

**Preliminary****1. GENERAL DESCRIPTION**

W83791SD is a programmable speech synthesizer with 8-bit current DAC output that can connect to speaker or LINE\_OUT by the AC'97 audio codec. It supports 1 CPU present or absent event trap, 5 external event traps, and 127 internal programmable event traps to trigger maximum 133 different speech output. If more than two events happen simultaneously, the priority set is: SLOTOCC# > EVNTRP1 > EVNTRP2 > EVNTRP3 > EVNTRP4 > EVNTRP5 > 127 Programmable events (Bank0 index 09h).

For the application of error messages from BIOS, 127 Programmable events are enabled with a watch dog timer. The time interval is programmable and events will be triggered when time out.

External flash memory interface with Winbond W55FXX is flexible to change warning voice message and support on-line programming flash data through I<sup>2</sup>C<sup>TM</sup> interface. An external resistor is added to provide ring oscillator.

Through the application software or BIOS, the users can edit and change the voice database in the serial flash chip by themselves under O.S.. A free Windows AP --- Voice Editor<sup>TM</sup> is provided for the voice editing, which can accept the \*.wav file as the voice database resource. Users can replace the voice with which they like through the S/W.

W83791SD also provides two address setting pins A0 & A1 for different I<sup>2</sup>C<sup>TM</sup> address and can be connected up to 4 devices if necessary.

## **2. FEATURES**

### **2.1 Speech Items**

- Programmable speech synthesizer
- New high fidelity synthesis algorithm
- Build in 8-bit current D/A converter
- Instruction cycle  $\leq 400$  ns typically
- Section control provided in each voice section
  - Variable frequency: 4.8/6/8/12 KHz
- External resistor for ring oscillator
- 1 CPU present or absent trigger input
- 5 External trigger inputs
- 127 Internal programmable trigger inputs with a watch dog timer
- Programmable 0-255 seconds timeout trigger inputs

### **2.2 General**

- I<sup>2</sup>C<sup>TM</sup> serial bus interface
- 2 pins (A0, A1) to provide selectable address setting for application of multiple devices (up to 4 devices) wired through I<sup>2</sup>C<sup>TM</sup> interface
- Winbond hardware monitoring application software (Voice Editor<sup>TM</sup>) support, for both Windows 95/98/ME/2000 and Windows NT 4.0/5.0
- Internal clock Oscillator with 3M Hz
- 5V VDD operation

