HuC62

SYSTEM OUTLINE NOTE

TABLE OF CONTENTS

1. DESCRIPTION

The HuC62 series ICs are developed to enhance the animation capability with much more colors and rapid movement of pictures than any other similar type of devices. Many convenient commands in those ICs make it easy to manipulate pictures: to reverse picture pattern, to scroll screen, to connect plural picture patterns as one picture and so on. Moreover this system is capable of producing dynamic stereo sounds. And the collaboration of audio and visual effect offers vivid environment of playing game to users.

1.1 Features

- Three ICs cooperate with each other to realize supreme effect on audio and visual. There shows the basic configuration of each IC.
  - ① CPU + PSG (Programmable Sound Generator) :HuC6280
  - ② Video Display Controller (VDC) :HuC6270
  - ③ Video Color Encoder (VCE) :HuC6260
- Easy connection to a CRT (TV) ... RGB output + Composite Video Signal
- 512 colors are available to express pictures
- Screen composition–background + sprite
- Powerful register capabilities to create realistic pictures
  - Blanking (vanishing a screen display)
  - Smooth scroll vertically or/and horizontally
  - Reverse sprite vertically or/and horizontally
  - Connect sprites
- Interrupt capability for quick response to screen condition
- Low power dissipation ... All ICs are made under the CMOS process technology
- Single power supply ... 5V

2. SYSTEM OPERATION

2.1 General Description

HuC62 system is basically constructed with three dedicated IC chips, memory chips and the clock circuit. Additional two audio amplifiers and speakers, an RGB signal interface circuit,a composite video signal interface circuit and a TV monitor complete the system.
The three ICs are HuC6260, HuC6270 and HuC6280. The HuC6280 contains a CPU and a PSG. The HuC6270 defines the contents of a video signal. The HuC6260 produces both analogue RGB signals and composite video signal.
RAM and ROM are needed for the CPU and VRAM is needed for the VDC.

2.2 Block Operation

2.2.1 CPU (HuC6280)

This is the core chip of this system. It is equipped with CPU (Central Processing Unit) and PSG (Programmable Sound Generator).
The CPU executes the program in the ROM and sends data and signal to each IC and PSG to produce pictures and stereo sounds.

2.2.2 VDC (Video Display Controller, HuC6270)

The pictures on screen are made by the combination of a background and sprites. The VDC defines data of patterns and color codes and locations of the display screen for background characters and sprites.
From these data, the VDC generates video data and transfers it to the VCE to synthesize display signals finally. Also the interrupt pin sends the signal of screen status to the CPU.
The status signal shows

(① collision of sprites
② timing of targeted Raster position
③ the start point of vertical blanking period, etc.)

The VRAM is used with the VDC to store data of backgrounds and sprites.

2.2.3 VCE (Video Color Encoder, HuC6260)

This chip converts the digital video data from the VDC into the analogue RGB signals and the composite video signal. The analogue RGB signals are produced through D/A converter for each color separately. Y, R-Y and B-Y signals are produced from RGB signals. The composite video signal is produced by Y, R-Y, B-Y and burst signal.

2.2.4 PSG (Programmable Sound Generator, HuC6280)

This is an internal circuit block of the HuC6280. The PSG produces musical stereo sounds by means of wave form memory and D/A converters.

Sound effects synchronized with display can be made under the cooperation with noise generators, low frequency generators, interrupt circuits and the wave form memory.