description

The Voice Activity Detection (VAD) algorithm analyzes voice activity to detect silence intervals. During silence VAD sends silence descriptors to the Comfort Noise Generator (CNG) module that generates comfort noise. VAD and CNG algorithm can be effectively used with vocoders and echo cancellers as well as with other applications where it is important to reduce the transmitted bit rate and save processing resources during the silence intervals of speech.

The Automatic Gain Control (AGC) algorithm automatically adjusts the signal to a user specified output target level within a specified time. Both the target level and adaption time are adjustable within a wide range of values. AGC can be used with echo cancellers to automatically control the output of the echo canceller. In this case it is necessary to control AGC with the help of VAD to avoid adaptation during silence intervals.

VAD, AGC, and CNG algorithms can be provided as separate objects and/or as an integrated piece of code.

resource requirements

<table>
<thead>
<tr>
<th>ALGORITHM</th>
<th>PEAK MIPS</th>
<th>PROGRAM MEMORY (WORDS)</th>
<th>CONSTANT MEMORY (WORDS)</th>
<th>DYNAMIC MEMORY (WORDS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAD</td>
<td>1.14</td>
<td>2300</td>
<td>167</td>
<td>372</td>
</tr>
<tr>
<td>AGC</td>
<td>0.36</td>
<td>440</td>
<td>33</td>
<td>16</td>
</tr>
<tr>
<td>CNG</td>
<td>1.66</td>
<td>346</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>

availability

The SPIRIT VAD, AGC, and CNG available in four forms:

- eXpressDSP-compliant object code for TMS320C54x
- Fully functional eXpressDSP evaluation object at extremely low price
- Portable C code
- Assembly code

The algorithm is supplied with test environment and integration example code.

Detailed product annotation and user guide documents describing testing procedures, interface and integration of this product, as well as PC-based and DSP-based (TI TMS320VC5406 EVM and TMS320VC5402 DSK) demos are available for evaluation upon request. To get additional information on CST software, go to www.spiritDSP.com/CST.

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.
IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third–party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Mailing Address:

Texas Instruments
Post Office Box 655303
Dallas, Texas 75265

Copyright © 2003, Texas Instruments Incorporated