VP-1000
Speech Processor

Features:

- High quality speech generation.
- Speech analysis and reproduct with external SRAM.
- Speech synthesis with external EPROM or ROM.
- Compatible to Eletech VP-880 voice development system.
- Compatible to VP-1600 speech controller for dividable speech ROM decoding.
- Memory addressable to 32K x 8 bits.
- Single 3V~6V supply voltage with low power consumption.
- Inexpensive RC oscillator.
- Bit rate adjustable from 9.6K to 128K bps.
- Continuous variable slope delta modulation (CVSD) technique.

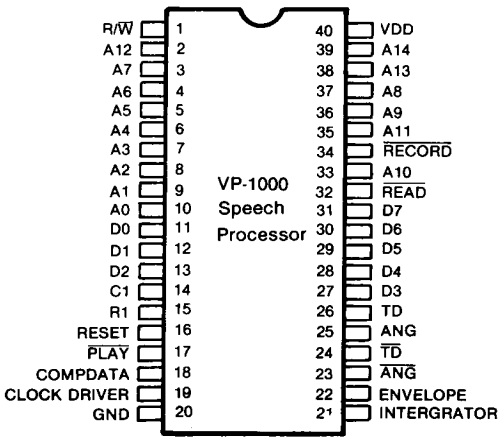
General Description:

The VP-1000 SPEECH PROCESSOR is a CMOS LSI for speech analysis and speech synthesis application. The chip can be connected to external SRAM to construct a real time recording and playback circuitry. For speech synthesis usage, it can be connected to external speech ROM to playback the stored voice data. Encoding (digitizing) of custom words or phrases must be accomplished by the chip manufacturer or alternately by the individuals using Eletech VP-880 voice development system. The VP-880 voice development kit is designed for speech ROM programming which utilizes IBM PC AT/XT as analysis tool. The system will produce very high quality voice output at the sampling rate of 24K to 32K bps as well as an acceptable voice when the sampling rate is lower down to 12K bps.

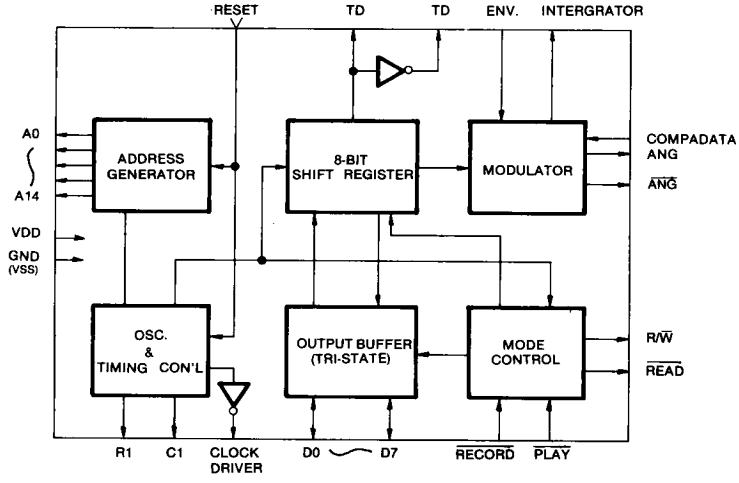
Application

- Sound recorder with low standby current.
- Sound effect producer.
- Digital announcer for consumer, industrial, security and telecommunication products.