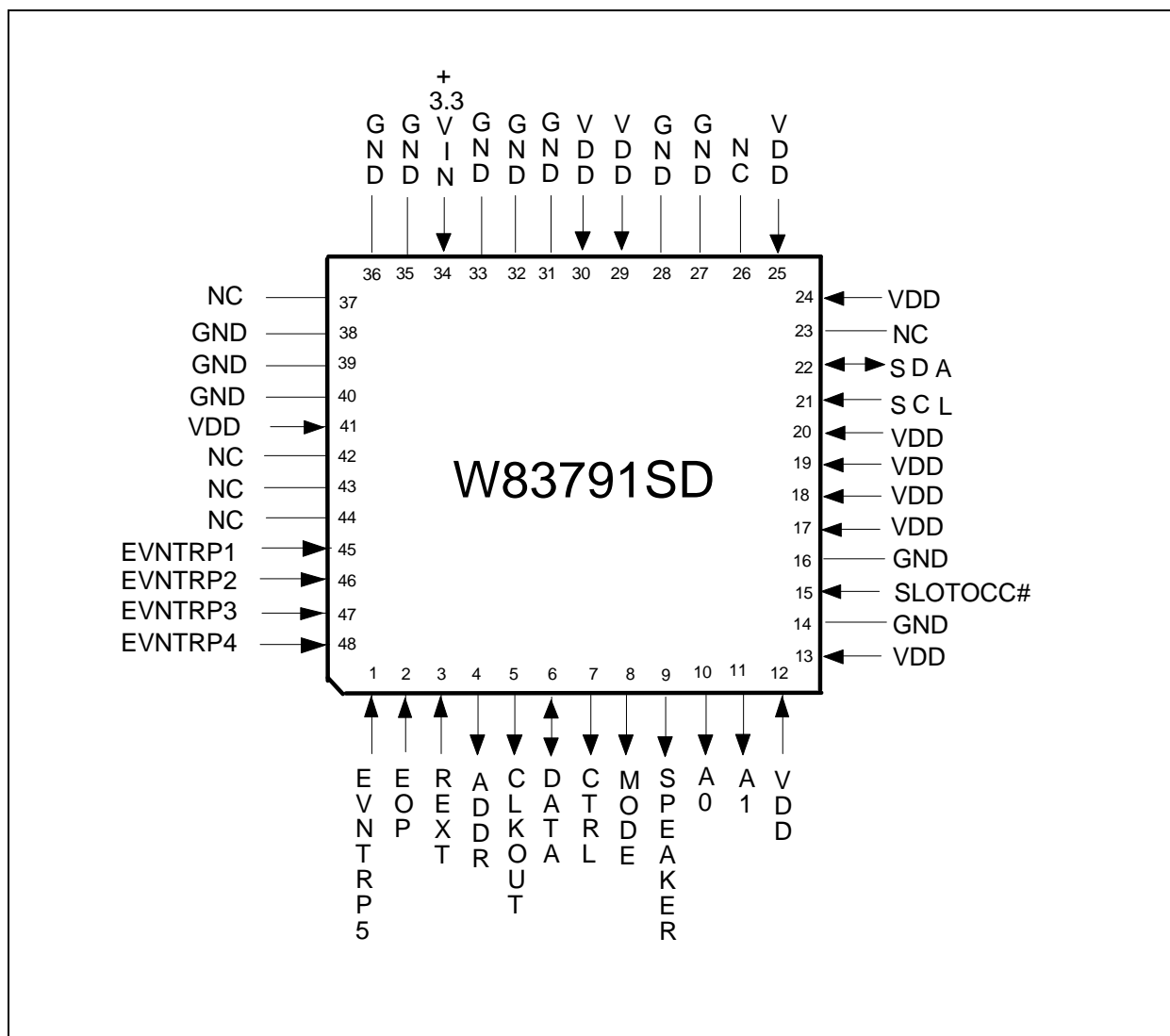
### **2.3 Package**

- 48-pin LQFP

## 3. KEY SPECIFICATIONS

- Supply Voltage 5V
- Operating Supply Current 5 mA typ.

## 4. PIN CONFIGURATION



### 5. PIN DESCRIPTION

I/O <sub>12t</sub>	- TTL level bi-directional pin with 12 mA source-sink capability
I/O <sub>12ts</sub>	- TTL level and schmitt trigger with 12 mA source-sink capability
I/OD <sub>8ts</sub>	- TTL level and schmitt trigger open drain output with 8 mA sink capability
OUT <sub>12</sub>	- Output pin with 12 mA source-sink capability
IN <sub>t</sub>	- TTL level input pin
IN <sub>ts</sub>	- TTL level input pin and schmitt trigger
AIN	- Input pin(Analog)

