

May 2024

GENERAL DESCRIPTION

The HI-35850 from Holt Integrated Circuits is a silicon gate CMOS device for interfacing a Serial Peripheral Interface (SPI) enabled microcontroller to the ARINC 429 serial bus. It is a drop-in replacement for Holt's popular HI-3585, with a much improved SPI of 12 MHz. This greatly improves host efficiency over the previous device.

The HI-35850 provides one receiver with user-programmable label recognition for any combination of 256 possible labels, 32 x 32 Receive FIFO and analog line receiver. The independent transmitter has a 32 x 32 Transmit FIFO and built-in line driver. The status of the transmit and receive FIFOs can be monitored using the programmable external interrupt pin, or by polling the HI-35850 Status Register. Other features include a programmable option of data or parity in the 32nd bit, and the ability to switch the bit-significance of ARINC 429 labels. Pins are available with different input resistance and output resistance values which provides flexibility when using external lightning protection circuitry.

The Serial Peripheral Interface minimizes the number of host interface signals resulting in a small footprint device that can be interfaced to a wide range of industry-standard microcontrollers supporting SPI. Alternatively, the SPI signals may be controlled using just four general purpose I/O port pins from a microcontroller or custom FPGA. The SPI and all control signals are CMOS and TTL compatible and support 3.3V or 5V operation.

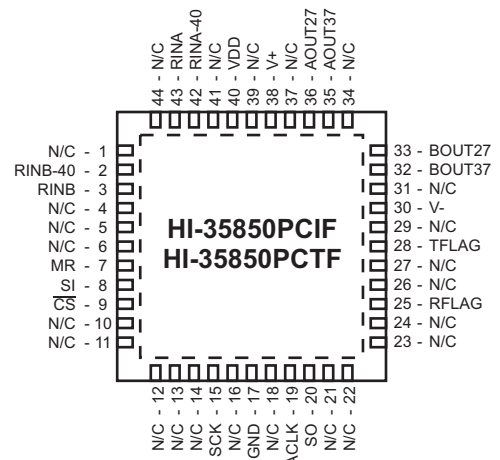
The HI-35850 applies the ARINC 429 protocol to the receiver and transmitter. ARINC 429 databus timing comes from a 1 MHz clock input, or an internal counter can derive it from higher clock frequencies having certain fixed values, possibly the external host processor clock.

The HI-35860 is functionally identical to the HI-35850 except it includes digital transmitter output pins 429D1 and 429D0 instead of a built-in line driver. This allows the designer to take advantage of Holt's single supply rail line drivers, such as the 5V HI-8592 or 3.3V HI-8596.

FEATURES

- ARINC specification 429 compliant
- 3.3V or 5.0V logic supply operation
- Drop-in replacement for Holt's HI-3585 with improved SPI host interface (12 MHz)
- On-chip analog line driver and receiver connect directly to ARINC 429 bus
- Programmable label recognition for 256 labels
- 32 x 32 Receive FIFO and 32 x 32 Transmit FIFO
- Independent data rates for Transmit and Receive
- High-speed, four-wire, 12 MHz SPI
- Label bit-order control
- 32nd transmit bit can be data or parity
- Self test mode
- Low power
- Industrial & extended temperature ranges

PIN CONFIGURATIONS (Top View)



44 - Pin Plastic 7mm x 7mm
Chip-Scale Package (QFN)