Pin Assignment



Block Diagram



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Absolute Maximum Ratings*

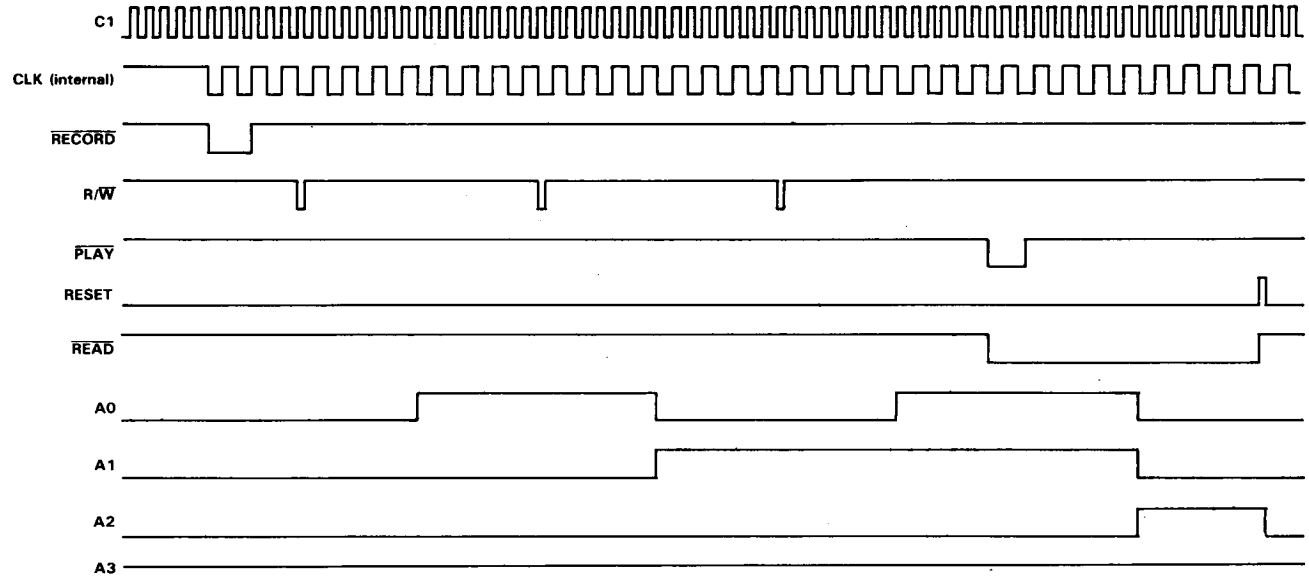
Supply Voltage, $V_{DD} - V_{SS}$ . . . . . 0 to 7V
Input Voltage, V_{IN} . . . . . V_{SS} to V_{DD}
Operating Temperature, T_{OP} . . . . . −10°C to 60°C
Storage Temperature, T_{ST} . . . . . −20°C to 80°C

*Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Eletrical Characteristics (V_{DD} = 5V, fosc 64KHz, sampling clock = 32K bps, unless otherwise specified.)

Symbol	Parameter		Limit			Units
			Min.	Typ.	Max.	
V_{DD}	Supply Voltage		3	5	6	V
I_{DD}	Stand-by Current			50		μA
I_{drive}	Clock Drive Current		16			mA
I_{sink}	Clock Sink Current		16			mA
V_{IH}	Input Voltage	High	3.5		5	V
V_{IL}		Low	0		1.5	V
I_{drive}	Output Current	Drive	3	4		mA
I_{sink}		Sink	3	4		mA
T_{Reset}	Reset Pulse		500			nS
T_{write}	Write Pulse Width		200			nS
S/N	Signal-to-Quantizied Noise			30		dB

TIMING DIAGRAM



Pin Name Description

A0 – A14:
Address bus output.

RECORD:
Input, active low. Triggering on this input shall put the chip into "SPEECH ANALYSIS" mode.

D0 – D7:
Data input/output

R/W:
Pluse output, active low. This pin generates one pluse each time when clock counting advances to eight. Active only in "SPEECH ANALYSIS" mode.

$\overline{\text{READ}}$:
Output, active low. Active only in "SPEECH SYNTHESIS" mode.

$\overline{\text{PLAY}}$:
Input, active low. Triggering on this input shall put the chip into "SPEECH SYNTHESIS" mode.

RESET:
Input, active high. When activated, all the internal counters are cleared and the chip is disabled.

ANG AND $\overline{\text{ANG}}$:
Analog signal outputs with opposite phase.

INTERGRATOR:
Output connected to external intergrator to produce envelope waveform.

