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Technical Data

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MPC8640 and MPC8640D Integrated Host Processor Hardware Specifications Addendum for the MC8640xTxxyyyyaC Series

This document describes part-number-specific changes to recommended operating conditions and revised electrical specifications, as applicable, from those described in the general *MPC8640 and MPC8640D Integrated Host Processor Hardware Specifications* (Document No. MPC8640DEC).

Specifications provided in this document supersede those in the *MPC8640 and MPC8640D Integrated Host Processor Hardware Specifications*, Rev. 1 or later, for the part numbers listed in Table A only. Specifications not addressed herein are unchanged.

Because this document is frequently updated, refer to the website listed on the back page of this document or contact your Freescale sales office for the latest version.

Note that headings and table numbers in this document are not consecutively numbered. They are intended to correspond to the heading or table affected in the general hardware specification.

Freescale Part Numbers Affected:

MC8640DTHX1250HC
MC8640DTHX1000HC
MC8640DTHX1067NC
MC8640DTVU1250HC
MC8640DTVU1000HC
MC8640DTVU1067NC
MC8640THX1250HC
MC8640THX1000HC
MC8640THX1067NC
MC8640TVU1250HC
MC8640TVU1000HC
MC8640TVU1067NC

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Part numbers addressed in this document are listed in Table A.

Table A. Part Numbers Addressed by This Data Sheet

Freescale Part Number	Operating Conditions			Significant Differences from Hardware Specification
	CPU Frequency (MHz)	V_{DD}_Core*n*	T_j (°C)	
MC8640DTHX1250HC	1250	1.05 V ± 50 mV	–40 to 105	Modified JTAG AC timing; extended junction temperature range.
MC8640DTHX1000HC	1000	1.05 V ± 50 mV		
MC8640DTHX1067NC	1067	0.95 V ± 50 mV		
MC8640DTVU1250HC	1250	1.05 V ± 50 mV		
MC8640DTVU1000HC	1000	1.05 V ± 50 mV		
MC8640DTVU1067NC	1067	0.95 V ± 50 mV		
MC8640THX1250HC	1250	1.05 V ± 50 mV		
MC8640THX1000HC	1000	1.05 V ± 50 mV		
MC8640THX1067NC	1067	0.95 V ± 50 mV		
MC8640TVU1250HC	1250	1.05 V ± 50 mV		
MC8640TVU1000HC	1000	1.05 V ± 50 mV		
MC8640TVU1067NC	1067	0.95 V ± 50 mV		

2 General Parameters

This section summarizes changes to the general parametersof the MPC8640 described in the *MPC8640 and MPC8640D Integrated Host Processor Hardware Specifications*.

- Modified JTAG AC timing
  - t_{JTDVKH} (min) = 15 ns
- Extended junction temperature range
  - T_J = –40 to 105 °C

2.1 Overall DC Electrical Characteristics

2.1.2 Recommended Operating Conditions

Table 2 provides the recommended operating conditions for the MPC8640 part numbers described herein.

Table 2. Recommended Operating Conditions

Characteristic	Symbol	Recommended Value	Unit	Notes
Junction temperature range	T_J	–40 to 105	°C	—

11.2 JTAG AC Electrical Specifications

Table 43 provides the JTAG AC electrical specifications for the MPC8640 part numbers described herein.

Table 43. JTAG AC Timing Specifications (Independent of SYSCLK) [1]

At recommended operating conditions (see Table 3).

Parameter	Symbol [2]	Min	Max	Unit	Notes
Input setup times:				ns	
Boundary-scan data	t_{JTDVKH}	15	—		4
TMS, TDI	t_{JTIVKH}	0	—		

Notes:

1. All outputs are measured from the midpoint voltage of the falling/rising edge of t_{TCLK} to the midpoint of the signal in question. The output timings are measured at the pins. All output timings assume a purely resistive 50-Ω load (see Figure 32). Time-of-flight delays must be added for trace lengths, vias, and connectors in the system.
2. The symbols used for timing specifications herein follow the pattern of $t_{\text{(first two letters of functional block)(signal)(state)(reference)(state)}}$ for inputs and $t_{\text{(first two letters of functional block)(reference)(state)(signal)(state)}}$ for outputs. For example, t_{JTDVKH} symbolizes JTAG device timing (JT) with respect to the time data input signals (D) reaching the valid state (V) relative to the t_{JTG} clock reference (K) going to the high (H) state or setup time. Also, t_{JTDXKH} symbolizes JTAG timing (JT) with respect to the time data input signals (D) went invalid (X) relative to the t_{JTG} clock reference (K) going to the high (H) state. Note that, in general, the clock reference symbol representation is based on three letters representing the clock of a particular functional. For rise and fall times, the latter convention is used with the appropriate letter: R (rise) or F (fall).
4. Non-JTAG signal input timing with respect to t_{TCLK}.

21 Ordering Information

21.1 Part Numbers Addressed by This Specification

Table 73 provides the ordering information for the MPC8640 parts described in this document.

Table 73. Part Numbering Nomenclature

uu	nnnn	D	w	xx	yyyy	a	z
Product Code	**Part Identifier**	**Core Count**	**Temp**	**Package [1]**	**Core Processor Frequency [2] (MHz)**	**DDR speed (MHz)**	**Product Revision Level**
MC[5]	8640	Blank = Single Core D = Dual Core	T: –40°C to 105°C	HX = High-lead HCTE FC-CBGA VU = RoHS lead-free HCTE FC-CBGA	1000, 1067, 1250	N = 533 MHz[4] H = 500 MHz	Revision C = 2.1 System Version Register Value for Rev C: 0x8090_0021 - MPC8640 0x8090_0121 - MPC8640D

Notes:

1. See Section 16, “Package,” for more information on available package types.
2. Processor core frequencies supported by parts addressed by this specification only. Not all parts described in this specification support all core frequencies. Additionally, parts addressed by part number specifications may support other maximum core frequencies.
3. The P prefix in a Freescale part number designates a “Pilot Production Prototype” as defined by Freescale SOP 3-13. These parts have only preliminary reliability and characterization data. Before pilot production prototypes may be shipped, written authorization from the customer must be on file in the applicable sales office acknowledging the qualification status and the fact that product changes may still occur while shipping pilot production prototypes.
4. Part Number MC8640xxx1067NC is our low V_{DD}_Core*n* device. V_{DD}_Core*n* = 0.95 V and V_{DD}_PLAT = 1.05 V.
5. MC - Qualified production

Document Revision History

Table B provides a revision history for this hardware specification addendum.

Table B. Document Revision History

Rev. Number	Date	Substantive Change(s)
0	12/2008	Initial release.

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