

Flash TAD Chips for all Digital Telephone Answering Devices with Superior Quality Triple Rate Coder™, True FULL Duplex SpeakerPhone® , and Caller ID Detection

General Description

The D6571A chips are digital speech/signal processing subsystems that implement all functions of TRUESPEECH® speech compression and voice prompts, telephone line signal processing, flash memory management, and True FULL Duplex SpeakerPhone® for an all digital answering machine. The D6571A are fully controlled by the system Host through a simple interface protocol. The Host processor provides activation and control of all system functions, such as speech recording and playback, DTMF and call progress tone detection, DTMF and tone generation, and voice prompting.

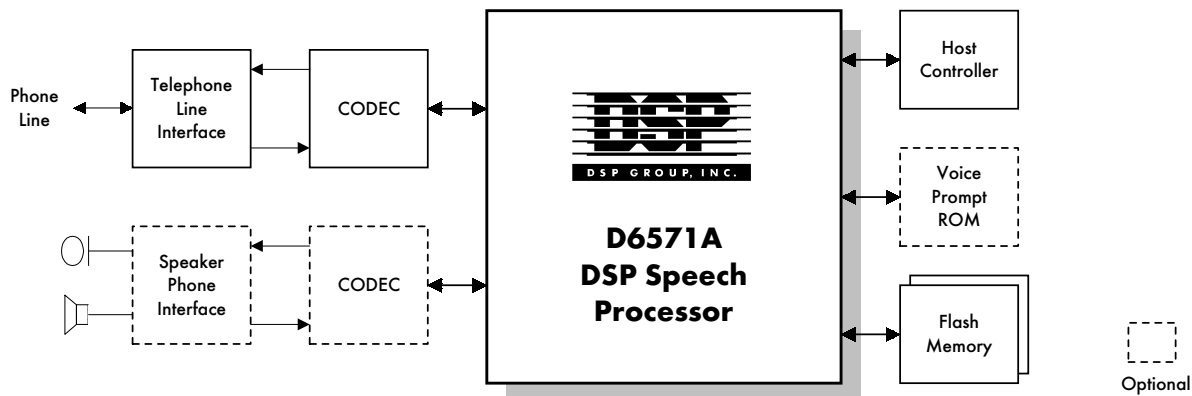


Figure 1. D6571A System Block Diagram

Key Features

- TRUESPEECH superior quality Triple Rate Coder™ allowing selectable 11, 15, and 25 min. of recording time per each 4 Mbit Flash Memory
- Higher bit rate messages can be re-compressed to a lower bit rate. Compression rate can be switched during recording.
- Flexible storage of incoming messages (ICM) and outgoing messages (OGM), supporting multiple OGMs and multiple mailboxes
- TRUESPEECH natural-sound voice prompting for Day/Time stamp and voice instructions
- DTMF generation and detection with near-end echo cancellation for superior performance
- FLEXISPEECH™ variable speed, natural sound playback (50% - 200%)
- Supports “offset playback” for jumps within a message
- Supports 4 Mb or 16 Mb Flash Memory Devices
- True FULL Duplex SpeakerPhone with both acoustical and near-end echo cancellation
- PCM recording
- Automatic Gain Control
- Caller ID and CID on Call Waiting (Bell 202 and V.23)
- Programmable sensitivity of the DTMF, VOX, CAS, and CPT detectors
- Digital volume control
- Selectable Slave or Master Codec mode
- μ -law and A-law codec support, 8 KHz sampling rate
- Supports time stamp (message tag) modification
- Allows suspend and resume recording
- GCI/IDL compatible codec interface
- Supports serial host interface mode
- General purpose (CID)/storage and non-erasable storage
- 3.3V or 5V operation

Device Configuration and System Components

STANDARD COMPONENTS

- D6571A-11 Digital Telephone Answering Device (TAD) processor (80-pin PQFP) — 1

ADDITIONAL SYSTEM COMPONENTS

These are supplied by the customer according to DSP Group's specifications

- Codec — 1, 2 for SpeakerPhone

One of the following:

- 4 Mb Flash memory, up to four per system, or
- 16 Mb Flash memory, single device

Optionally, the system will support a 64K x 8 EPROM/ROM (access time 300 ms or less) for voice prompt storage. This option is only available in systems with a single 4 Mbit Flash memory device or, for D6571A, without Flash.