ENVELOPE:
Input to be connected to external intergrator output.

TD, $\overline{\text{TD}}$:
Auxilary outputs for signal modulation.

COMPDATA:
Input feedback signal from the external comparator output.

R1, C1:
Oscillator pins. Use C1 as the input when employing external clock.

CLOCK DRIVER:
Output pin for the generation of negative voltage.

V_{DD} & GND:
+3V ~ +6V power inputs.

FIGURE 1 Sound recorder with memory retention

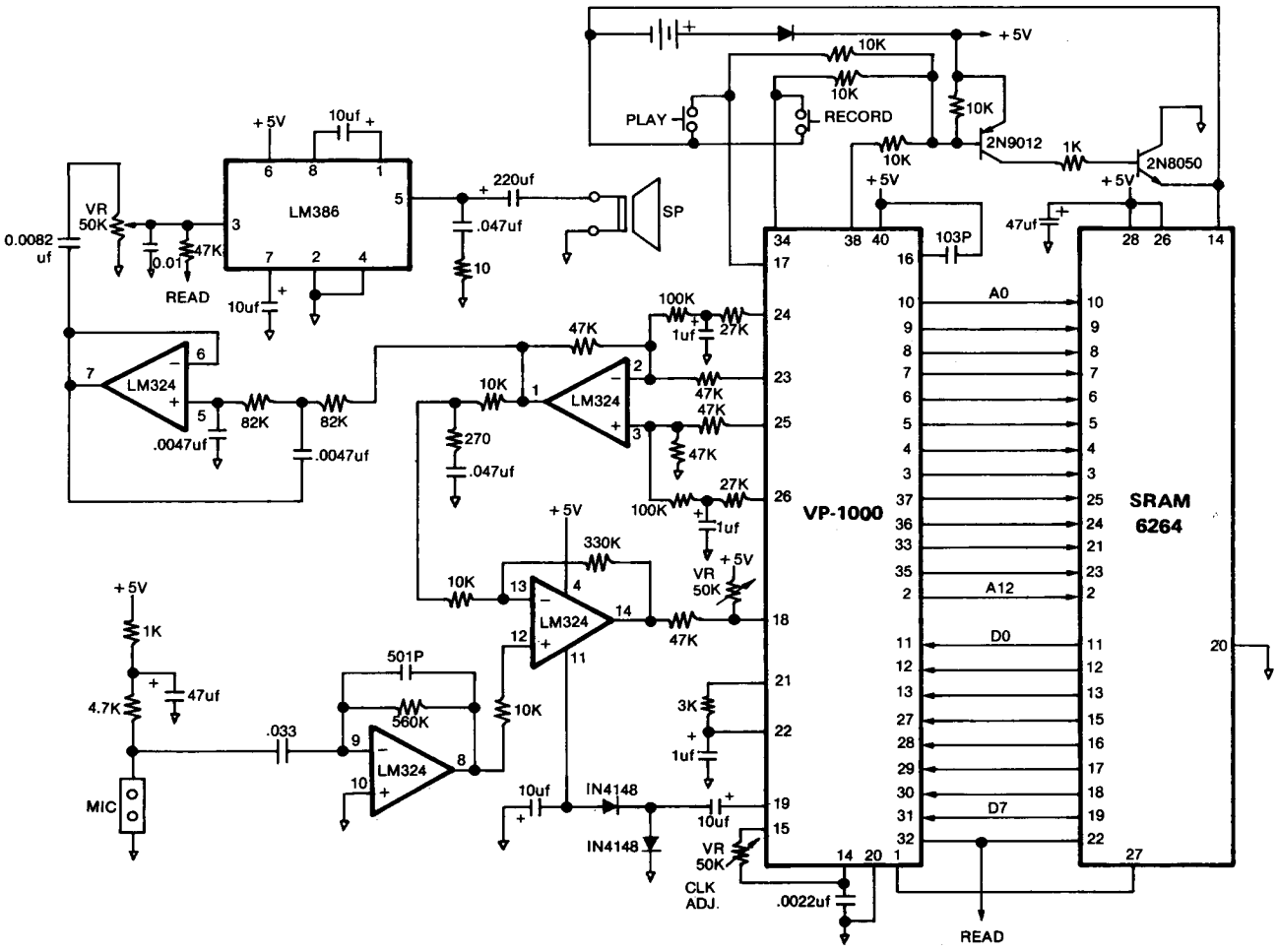


FIGURE 2 Playback circuit of a digitized voice.

