

## NS16C451 Universal Asynchronous Receiver/Transmitter with Parallel Interface†

### General Description

The NS16C451 integrates a CMOS version of the NS16450 UART with a bidirectional parallel interface into a single IC. The serial port is fully compatible with all existing software written for the INS8250A, INS82C50A, NS16450, and NS16C450. The parallel port is fully compatible with all existing software written for the IBM® PC, XT, AT, PS/2 and Centronics parallel ports.

The serial port includes one programmable baud rate generator capable of dividing the clock input by divisor of 1 to  $(2^{16} - 1)$ , and producing a  $16 \times$  clock for driving the internal logic of both the receiver and transmitter sections. The serial port has MODEM-control capability and a processor interrupt system which supports 4 types of interrupts.

The parallel port has three registers—data, status, and control registers and is bidirectional. All of the signals required by PC and Centronics printers to transfer data and monitor printer status are provided.

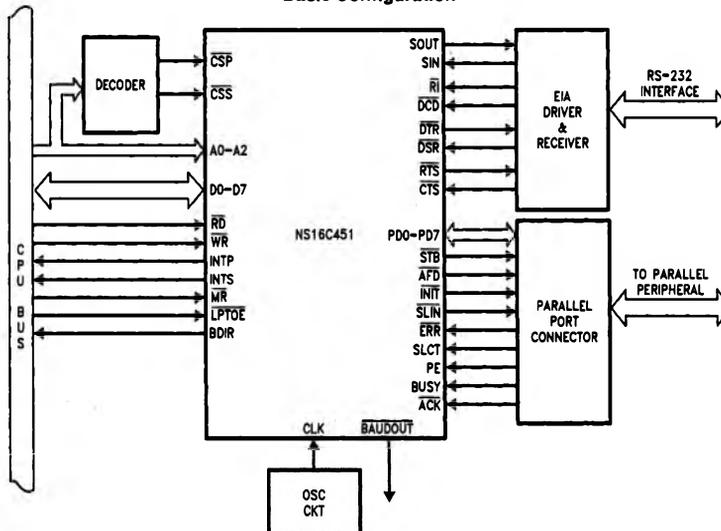
### Features

- Serial port capable of running existing software written for INS8250A and NS16450 series of products used in the IBM PC, XT, AT and PS/2
- Parallel port capable of running existing software written for the standard parallel port on the IBM PC, XT, AT and Centronics printers

- National's  $1.25\mu$  CMOS technology provides faster AC timing
- Maximum operating frequency 24 MHz
- Separate interrupt request lines for the parallel and serial ports
- Separate Chip Select signals for the parallel and serial ports
- Bus Direction control output helps avoid bus conflict when using an external data bus latch
- Adds or deletes standard asynchronous communication bits (start, parity, and stop) to or from the serial data
- Independently controlled transmit, receive, line status, and data set interrupts
- Programmable baud generator divides any input clock by 1 to  $(2^{16} - 1)$  and generate the  $16 \times$  clock
- MODEM control functions (CTS, RTS, DSR, DTR, RI and DCD)
- Fully programmable serial-interface characteristics:
  - 5, 6, 7, or 8 bit characters
  - Even, odd, or no parity generation and detection
  - 1,  $1\frac{1}{2}$ , or 2 stop bit generation
- High current drive capability for the parallel port

†Note: This part is patented.

### Basic Configuration



TL/C/10428-1