Product news No. .
(99/01)

YAMAHA LSI new products

YSS915

KP2V2

LSI for "Karaoke" systems, including memory for microphone echo and key control

■ Outline

YSS915 (KP2V2) is an LSI for processing Karaoke voice signals. This LSI has an A/D converter (1 channel) for the microphone echo, and a memory for the microphone echo and key control. These features allow achieving the functions needed for the Karaoke system by using only one LSI chip. As for the microphone echoes, many other types of echoes are available in addition to ordinary ones so that YSS915 is applicable to various uses.
In addition to these Karaoke programs, YSS915 is able to provide the Movie & Music programs, with which the surround effect is applied to the movie and music sources for giving the users more enjoyment. YSS915 is pin compatible with and register compatible with YSS903 (KP2V).

■ Features

• Basic functions

[Karaoke program **]**

- Stereo key control (The key can be shifted +/- 3 whole tones at 50 cent steps, or +/- 1 octave.)
- Voice cancellation
- Microphone echo
  - Normal microphone echo (approximately 174 ms)
  - Stereophonic echo
  - Reverberation echo
- Microphone key control
- Microphone "YMERSION™" (Yamaha's original wide surround technology)
- Tone control
  - BASS, MID or TREBLE (Adjustable 0 to +/- 10 dB range in 2 dB steps)
- Surround
  - Yamaha "YMERSION ™"

[Movie & Music program **]**

- Surround
  - Initial reflection synthesis
  - "YMERSION™"
- Tone control
  - BASS, MID or TREBLE (Adjustable 0 to +/- 10 dB range in 2 dB steps)

• I/O interface

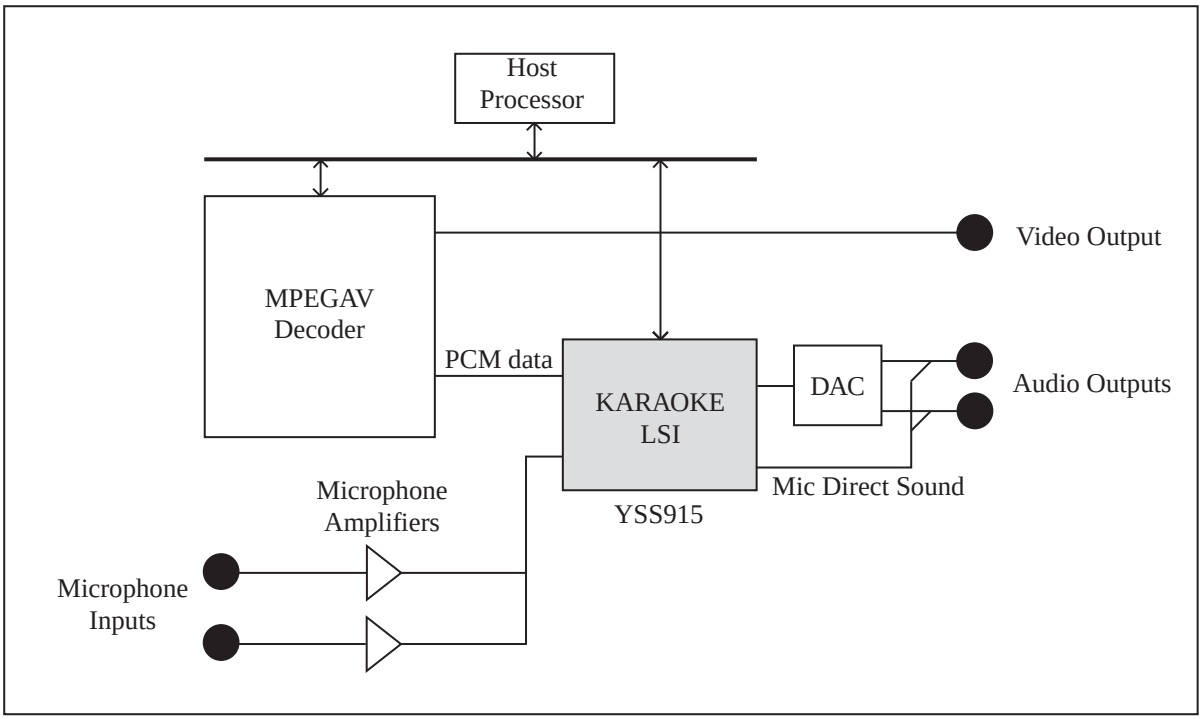
• Digital signal input	2 channels (16/18/20/24 bit)
• Digital signal output	2 channels (16/18/20/24 bit)
• Analog signal input	1 channel (for microphone)
• Microprocessor interface	Serial four line system
• Through mode:	Digital input is outputted without any processing (Correspond with fs = 96 kHz 24 bit DVD format)

• Others

• Sampling frequency	32, 37.8, 44.1, 48 kHz or correspond with 96 kHz through mode.
• Package type	28 pin SOP
• Supply voltage	+5.0 V (single power supply)

- Pin/register upper compatible with YSS903 (KP2V)

■ Example of system configuration



For this LSI, audio signal is inputted as digital signal, and vocal signal from the microphone is inputted as analog signal.
The signal processed in this device is outputted as digital signal.
The memories for the key control and microphone echo are built in the YSS915.

The settings are made through the host processor.

Notice The specification given here are provisional and subject to change without prior notice.
Please confirm the latest documentation before using this product.

AGENCY

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Reference: Difference between YSS903 and YSS915

YSS915 has been developed placing emphasis on its compatibility with YSS903. Thus, the users of YSS903 are able to replace it with YSS915 without changing the circuit and other items of their system.

YSS915 newly offers the following advantages when compared with YSS903.

1. Connectable with A/D converter directly
   This LSI can be connected directly with A/D converter that outputs MSB justified data, thus it can be connected directly with CODEC.

2. Microphone echo input can be processed with a fader.
   The microcomputer is able to designate do/undo for the microphone echo fade-in/fade-out by using one bit register.

3. A mode with wider microphone echo range
   In this mode, the frequency range for the microphone echo can be made wider though the delay time becomes shorter.
   YSS915 is given a low pass filter that has two types of cut off frequencies, so that either one can be selected as necessary.

4. ZERO terminal
   This LSI has a new zero level detection function for digital audio output, thus ZERO terminal outputs "0" signal when the audio output has been zero for a certain period. S/N ratio of the system can be improved by muting the output of external D/A converter using this signal.

5. The terminals for the microcomputer interface, CDI and CDO can be connected on the board.
   Thus, the number of ports for the microcomputer can be reduced by one.

6. The operation is made to the accuracy of 20 bits.
   The internal DSP performs the operation to the accuracy of 20 bits.

7. PO terminal
   YSS915 has an output port (PO pin) for controlling peripheral devices. Use of this port, for example, allows the control of the gain of an audio output amplifier by the microcomputer through this LSI.

fs = 96 kHz, 24 bit signal
   When the fs double (through) mode has been selected, it is possible to input the master clock equivalent to 384 fs/256 fs with fs = 96 kHz.
   When in this mode, the 24 bit signal with fs = 96 kHz can be passed through this LSI without processing it.

YSS915 does not have DAC that is built in the YSS903.