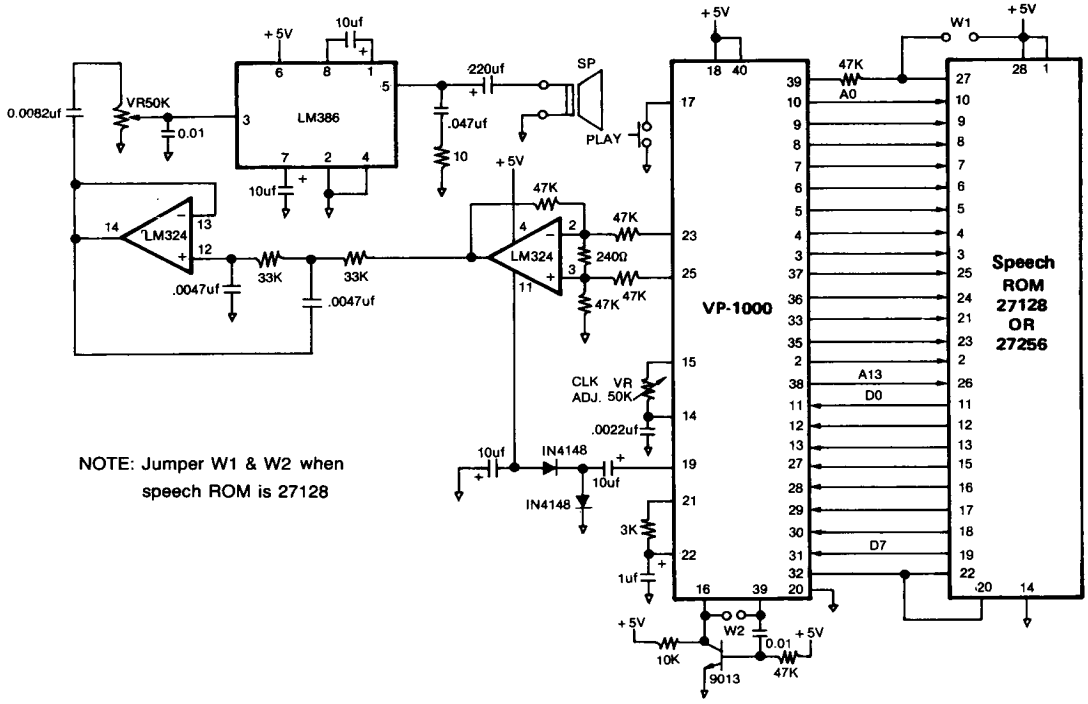


FIGURE 3
Playback circuit of external- controllable speech ROM (8 phrases, equal segment)