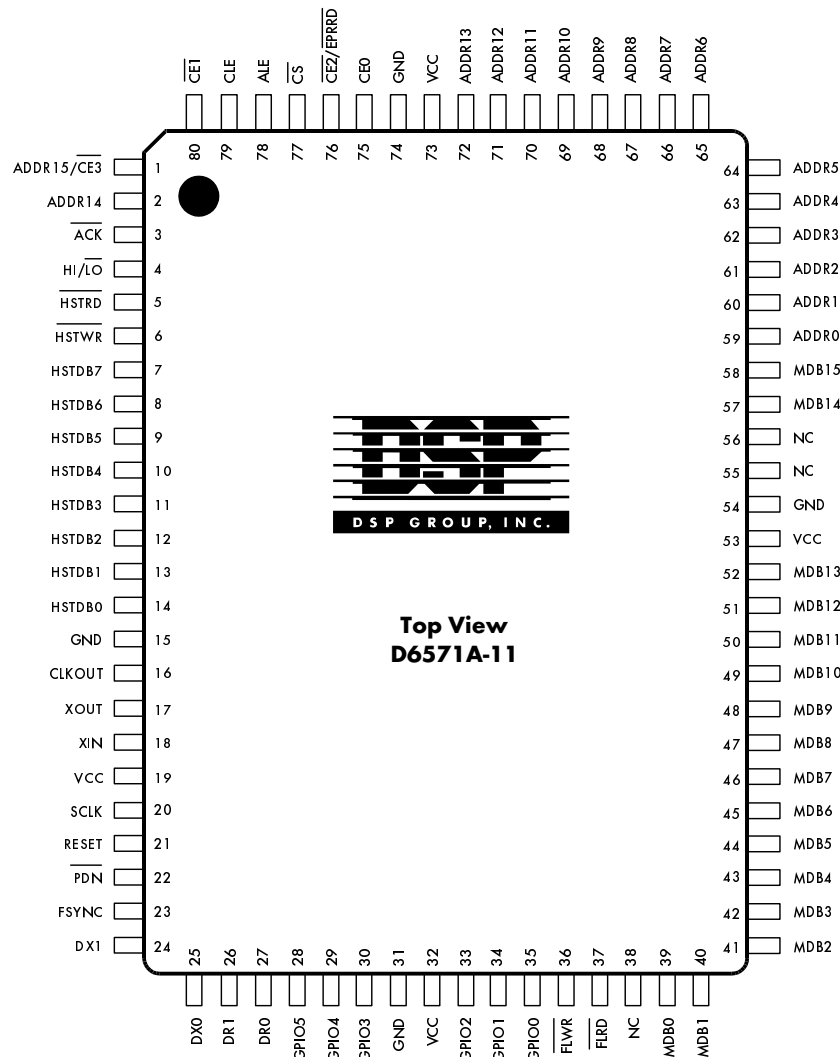


Figure 2. D6571A-11 Pin Diagram

System Functions

All of the speech and signal processing tasks are done by the D6571A. This allows the use of a very low cost microcontroller to be used for basic control of the system. The Host needs to send high level commands to perform functions such as Record Message, Playback, or Delete Message. The operation is performed by the D6571A which reports the status of the operation to the Host. All memory interface and management is performed by the DSP, requiring the Host to only handle control functions. A summary of the functions performed by the D6571A and Host Controller are shown in Figure 3, below.

