offers the same level of effectiveness as other significantly more expensive high maintenance monetary-grade hash algorithm and authentication schemes.

The ISL6296A has a wide operating voltage range and is suitable for direct powering from a 1-cell Li-ion/Li-Poly or a 3-cell series NiMH battery pack. The ISL6296A can also be powered by the XSD bus when the bus pull-up voltage is 3.3V or higher. The device connects directly to the cell terminals of a battery pack and includes on-chip voltage regulation circuit, POR and a noncrystal based oscillator for bus timing reference.

Communication with the host is achieved through a single-wire XSD interface (a light-weight subset of Intersil's ISD bus interface). The XSD bus is compatible for use with serial ports offered by all 8250 compatible UART's or a single GPIO (General Purpose Input and Output) pin of a microprocessor.

A clone prevention solution utilizing the ISL6296A offers safety and revenue protection at the lowest cost and power and is suitable for protection against after-market replacement for a wide variety of low-cost applications.

Related Literature

- AN1167, "Implementing XSD Host Using a GPIO"
- AN1788, "ISL6296A Evaluation Kit"
- UG019, "ISL6296ARU-EVZ Evaluation Board User Guide"
- AN1166, "FlexiHash Engine Algorithm"

Features

- Challenge-response based authentication scheme using 32-bit challenge code and 8-bit authentication code
- Fast and flexible authentication process. Multipass authentication can be used to achieve the highest security level if necessary
- 16x8 OTP ROM stores up to three sets of 32-bit host selectable secrets with additional programmable memory for storage of up to 48 bits of ID code and/or pack information
- FlexiHash engine uses two sets of 32-bit secrets for authentication code generation
- Nonunique mapping of the secret key to an 8-bit authentication code maximizes hacking difficulty due to need for exhaustive key search (superior to SHA-1)
- Supports 1-cell Li-ion/Li-Poly and 3-cell series NiMH battery packs (2.6V ~ 4.8V operation), or powered by the XSD bus
- XSD single-wire host bus interface communicates with all 8250-compatible UART's or a single GPIO. Supports CRC on read data and transfer bit-rate up to 23kbps
- True "Zero Power" sleep mode - automatically entered after a bus inactivity time-out period
- 5 Ld SOT-23, 8 Ld TDFN and 8 Ld µTQFN packages
- -25°C to +85°C operating temperature range
- Pb-free (RoHS compliant)

Applications

- Battery pack authentication
- Printer cartridges
- Add-on accessories
- Other nonmonetary authentication applications

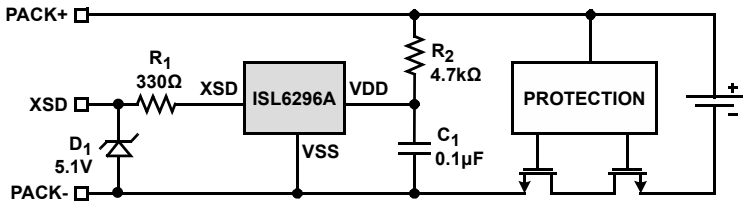

FIGURE 1. TYPICAL APPLICATION WITH THE ISL6296A POWERED BY THE BATTERY

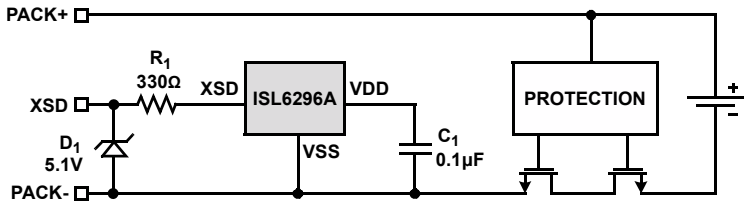

FIGURE 2. TYPICAL APPLICATION WITH THE ISL6296A POWERED BY THE XSD BUS

CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures.
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