- **eXpressDSP Algorithm Interface Standard (XDAIS) compliant**
- **eXpressDSP Digital Media (XDM) interface compliant**
- **Validated on the DM6437 EVM**
- **ISO/IEC 11172-3 Layer 1, Layer 2, and Layer 3 compliant streams supported.**
- **Variable Bit Rate (VBR) and Constant Bit Rate (CBR) modes supported. The VBR encoding provides a higher overall sound quality with smaller file size.**
- **Bit rates of 32 to 448 kbps for Layer 1, 32 to 384 kbps for Layer 2, and 8 to 320 kbps for Layer 3 supported.**
- **Mono, stereo, and dual channel input streams supported.**
- **Outputs 16-bit raw Pulse Code Modulation (PCM) samples. If two channels of audio data are produced, the output can be either in interleaved or block format.**
- **Layer 1 and Layer 2 decoder is compliant only with ISO/IEC 11172-3 (MPEG1 audio) standard.**
- **Layer 3 decoder is compliant with the following standards:**
  - ISO/IEC 11172-3 (MPEG 1) (48 KHz, 44.1 KHz, and 32 KHz)
  - ISO/IEC 13818-3 (MPEG 2) (24 KHz, 22.05 KHz, and 16 KHz)
  - MPEG 2.5 extension (12 KHz, 11.025 KHz, and 8 KHz) sampling rates
- **Does not support free format streams**

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description

MP3 is one of the most popular audio compression standards across wide spectrum of application ranging from portable player, cell phones, music systems, internet, and so forth.

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PRODUCT PREVIEW

summary of performance

Table 1. Configuration Table

CONFIGURATION	ID
Layer1, Layer2, Layer3 Support	MP3_DEC_001

Table 2. Cycles Information[1] – Profiled on DM6437 EVM with Code Generation Tools Version 6.0.8

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[2]		
	TEST DESCRIPTION	AVERAGE	PEAK
MP3_DEC_001	MJ44khz128kbps.mp3, 44Khz – 128 kbps	19.36	24.11
	fl11.mp3, 44.1Khz – 192 kbps	14.03	15.12
	fl2.mp3, 44.1Khz – 384 kbps	16.58	17.71

[1] Profiling is done by thrashing cache after decoding each frame for Layer 1 and Layer 2 and each granule for Layer 3
[2] Measured with program memory, stack, and I/O buffers in external memory and with cache configuration 32K-bytes L1P cache, 16K-bytes L1D cache, 64K-bytes L2 cache

Table 3. Memory Statistics - Generated with Code Generation Tools Version 6.0.8

CONFIGURATION ID	MEMORY STATISTICS[3]				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
MP3_DEC_001	60.85	Not used	42.89	2	105.74

[3] All memory requirements are expressed in kilobytes (1 kilobyte = 1024 bytes)

Table 4. Internal Data Memory Split-up

CONFIGURATION ID	DATA MEMORY – INTERNAL[4]		
	SHARED		INSTANCE[5]
	CONSTANTS	SCRATCH	
MP3_DEC _001	Not used	Not used	Not used

[4] All memory requirements are expressed in kilobytes
[5] Does not include I/O buffers

Table 5. External Data Memory Split-up

CONFIGURATION ID	DATA MEMORY – EXTERNAL[6]		
	SHARED		INSTANCE[7]
	CONSTANTS	SCRATCH	
MP3_DEC _001	24.01	6.75	12.13

[6] All memory requirements are expressed in kilobytes
[7] Does not include I/O buffers

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notes

- I/O buffers:
  - Input buffer size = 2512 bytes
  - Output buffer size = 4608 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)

references

- ISO/IEC IS 11172-3 Information Technology -- Coding of Moving Pictures and Associated Audio for Digital Storage Media at up to about 1.5 Mbps -- Part 3: Audio
- ISO/IEC IS 13818-3 Information Technology -- Generic Coding of Moving Pictures and Associated Audio Information -- Part 3: Audio
- MP3 Decoder on C64x+ User Guide (literature number SPRUEY5)

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

CBR	Constant Bit Rate
EVM	Evaluation Module
Kbps	Kilo bits per second
kHz	Kilo Hertz
MP3	MPEG1 Layer 3
MPEG	Moving Pictures Experts Group
PCM	Pulse Code Modulation
VBR	Variable Bit Rate
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

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