Pin Name	Pin No.	Type	Description
EVNTRP5 /	1	IN <sub>t</sub>	Event trapping to selection speech output sound.
EOP	2	IN <sub>t</sub>	End of Process signal input from cascaded Flash.
REXT	3	IN <sub>t</sub>	Resistor(Rosc) connect to VSB used to adjust ring oscillator frequency.
ADDR /	4	OUT <sub>12</sub>	Speech address pulse output, connect to W55FXX. When this pin translates from logic high to logic low, it will latch the data pin 6 and shift it into a speech flash address counter.
CLKOUT /	5	OUT <sub>12</sub>	Speech clock output, for speech data read-out and write-in, connect to W55FXX. When this pin translates from logic high to logic low, the data pin 6 will be latched by this clock.
DATA /	6	I/O <sub>12t</sub>	Serial data input/output, connect to W55FXX. The pin is latched by CLKOUT and ADDR acted as speech data and address respectively.
CTRL /	7	OUT <sub>12</sub>	Output clock numbers of this pin decide which mode is selected. Connect to W55FXX.
MODE /	8	OUT <sub>12</sub>	Output mode signal to W55FXX serial Flash.
SPEAKER	9	OUT <sub>12</sub>	Current type output driving an external speaker. The function is only working in VSB 5V OK.
A0	10	IN <sub>ts</sub>	I <sup>2</sup> C device address bit0 trapping during 5VDD power on.
A1	11	IN <sub>ts</sub>	I <sup>2</sup> C device address bit1 trapping during 5VDD power on.
VDD (5V)	12,13,17, 18,19,20, 24,25,29, 30,41	POWER	+5V VDD pins.
GND	14,16,27, 28,31,32, 33,35,36, 38,39,40	GROUND	Ground pins
SLOT0CC#	15	IN <sub>ts</sub>	CPU presence signal. 0, means CPU is present. 1, means CPU is absent.
NC	23,26,37, 42,43,44		No connect.
SCL	21	IN <sub>ts</sub>	Serial Bus Clock.

## Preliminary

SDA	22	I/OD <sub>8ts</sub>	Serial Bus bi-directional Data.
+3.3VIN	34	AIN	0V to 4.096V FSR Analog Inputs.
EVNTRP1-4	45-48	I/O <sub>12ts</sub>	Event trapping to selection speech output sound.

## 6. HOW TO READ THE TOP MARKING

The top marking of W83791SD



Left: Winbond logo

1st line: Type number W83791SD, D means LQFP (Thickness = 1.4 mm).

