

PC87108 Advanced UART and Infrared Controller

General Description

The PC87108 is a serial communications device with infrared capability. It supports 6 modes of operation and is backward compatible with the 16550 and 16450. The operational modes are: UART, Sharp-IR, IrDA 1.0 SIR, IrDA 1.1 MIR and FIR, and Consumer Remote Control (commonly referred to as TV Remote).

Two methods are provided to access the internal registers: an internal 16-bit address decoder, or an externally generated chip select in combination with an internal 4-bit address decoder are used to generate the internal register select. When the internal 16-bit address decoder is used, any one of four PC COMM port legacy addresses can be selected as the base address.

In order to support existing legacy software using the 16550 UART, the PC87108 provides a special fallback mechanism that automatically switches the device to 16550 compatibility mode when the standard baud generator divisor registers are accessed.

The device architecture has been optimized to meet the requirements of a variety of UART and infrared based applications. DMA support for all operational modes has been incorporated into the architecture. Routing for interrupt and DMA handshake signals is provided to meet Plug-and-Play as well as PC'95 requirements.

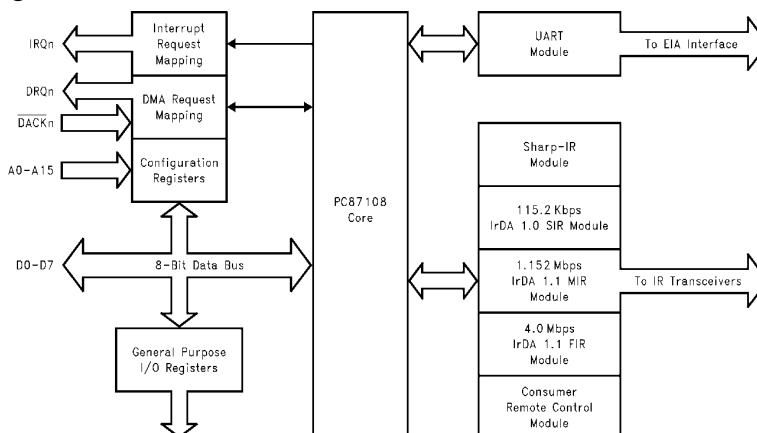
The device can use either 1 or 2 DMA channels. One channel is required for infrared based applications since infrared communications work in half duplex fashion. Two channels would normally be needed to handle high-speed full duplex UART based applications.

To further ease driver design and simplify the implementation of infrared protocols, a 12-bit timer with 1 ms resolution has also been included.

Features

- Fully compatible with 16550 and 16450 devices
- Enhanced UART mode
- Sharp-IR with selectable internal or external modulation
- IrDA 1.0 SIR with up to 115.2 kbps data rate
- IrDA 1.1 MIR and FIR with 1.152 and 4.0 Mbps data rates
- Consumer remote control mode
- UART mode baud rates up to 1.5 Mbps
- Back-to-back infrared frame transmission and reception
- Full duplex infrared capability for diagnostics
- Transmit deferral
- Automatic fallback to 16550 compatibility mode
- IrDA modes pipelining
- Selectable 16 or 32 level FIFOs
- Multiple optical transceiver support
- Automatic or manual transceiver configuration
- 12-bit timer for infrared protocol support
- 4 general purpose I/O pins
- Interrupt signal routing to 1 of 7 output pins
- DMA handshake signal routing for either 1 or 2 channels
- Full 16-bit address decode
- Selectable base address or chip select mode
- Power management support
- 3.3V and 5V operation
- ISA compatible interface
- 80-pin PQFP or TQFP package

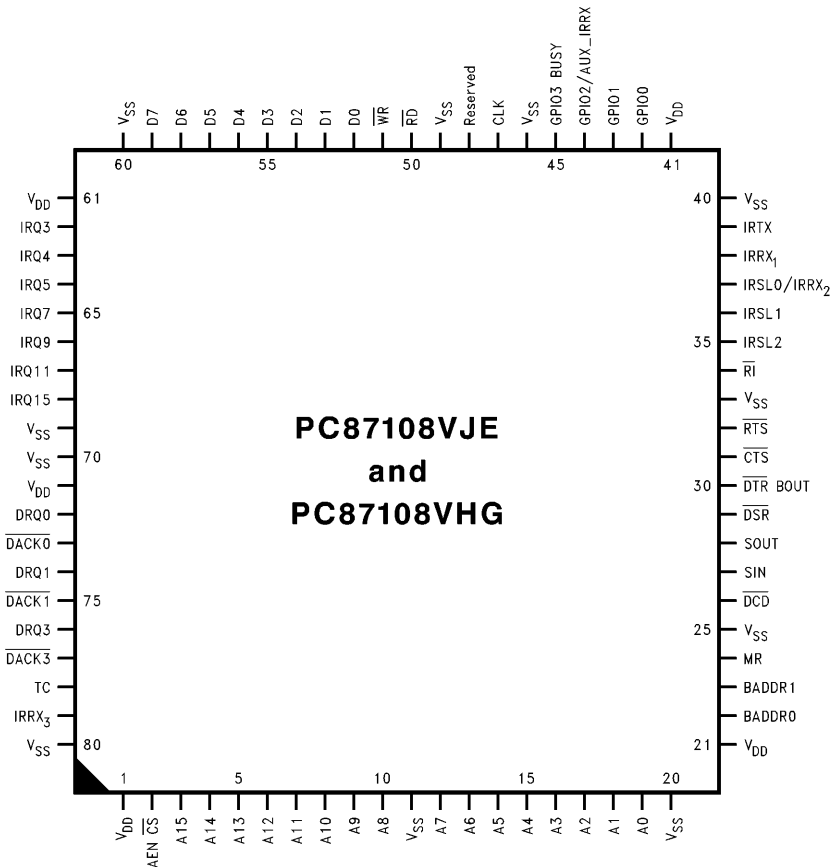
Block Diagram



TL/XX/0249-1

1.0 Pin Description

1.1 CONNECTION DIAGRAM



TL/XX/0249-2

FIGURE 1-2. Connection Diagram for the PC87108 in a Plastic Quad Flatpak, EIAJ

LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.



National Semiconductor Corporation
1111 West Bardin Road
Arlington, TX 76017
Tel: 1(800) 272-9959
Fax: 1(800) 737-7018

<http://www.national.com>

National Semiconductor Europe

Fax: +49 (0) 180-530 85 86
Email: europe.support@nsc.com
Deutsch Tel: +49 (0) 180-530 85 85
English Tel: +49 (0) 180-532 78 32
Français Tel: +49 (0) 180-532 93 58
Italiano Tel: +49 (0) 180-534 16 80

National Semiconductor Hong Kong Ltd.

13th Floor, Straight Block,
Ocean Centre, 5 Canton Rd.
Tsimshatsui, Kowloon
Hong Kong
Tel: (852) 2737-1600
Fax: (852) 2736-9960

National Semiconductor Japan Ltd.

Tel: 81-043-299-2308
Fax: 81-043-299-2408