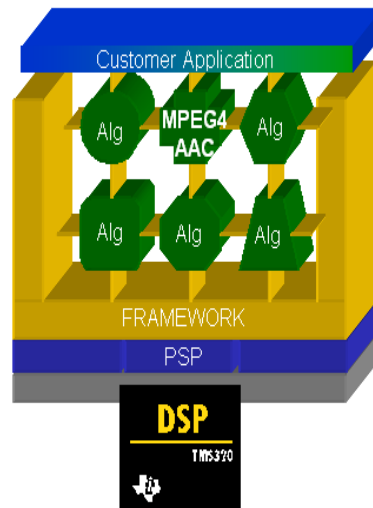




- eXpressDSP™ compliant
- Supports sampling frequency conversion from any to any frequency within the standard set ( 8, 11.025, 16, 22.05, 24, 32, 44.1, 48) KHz



## Description:

- Efficient Stereo SRC implementation on a single TMS320C55x DSP
- Required memory for code and data is 2.6Kw. This makes it capable run on the internal memory of C55x processors.
- Supported Sampling Frequencies (KHz): 8, 11.025, 12, 16, 22.05, 24, 32, 44.1, 48
- 16<sup>th</sup> Order Lagrange Interpolation for upward conversion
- 2<sup>nd</sup> Order Lowpass Elliptic Filter to reduce aliasing
- 16<sup>th</sup> Order Lagrange Interpolation for downward conversion
- TI eXpressDSP compliant
- CCS version 2.0 with CG Tools version 2.0 and Skywalker board with DA250(C5509 core) are used for development.

PRODUCT PREVIEW



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.

PRODUCT PREVIEW information concerns products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



Copyright © 2003, Texas Instruments Incorporated

IA\_SRC\_C55X\_V3.0

# SAMPLE RATE CONVERTER ON TMS320DA250

RELEASE VERSION V3.0 – 28 MAY 2003

## Summary of Performance

**Table 1. Configuration Table**

CONFIGURATION	ID
For Sampling Rate Conversion from 44.1KHz to 48.0KHz	A

**Table 2. Cycles Information–Profiled on TMS320DA250 EVM**

CONFIGURATION ID	TEST FILE PARAMETERS	PERFORMANCE STATISTICS (IN MIPS)	
		AVERAGE	PEAK
A	Sampling Frequency 44.1 KHz	6.352	7.062

**Table 3. Memory Statistics- Generated with Code Generation Tools Version 2.55**

CONFIGURATION ID	MEMORY STATISTICS <sup>1</sup>				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
A	3.864	2.929	0	0.500	7.293

<sup>1</sup> All memory requirements are expressed in kilobytes (1 kilobyte = 1024 8-bit bytes).

**Table 4. Internal Data Memory Split-up**

CONFIGURATION ID	DATA MEMORY – INTERNAL <sup>2</sup>		
	SHARED		INSTANCE <sup>1</sup>
	CONSTANTS	SCRATCH	
A	2.343	0	0.586

<sup>1</sup> All memory requirements are expressed in kilobytes (1 kilobyte = 1024 8-bit bytes)

<sup>2</sup> Does not include I/O Buffers

**Notes**

- I/O Buffers - Input Buffer Size = 1024 bytes,  
Output Buffer Size = 128 bytes.
- Total Data Memory for N *Non-Pre-Emptive* Instances =  
Constants + Runtime Tables + Scratch + N\*(Instance + I/O buffers + Stack)
- Total Data Memory for N *Pre-Emptive* Instances =  
Constants + Runtime Tables + N\*(Instance + I/O buffers + Stack + Scratch)
- Stack includes stack and sysstack

# SAMPLE RATE CONVERTER ON TMS320DA250

RELEASE VERSION V3.0 – 28 MAY 2003

---

---

## **glossary**

Constants	Elements that go into .const memory section
Scratch	Memory space that can be reused across different instances of the algorithm
Shared	Sum of Constants and Scratch
Instance	Persistent-Memory that contains persistent information - allocated for each instance of the algorithm

## **Acronyms**

SRC	: Sample Rate Converter
-----	-------------------------



## REVISION HISTORY

This data sheet revision history highlights the technical changes made to the SPRA237A data sheet to make it an SPRA237B revision.

**Scope:** Applicable updates to SRC on TMS320DA250 have been incorporated.

DATE	VERSION	ADDITIONS/CHANGES/DELETIONS
22 <sup>ND</sup> May 03	v1.0	Initial
28 <sup>TH</sup> May 03	v1.1	Review Comments Incorporated

## **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.

**Copyright © 2003 Texas Instruments Incorporated. All rights reserved.**

Information in this document is subject to change without notice. Texas Instruments may have pending patent applications, trademarks, copyrights, or other intellectual property rights covering matter in this document. The furnishing of this document is given for usage with Texas Instruments products only and does not give you any license to the intellectual property that might be contained within this document. Texas Instruments makes no implied or expressed warranties in this document and is not responsible for the products based from this document. This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Texas Instruments assumes no obligation regarding future manufacturing unless otherwise agreed to in writing.