2nd line: Tracking code 025 A A

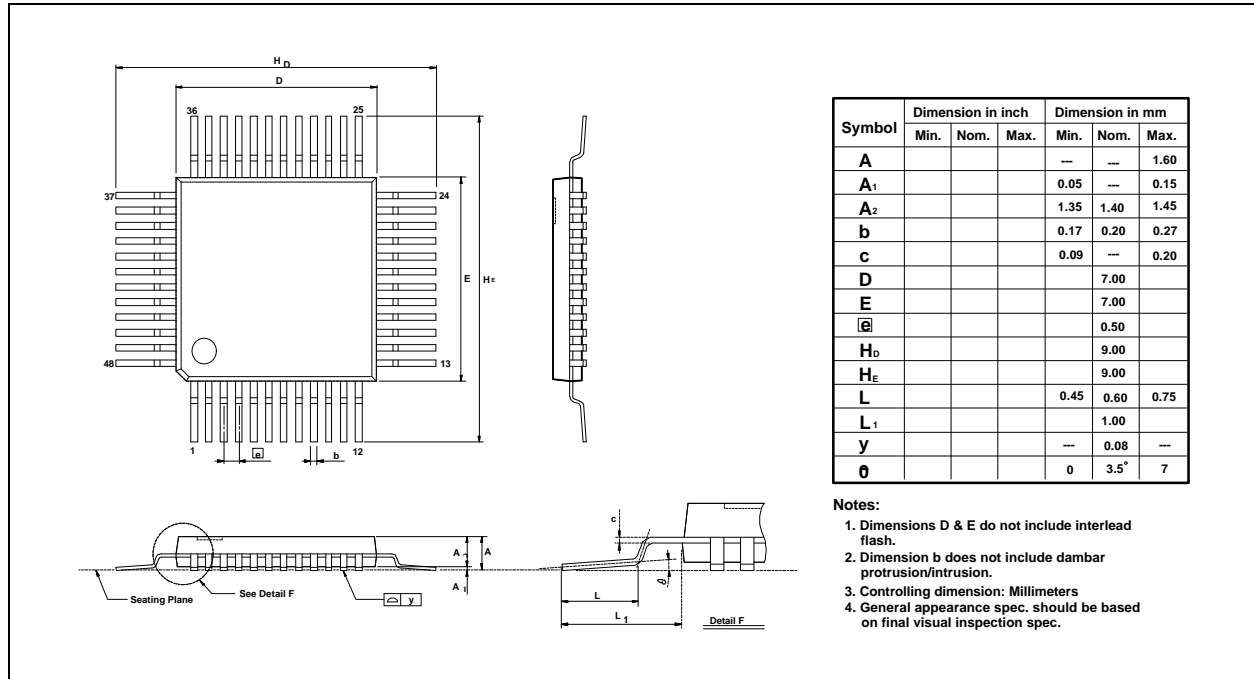
025: packages made in 2000, week 25

G: assembly house ID; A means ASE, O means OSE, G means Greatek

C: IC revision; A means version A, C means version C

### 7. PACKAGE DIMENSIONS

(48-pin LQFP)



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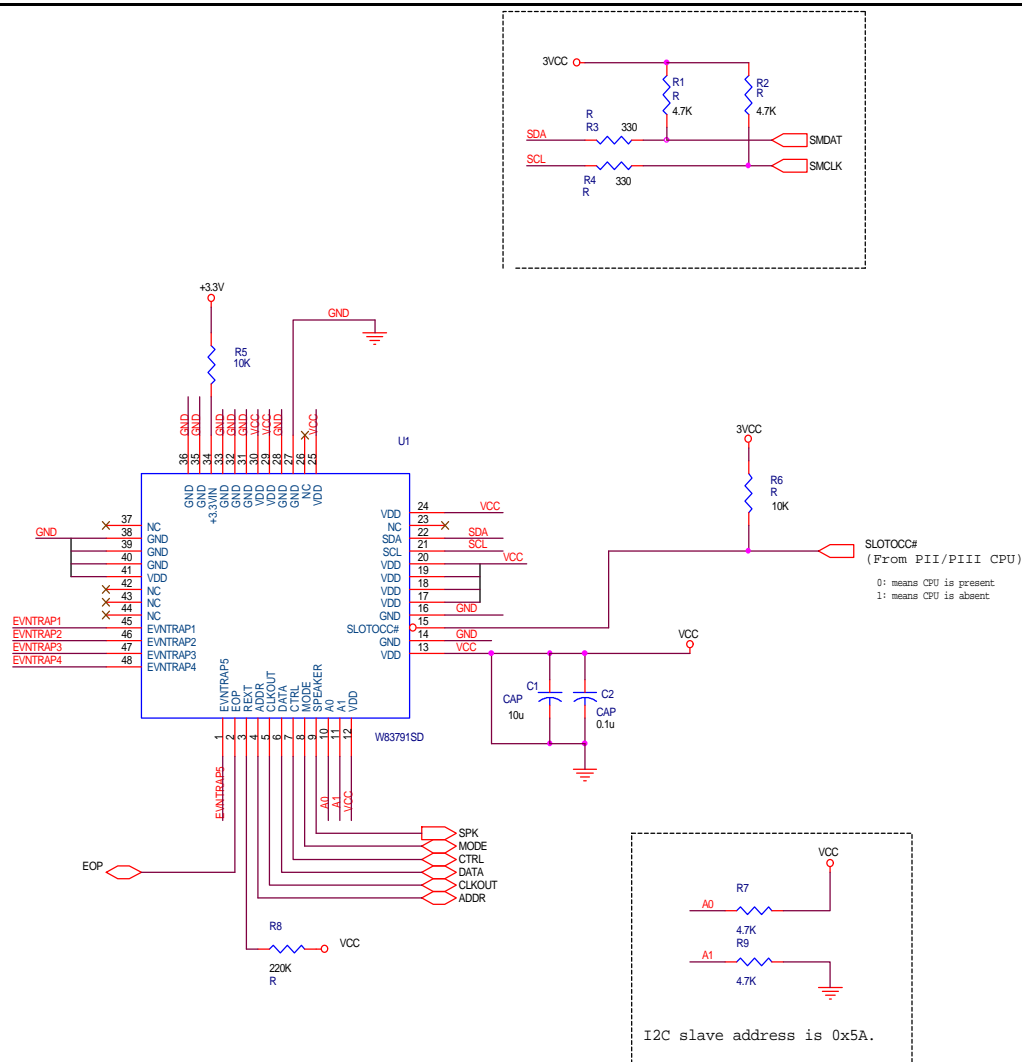
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**W83791SD Data Sheet Revision History**

