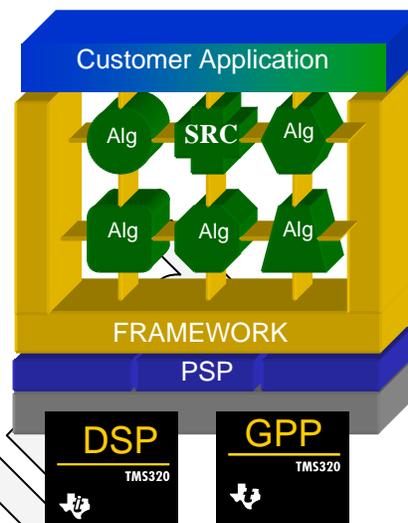




- eXpressDSP™ compliant
- Supports sampling frequency conversion from any to any frequency within the standard set (8, 11.025, 16, 22.05, 24, 32, 44.1, 48) KHz



description

- Efficient Stereo SRC implementation on a single TMS320C55x DSP
- Supported Sampling Frequencies (KHz): 8, 11.025, 12, 16, 22.05, 24, 32, 44.1, 48
- 16th Order Lagrange Interpolation for upward conversion
- 2nd Order Low pass Elliptic Filter to reduce aliasing
- 16th Order Lagrange Interpolation for downward conversion
- TI eXpressDSP compliant.
- Fully validated on TMS320C5510 EVM using CCS ver 2.2 with the code generation tools version 2.56.

PRODUCT PREVIEW



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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 TMS320C5510 EVM with CCS 2.2/ cgtools 2.56

| CONFIGURATION ID | TEST FILE PARAMETERS | PERFORMANCE STATISTICS (IN MEGACYCLES /SEC) ¹ | |
|------------------|-----------------------------|--|-------|
| | | AVERAGE | PEAK |
| A | Sampling Frequency 44.1 KHz | 6.352 | 7.876 |

Table 3. Memory Statistics - Generated with Code Generation Tools Version 2.56

| CONFIGURATION | MEMORY STATISTICS ² | | | | |
|---------------|--------------------------------|-------------|----------|-------|-------|
| | PROGRAM MEMORY | DATA MEMORY | | | TOTAL |
| | | INTERNAL | EXTERNAL | STACK | |
| A | 2.515 | 2.929 | 0 | 0.500 | 5.944 |

² All memory requirements are expressed in kilobytes (1 kilobyte = 1024 8-bit bytes).

Table 4. Internal Data Memory Split-up

| CONFIGURATION | DATA MEMORY – INTERNAL ² | | |
|---------------|-------------------------------------|---------|-----------------------|
| | SHARED | | INSTANCE ³ |
| | CONSTANTS | SCRATCH | |
| A | 2.343 | 0 | 0.586 |

² All memory requirements are expressed in kilobytes (1 kilobyte = 1024 8-bit bytes)

³ Does not include I/O buffers

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notes

- I/O Buffers - Input Buffer Size = 64 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

references

Texas Instruments “SRC reference Manual”

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 |
|-----|-----------------------|

NDA Required

PRODUCT PREVIEW



REVISION HISTORY

Scope: Applicable updates to the Sample Rate Converter on TMS320C55xx EVM have been incorporated.

| DATE | VERSION | ADDITIONS/CHANGES/DELETIONS |
|-------------------------|---------|------------------------------|
| 22 ND May 03 | V1.0 | Initial |
| 28 TH May 03 | V1.1 | Review Comments Incorporated |
| 28 TH Jan 04 | V1.2 | Updated the template |
| | | |

PRODUCT PREVIEW

NDA Required

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