DESCRIPTION

The ES692 is a single, highly integrated, high-performance, and economical wavetable music synthesizer for personal computers, delivering superior acoustic sound comparable to professional synthesizers. The ES692 includes reverb special effects without need of external RAM. With its embedded microcontroller, the ES692 supports General MIDI, providing for 128 melodic instruments with the ability to play back 32 voices of 16-bit data at a sampling rate of 44.1 kHz. Music is produced in high fidelity with the realism of a live symphony orchestra.

The ES692 includes a 1 MB wavetable ROM to provide a complete wavetable solution. This internal ROM provides digitally recorded sound samples of musical instruments.

The ES692 is designed to interface with the ES1xxx *Audio*Drive® chips without requiring any glue logic or external DAC. The ES692 interfaces with the music DAC of the ES1xxx via the third serial port of the host chip, providing a cost-effective implementation of a complete wavetable music synthesizer.

Advanced power management features include suspend/resume and automatic power-down when MIDI input is idle.

The ES692 is available in an industry-standard 100-pin Thin Quad Flat Pack (TQFP) package.

APPLICATIONS

- Multimedia PCs
- PC Games
- Music Synthesis
- Consumer Audio Equipment
- Karaoke Systems

FEATURES

- Single chip, high-performance wavetable music synthesizer with embedded 1 MB ROM sample
- Reverb special effect without external RAM
- Playback of 16-bit data at 44.1 kHz via the ES1xxx DAC
- Stereo pan for each voice
- 32-voice polyphony
- MIDI serial port compatible with MPU-401 serial port of the ES1xxx
- General MIDI instrument set – 128 melodic and 47 rhythm instruments
- Digital serial interface with the ES1xxx
- Glueless interface with an ES1xxx *Audio*Drive® chip
- Advanced power management with automatic power-down when MIDI input is idle
- Context upload/download for suspend/resume
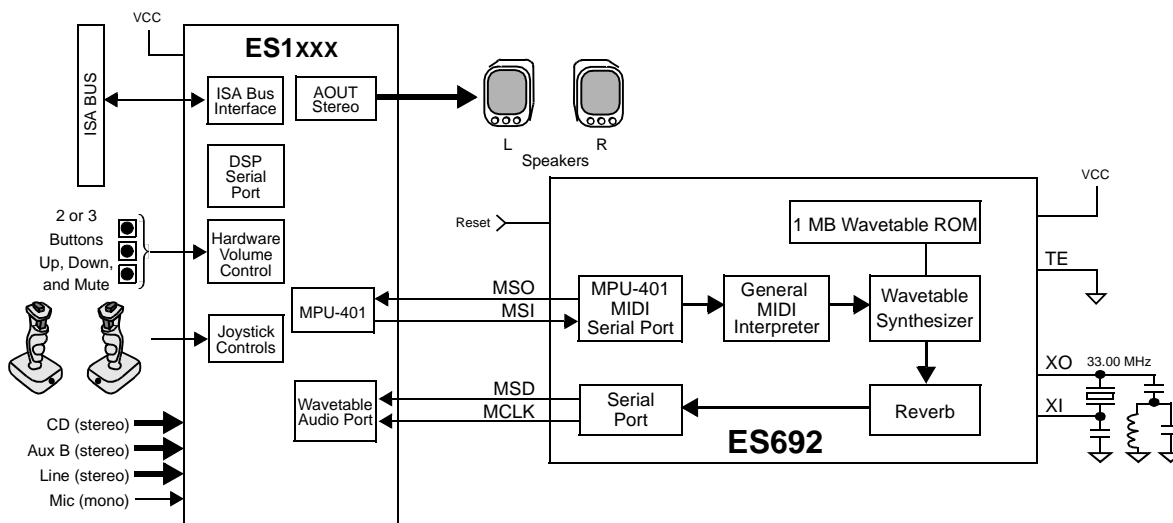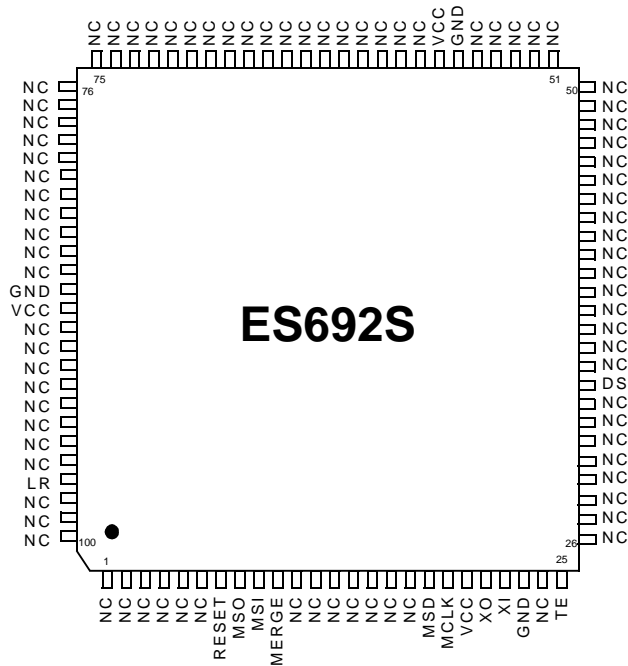- 100-pin TQFP package

