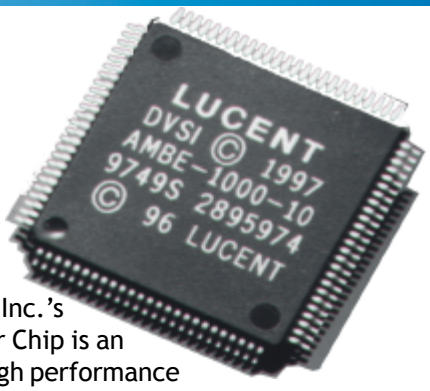
# AMBE-1000™ Vocoder Chip

DIGITAL VOICE SYSTEMS, INC.
The Speech Compression Specialists




## Benefits

### Low Cost

- Ideal for consumer products
- No licensing fees or royalties
- 3.3 V or 5.0 V operation
- Low power consumption (65 mw @ 3.3v)
- Single IC Solution (100 pin TQFP)

### Simple Integration

- Flexible A/D-D/A interface that works with most low cost codecs
- User selectable speech and FEC rates for flexibility in system design
- Serial and Parallel channel interface
- PC-based evaluation board available (PC-1000)

## Features

- AMBE™ Vocoder - Quality Voice at Low Data Rates
- User selectable bit rate (2.4 kbps to 9.6 kbps)
- Integrated block code Forward Error Correction
- Robust to bit errors and background noise
- High performance Voice Activity Detection with adaptive Comfort Noise Insertion
- DTMF & North American call progress tone detection, transmission and regeneration
- Low delay (~52 ms)
- Echo Cancellation (5 ms)

## Introduction

Digital Voice System Inc.'s AMBE-1000™ Vocoder Chip is an extremely flexible high performance vocoder. The AMBE-1000™ Vocoder Chip is a low cost, DSP based full-duplex voice coding solution for real-time and non-real time voice compression applications. The AMBE-1000™ Vocoder Chip uses DVSI's proprietary AMBE™ Voice Compression Technology to deliver excellent voice quality even at low data rates. Proven to be a superior alternative to linear predictive model vocoders AMBE™ Voice Compression Technology has been chosen as the standard for several major satellite and mobile radio communications systems.

The AMBE-1000™ Vocoder Chip includes a number of advanced features such as an automatic Voice/Silence detection (VAD), adaptive comfort noise generation, DTMF detection and signaling, echo cancellation and low power saving modes.

The AMBE-1000™ Vocoder Chip supports bit rates from 2400 to 9600 bps. The total rate is the combination of the speech data and the Forward Error Correction (FEC). The AMBE-1000™ has the flexibility to change the speech and FEC rates in 50 bps increments. High FEC rates enable the vocoder to maintain acceptable speech quality even at BER rates as high as 5%. This is a feature that is ideal for mobile communication applications that experience degraded channel conditions and / or significant bit errors.

The AMBE-1000™ Vocoder Chip is easily set-up to transmit and receive digitized speech to and from most linear, A-law, or mu-law A/D-D/A (codec) chips through a serial interface. Even programmable A/D-D/A codecs can be configured through a single interface with a controlling processor. The digitized speech from the external A/D chip is converted into compressed digital data (encoded) by the AMBE-1000™ Vocoder Chip and output to the channel interface.

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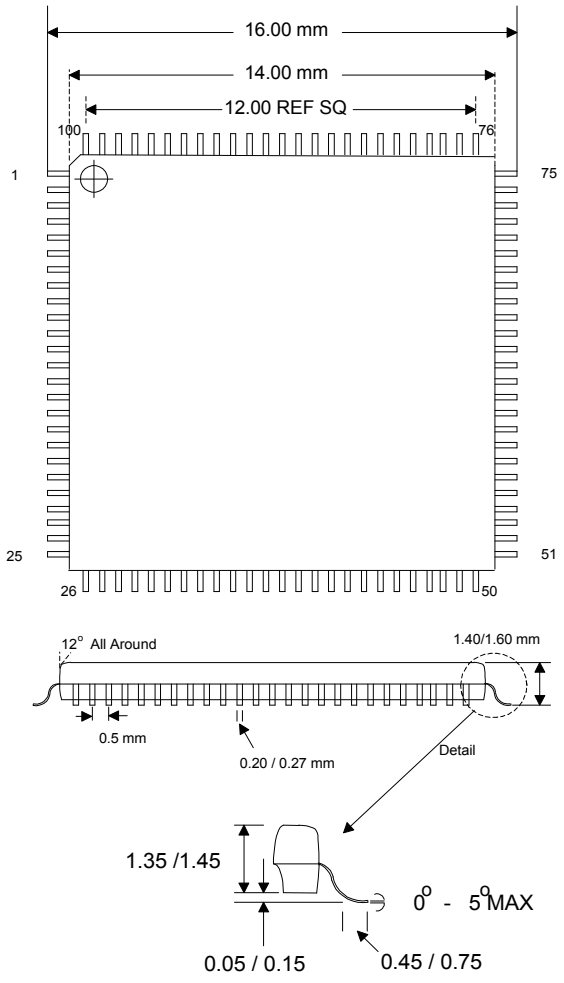
The channel interface is typically a processor, controller, modem or similar device that handles the transmission of data across the channel. Simultaneously, the AMBE-1000™ Vocoder Chip receives compressed digital data from the other side of the channel. This received data is reconstructed into a digital speech signal (decoded) by the AMBE-1000™ Vocoder Chip and then sent to the D/A where it is converted back into an analog signal. The encoder and decoder functions are fully asynchronous. The interface to the channel can be configured as serial or parellel interface to accomidate many low cost micro-processor solutions

Digital Voice Systems, Inc. (DVSI)'s AMBE-1000™ Vocoder Chip contains a patented voice compression algorithm AMBE™ Voice Compression Technology. This voice coding software has been proven to out perform standard setting linear predictive coders, such as CELP. AMBE™ Voice Compression Technology is extremely flexible and delivers superior voice quality even at low data rates. A variety of wireless communication systems throughout the world, have installed the AMBE-1000™ Vocoder Chip in devices ranging from hand held global phones to personal voice pagers.




Not Drawn to Scale

## Specifications

### Electrical

*Supply Voltage:*

| | 5.0 Volts | 3.3 Volts |
|---|---|---|

*Power Consumption :*

| | | |
|---|---|---|
| *(typical)* | 180mw | 65 mW |
| *(standard sleep)* | 36mW | 13 mW |
| *(hardware & software stop)* | .55 mW | .11 mW |

### Physical

*Package:* 100 pin TQFP (industrial grade)

*Temperature Range:*

-40°C to 85°C *(Operation)*

-65°C to 150°C *(Storage)*

*Humidity:* <95% RH

### Interfaces

*Codec (passive):*

8 bit ulaw @ 8 kHz.
8 bit alaw @ 8 kHz.
16 bit linear* @ 8 kHz.
*(*recommended for optimum performance)*

*Channel*

Serial or Parallel
Active or Passive
Framed or Unframed

(Specifications subject to change without notice.)

## Contact DVSI

The dedicated staff at DVSI bring years of experience in vocoder technology including Digital Signal Processing, computer software generation and hardware development. DVSI's expertise and unique technology offers significant benefits.

For more information on how to get the best quality voice compression, contact DVSI today.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