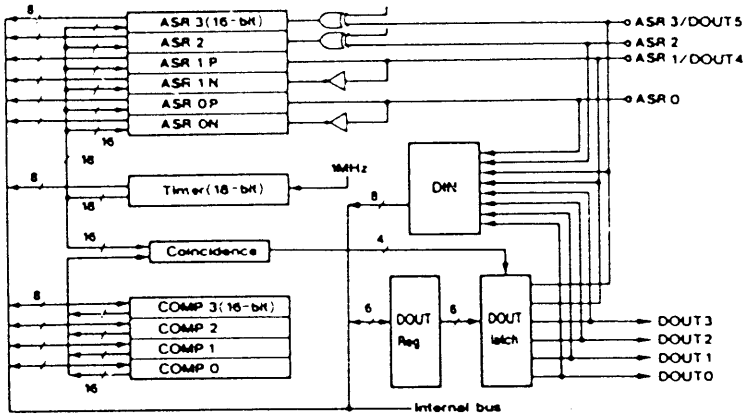


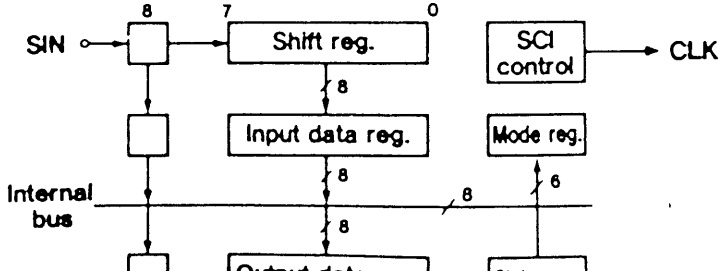
Fig. 12 - Block diagram of high-speed I/O section

Serial I/O

The serial I/O port, which is used for communicating with the external A/D converter chip, expansion of input ports by the external shift register, and other purposes, is designed with the following characteristics so that it can be used as an effective link with other systems:

- all synchronous/asynchronous mode double-serial input/output
- 8 and 9 bit mark/space NRZ data format
- 14 baud rates including synchronous 1M baud
- a number of status flags for interrupt output indicating transfer end and transfer status of each input and output

Figure 13 shows a block diagram of the serial I/O section.



the power source voltage, it operates with 5V ± 10% in all temperatures, and down to 4V when the temperature is low. It enters the stand-by mode with the suspended crystal oscillation when the input of both of the WI and HALT reaches a low level. The current consumption then becomes 0.1 mA or less.

Each edge input circuit is equipped with a spike noise filtering function. With the increased speed of the clock within the CPU, input signal receiving speed is also increased.

Since there are so many noise sources in the automobile, noise counter-measures are necessary in areas such as interrupt signal inputs that receives the input signal edges. Normally, noise counter-measures are performed by input buffer circuits which consist of discrete components; however, for eliminating noise with a short pulse width or the type which is superimposed directly on print patterns, the use of some filtering at the input section of the CPU is effective. Taking the above into consideration, several inputs are equipped with a 2-4 μsec filter at the ASR input, port A edge inputs, interrupt signal inputs, CPU control input WI, and HALT (for the stand-by operation). Figure 14 shows the CPU chip layout.