IMPLEMENTATION PLATFORMS

- Desktop PCs
- Notebooks
- Multifunction Cards
- Sound Cards
- Combination Audio-Fax/Modem Cards

TYPICAL APPLICATION

PINOUT

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit (conditions)
Operating voltage	VCC	3.0	3.3	3.6	volts
Input low voltage	VIL		0.5	0.8	volts
Input high voltage: all inputs except XI	VIH	1.2			volts
Input high voltage: XI	VIH2	2.5			volts
Output low voltage	VOL			0.4	volts (IOL = 4 mA)
Output high voltage	VOH	2.0			volts (IOH = -3 mA)
Input leakage current high	IILH			10	microamps
Input leakage current low	ILL			-10	microamps

PIN DESCRIPTION

Name	Number	I/O	Description
RESET	7	I	Active-high reset input.
MSO	8	O	MIDI serial output for two-way connection to ES1xxx *AudioDrive*® controller.
MSI	9	I	MIDI serial input from ES1xxx *AudioDrive*® controller.
MERGE	10	I	For one-way MIDI connection, this pin is left no-connect. For two-way MIDI connection, this pin is connected to external MIDI input. Use external pull-up resistor when MERGE is not connected to MIDI input. Normally, this pin is internally connected to MSO pin.
MSD	18	O	Music serial data to the ES1xxx *AudioDrive*® controller.
MCLK	19	O	Music serial clock to the ES1xxx *AudioDrive*® controller.
VCC	20, 57, 88	I	Power supply voltage (3.3 V).
XO	21	O	Oscillator output. Connect to 33.0 MHz crystal.
XI	22	I	Oscillator input. Connect to 33.0 MHz crystal.
GND	23, 56, 87	I	Ground.
TE	25	I	Test pin (reserved). Connect to GND for proper operation.
DS	34	I	Data format select for audio serial port. 0: 2-wire interface to ES1xxx *AudioDrive*® controller 1: 3-wire interface to stereo DAC
LR	97	O	Left/right strobe for 3-wire interface to stereo DAC.
NC	6:1, 17:11, 24, 33:26, 55:35, 86:58, 96:89, 100:98		No connection.

MAXIMUM RATINGS

Rating	Symbol	Value	Units
Power supply voltage	VCC	-0.3 to 7.0	V
Voltage range on any pin	VIN	-0.3 to 7.0	V
Operating temperature range	TA	0 to 70	Deg C
Storage temperature range	TSTG	-50 to 125	Deg C

SERVICE AND SUPPORT

- Evaluation Kit
- Manufacturing Kit
- Reference Design

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