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1.0 Introduction

Both MT90220 and MT90223 are 8-link IMA/UNI devices. Both in functions and in features, MT90223 is an enhanced version of MT90220. This document lists all and only the differences between the two. For implementation details, refer to MT90222/3/4 Datasheet.

2.0 Hardware Differences

	Description	MT90220	MT90223
General			
1	Package	208-pin MQFP	384-ball PBGA
2	Footprint	30.80 mm x 30.80 mm	27.20 mm x 27.20 mm
3	Power supply	3.3 V only	2.5 V, 3.3 V and 5 V (as required)
4	Maximum current consumption	300 mA	425 mA at 2.75 V + 90 mA at 3.63 V ¹
5	System clock	25 MHz	50 MHz
6	IMA groups	4	8
7	Software reset	Not available	Available
Utopia Interface			
8	Utopia Tx and Rx clocks	Maximum 25 MHz	Maximum 52 MHz ²
9	Utopia Rx clock and System clock	Must be phase locked with 10 ns apart	Asynchronous
10	Utopia data bus	8-bit only	8-bit or 16-bit
11	Utopia parity bits	Not available	Available
External SRAM			
12	SRAM access time	30 ns or faster	10 ns or faster
CPU Interface			
13	CPU data bus	8 bit	16 bit

Table 1 - Hardware Differences

	Description	MT90220	MT90223
14	CPU address bus	11 bit	12 bit
15	Internal registers	8 bit	16 bit
16	Register addresses	Some registers in MT90220 remain in MT90223. However, the locations are different.	
TDM Interface			
17	Multiplexing mode for T1/E1 framers with high speed link	Not available	Available
18	Multiplexing of sub-rate streams onto single T1/E1 link	Not available	Available
19	Unframed mode e.g. DSL framer interfacing	Not available	Available
20	Mapping register for fractional T1/E1 operation	Not available	Available
21	TDM ring for cascading	Not available	Available
Diagnostic tools			
22	Utopia loopback	Not available	Available
23	TDM remote loopback	Not available	Available
24	TDM digital loopback	Not available	Available
25	Utopia input user cell counter	Not available	Available
26	Tx link user cell counter	Not available	Available
27	Rx link user cell counter	Not available	Available
28	Latch all counter values	Not available	Available
IMA Features			
29	Support of IMA Spec. v1.0 and v1.1	Supports one or the other at one time	Simultaneously supports both
30	ICP pre-processing	No pre-processing - CPU reads the whole ICP cell and then compares it with the previous one.	Adjacent ICP cells automatically compared - CPU only reads the changed bytes.
31	CRC error in received Filler cells	Not detected	Detected
32	TxSOC pulldown	Not needed	Needed (see the datasheet)

Table 1 - Hardware Differences (continued)

1. The current is measured at increased power supply voltage of 2.75 V and 3.65 V. The current consumption at 5 V is negligible.
2. The 52 MHz is supported in 8-bit mode and in 16-bit UTOPIA mode, maximum Tx UTOPIA frequency is 33 MHz and Rx UTOPIA frequency is 52 MHz.

Please refer to ZLAN-88 for details of back to back cell implementation in MT90223/3/4 (the back to back cell mode is different than MT90220/1).

3.0 Software Differences

MT90220 runs on IMA-CORE r1.1.1. MT90223 runs on IMA-CORE r2.0. The following list details the differences between the two releases.

3.1 IMA-CORE r2.0 Architecture

- uses the same architecture of IMA-CORE r1.1.1
- state machine components have not changed (primarily since the IMA specification has not changed)
- MIBS interface and standard MIBS data through LMI remain unchanged
- same component names and design: TXLSM, RXLSM, GSM, TPP, ALP, HWED/HWAPI, MTMAT etc
- same system requirements
 - LMI API access methods are identical (FT_SetParamFull etc.)
 - OS Wrapper is the same
 - still a run-to-completion model (FT_Activate, FT_RunIMA etc.)
 - Interrupt latching and processing are the same
 - timer tick requirement is the same
 - alarm processing (ALP) and failure state machine remain the same
 - PFM latching is the same
 - debug facilities are identical (STATE_TRACING_PRINTFs)
- supports MT90222/3/4 as well as ZL30226/7/8
- directory structures identical to r1.1.1

3.2 IMA-CORE r2.0 Documentation

- IMA-CORE Porting Guide r2
- IMA-CORE External Interface Guide r2

Both documents updated for content, but not rewritten from r1.1.1.

3.3 New Module in IMA-CORE r2.0

- a new driver layer to support MT90223 has been added, but it is the same architecture as previous version

3.3.1 Data Changes in IMA-CORE r2.0

- small changes have been made to some data structures in the LMI interface to account for register differences (e.g., names, functions and size) between MT90220 and MT90223
- IMA_CORE r2.0 will scale to 8 groups by a simple change to some constants
- the customer will need to update their application code for device(hardware)-related accesses, state machine data structures remain unchanged
- some low level i/o calls have been altered to support 16-bit accesses, but this is a minor change

3.4 Support

- Software support still provided through ima-support@Zarlink.com

In summary, if one has already ported IMA-CORE r1.1.1 with MT90220 he/she will be able to get up and running with the MT90223 very quickly.



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