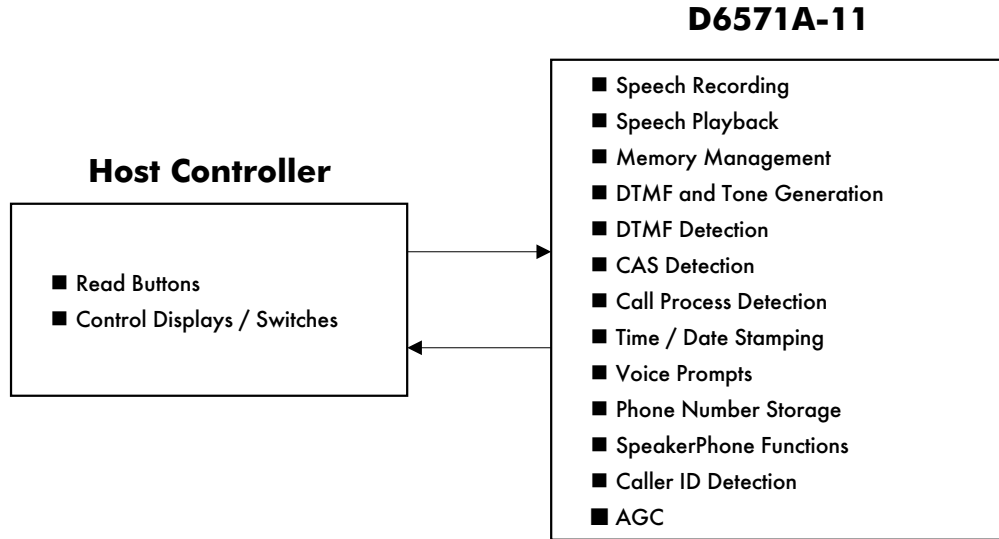


Figure 3. System Functions

Simple Hardware Interface

The hardware interface between the D6571A and the Host Controller is simple, requiring only an 8-bit parallel port and 4 handshake lines. The Host writes high level commands to the D6571A, and the D6571A responds with status information. Once a command is issued, the D6571A uses the ACK pin to acknowledge the command and indicate that the status is available to be read. The hardware interface between the D6571A and Host is shown in Figure 4 below.

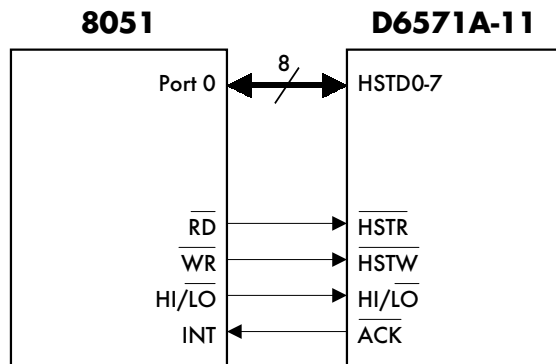


Figure 4. D6571A - Host Interface



Benefits of the D6571A

- TRUESPEECH Triple Rate Coder digital speech compression allows flexible use of the message memory thus allowing the system to dynamically configure voice quality and recording time as required.
- Flash Memory support.
 - Allows use of readily available memory.
 - Reduces the system cost by eliminating the need for battery back-up in power failure situations.
 - Allows storage of voice prompts in Flash memory eliminating the need for external ROM.
- Allows flexibility in design for features such as multiple mailboxes and multiple OGM's, enabling the design of a product that is truly a Personal Voice Mail System.
- The Host-selectable sensitivity of the DTMF, VOX, and CPT detectors makes for flexibility in design for various countries and different applications.
- The Caller ID and Call Waiting CID features eliminates the need for any extra components to include these increasingly important feature in your design.
- TRUESPEECH natural sounding voice prompts and time/date stamping allow design of a high quality and professional sounding product.
- The True FULL Duplex SpeakerPhone capability allows a professional sounding speakerphone to be added to your product with very minimal additional cost.

	Bit Rate (Fixed) Kbps	Average Recording time with "Gap Coding"	Quality	Reference
High bit rate	9.6	11 min.	Superior	~PCM
Mid bit rate	7.2	13-15 min.	Excellent	Better than ITU G.723.1 with recording time as with the D6305/D6301.
Low bit rate	4.4	22-25 min.	Very Good	Recording time as with the D6471 with much better quality.



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