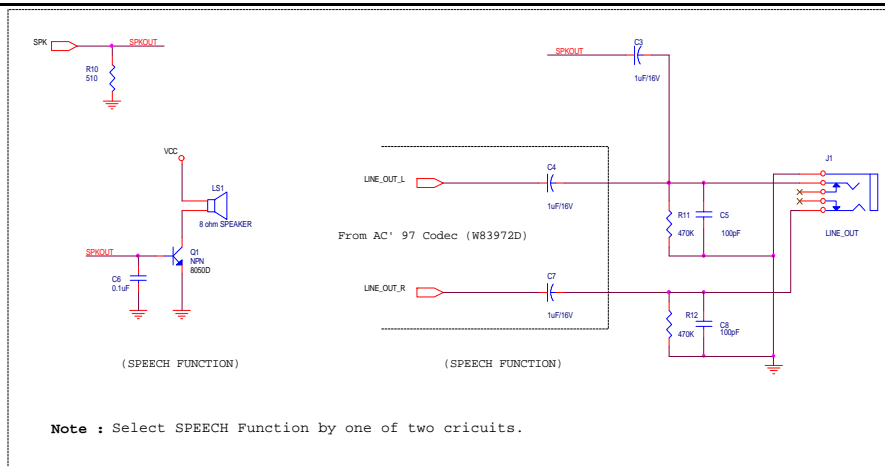
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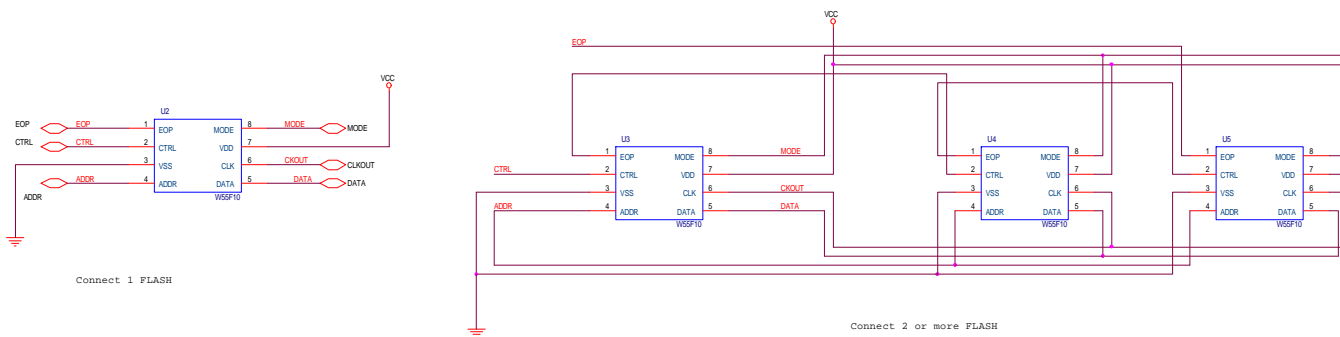
### NOTE :

The EVNTRAP1-5 trigger inputs default are low to high active.





### Connect to serial FLASH EEPROM (W55FXX)



REV	Decription
0.1	First Publication



WINBOND ELECTRONICS CORP.

Title	
W83791SD Application circuit	
Size A	Document Number
Date: Tuesday, May 29, 2001	Sheet 3 of 3
	Rev 0.1