

MPEG2 Main Profile Decoder (v1.00) on DM6467

FEATURES

- eXpressDSP™ Digital Media (XDM 1.2 IVIDDEC2) complaint
- Validated on DM6467 EVM
- All I, P, and B frame decoding supported
- Both progressive and interlaced supported
- Outputs are available in YUV 420 interleaved formats (Y in one plane and U and V data interleaved to form the other plane)
- Frame based decoding with frame size being multiples of 16 supported
- Simple Profile MPEG2 decoding supported
- Main Profile MPEG2 decoding supported
- DMA based framework supported
- Use of C64x+ and ARM968 of HD-VICP0 and

HDVICP1 supported

- Interrupt based communication between processors supported

DESCRIPTION

MPEG2 video standard specifies the decompression and coded representation for entertainment-quality digital video. It is validated on DM6467 EVM, with Code Composer Studio version 3.3.49, and code generation tools version 6.0.8.

PRODUCT PREVIEW



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Performance Summary

This section describes the performance of the MPEG2 Decode Codec on DM6467.

Table 1. Configuration Table

CONFIGURATION	ID
Mpeg2 Main Profile at High Level	DM6467_MP_001

Table 2. Cycles Information in MHz - Profiled on DM6467 EVM with Code Generation Tools Version 6.0.8

CONFIGURATION ID	PERFORMANCE STATISTICS (MEGA CYCLES PER SECOND) ⁽¹⁾				
	TEST DESCRIPTION	DSP CYCLES AT 600 MHZ		IMCOP ARM 968 CYCLES AT 300 MHZ	
		AVERAGE	PEAK ⁽²⁾	AVERAGE	PEAK ⁽²⁾
DM6467_MP_001	emotion_1920_1088_fields_MC.m2v	4.65	4.85	244	287
	crawford_1080i_vid.m2v	4.7	4.87	241	295
	fball_30_s.m2v	4.4	5.45	197	232

(1) Measured with program memory, stack, and I/O buffers in external memory and with cache configuration 32 K bytes L2 cache, 32 K L1D cache and 32 K L1P cache.

(2) Peak values are calculated assuming that the most demanding frame is repeated 30 times in the sequence, rather than finding the most demanding 30 frames sequence in the bit-stream.

Table 3. Cycles Information for 2MB Processing - Profiled on DM6467 EVM with Code Generation Tools Version 6.0.8

CONFIGURATION ID	PERFORMANCE STATISTICS (CYCLES FOR 2 MB PROCESSING) ⁽¹⁾				
	TEST DESCRIPTION	DSP CYCLES AT 600 MHZ		IMCOP ARM 968 CYCLES AT 300 MHZ	
		AVERAGE	PEAK ⁽²⁾	AVERAGE	PEAK ⁽²⁾
DM6467_MP_001	emotion_1920_1088_fields_MC.m2v	40	40	1950	2440
	crawford_1080i_vid.m2v	40	40	2150	2440
	fball_30_s.m2v	40	40	1940	2440

(1) Measured with program memory, stack, and I/O buffers in external memory and with cache configuration 32 K bytes L2 cache, 32 K L1D cache and 32 K L1P cache.

(2) Peak values are calculated assuming that the most demanding frame is repeated 30 times in the sequence, rather than finding the most demanding 30 frames sequence in the bit-stream.

Table 4. Memory Statistics - Generated with Code Generation Tools Version 6.0.8

CONFIGURATION ID	MEMORY STATISTICS ⁽¹⁾				TOTAL
	PROGRAM MEMORY	DATA MEMORY			
		INTERNAL ⁽²⁾	EXTERNAL ⁽²⁾	STACK	
DM6467_MP_001	41.1	10.9	6.62	2	60.62

(1) All memory requirements are expressed in kilobytes (1K-byte = 1024 bytes).

(2) Internal memory is placed in L2 SRAM.

Table 5. Internal Data Memory Split-Up

CONFIGURATION ID	DATA MEMORY - INTERNAL ⁽¹⁾		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
DM6467_MP_001	0	10.9	0

(1) All memory requirements are expressed in kilobytes

Table 6. External Data Memory Split-Up

CONFIGURATION ID	DATA MEMORY - EXTERNAL ⁽¹⁾		
	SHARED		INSTANCE
	CONSTANTS	SCRATCH	
DM6467_MP_001	0.50	0	6.12

(1) All memory requirements are expressed in kilobytes.

Notes

- The entire HDVICP is a video resource and uses 16K ITCM and 8K DTCM.

References

- *MPEG2 Decoder Codec on DM6467 User's Guide* (literature number - SPRUFE1)

Glossary

Term	Description
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

Acronym	Description
CPB	Constrained Parameters Bit-streams
DMA	Direct Memory Access
DMAN3	DMA Manager
EVM	Evaluation Module
IDCT	Inverse Discrete Cosine Transform
MCPS	Mega Cycles Per Second
MPEG	Motion Picture Expert Group
QDMA	Quick Direct Memory Access
XDM	eXpressDSP Digital Media

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