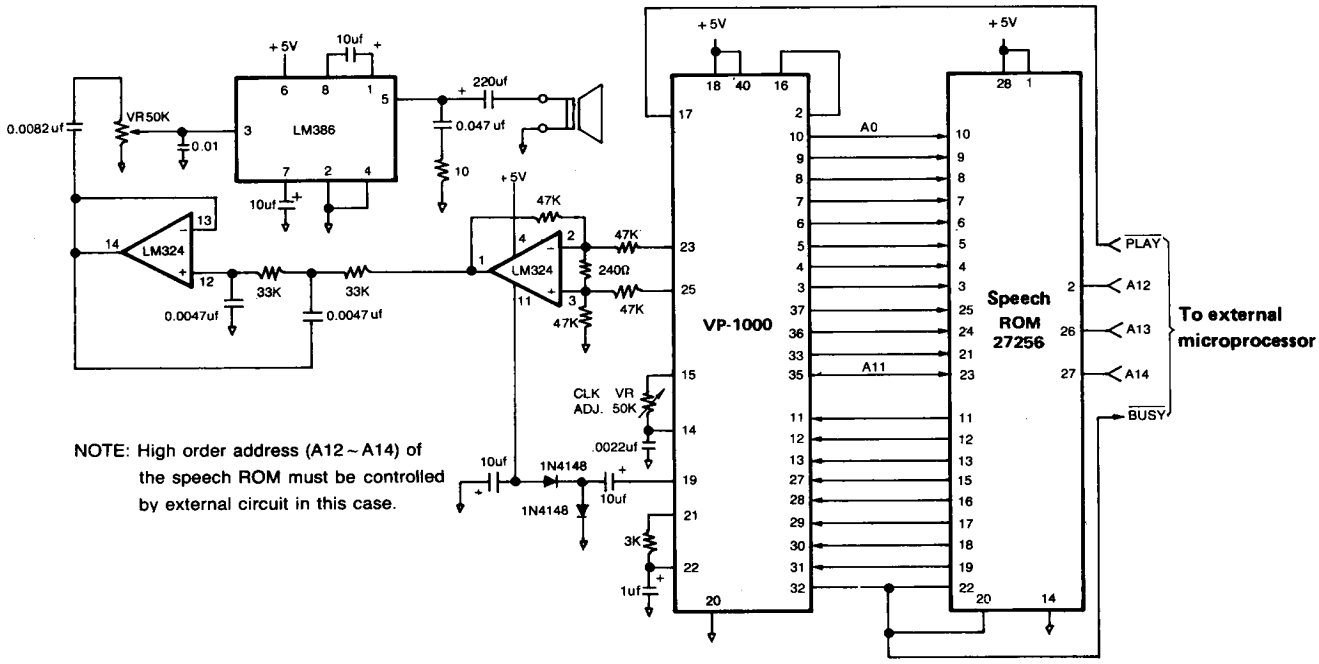


FIGURE 4 Memory expansion-multiplexer circuits of VP-1000

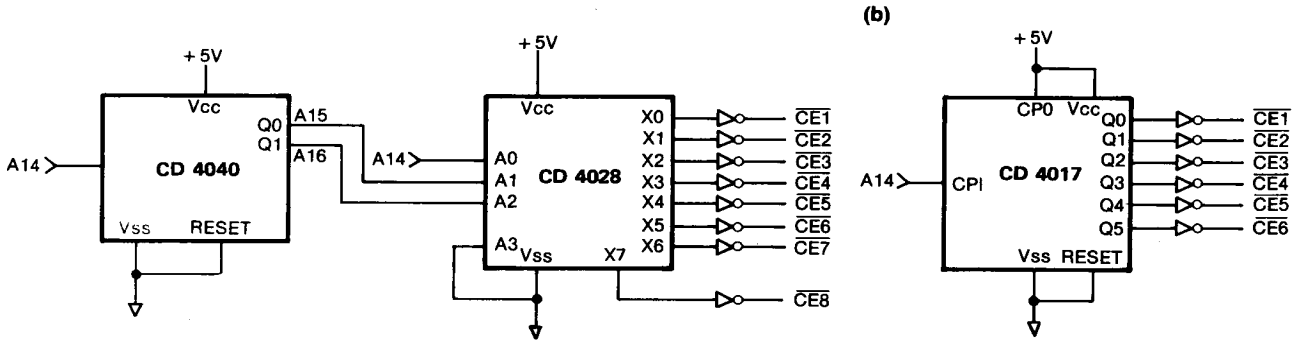
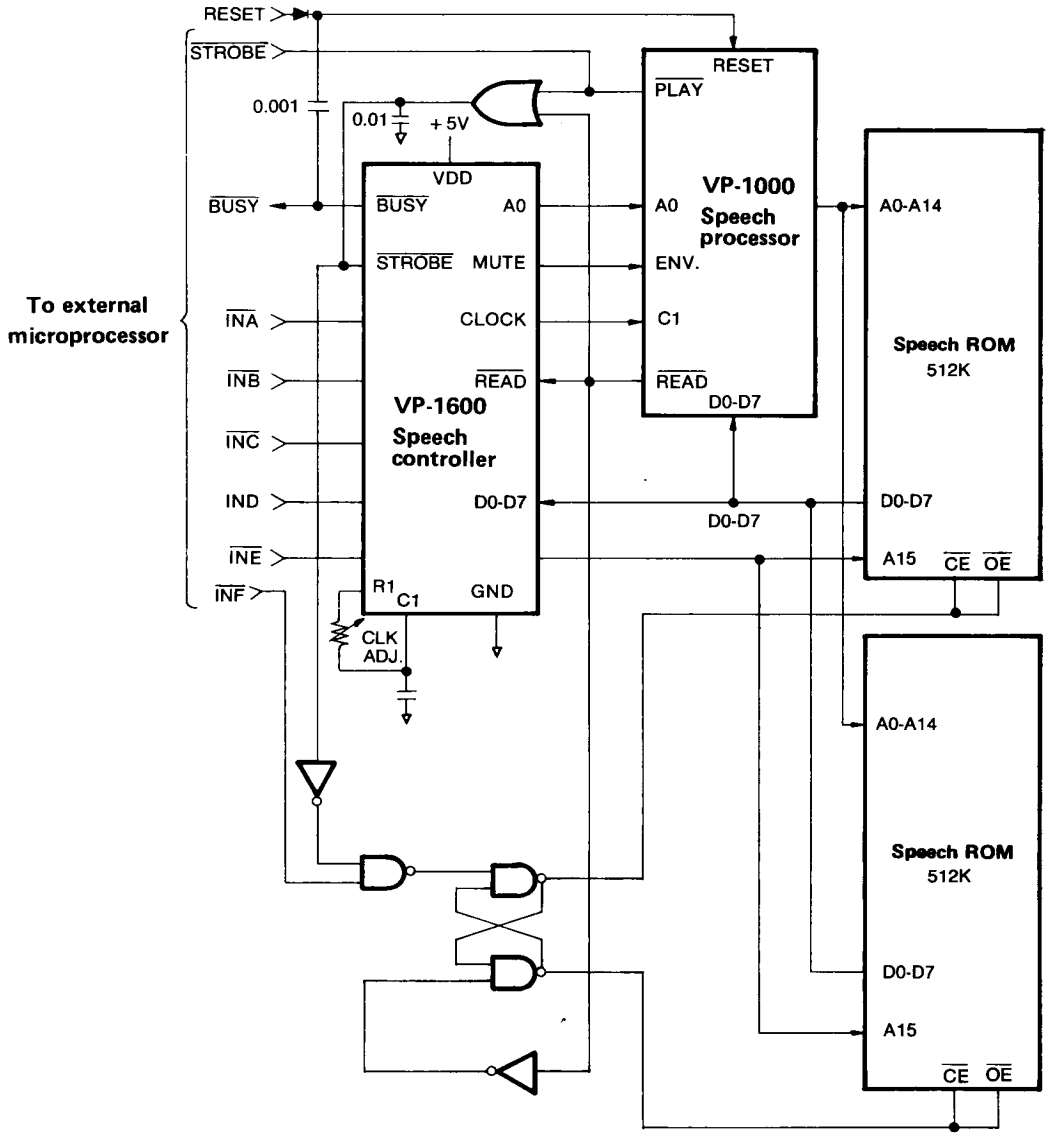


FIGURE 5

Playback of external-controllable speech ROMs (1 Mega bits)
16 phrases in each 256K memory, flexible segment)



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