Freescale Semiconductor
Advance Information

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MPC7455 RISC Microprocessor Hardware Specifications Addendum for the XPC74*n*5RX*nnnn*S*x* Series

This document describes part-number-specific changes to recommended operating conditions and revised electrical specifications, as applicable, from those described in the general *MPC7455 RISC Microprocessor Hardware Specifications* (Order No. MPC7455EC). The MPC7455 is a PowerPC™ microprocessor.

Specifications provided in this document supersede those in the *MPC7455 RISC Microprocessor Hardware Specifications*, Rev. 0 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 http://www.freescale.com 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:
XPC7455RX1000SC

The part number addressed in this document is 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}	T_j (°C)	
XPC7455RX1000SC	1000	1.85 V ±50 mV	0 to 75	Modified core voltage and temperature specifications to achieve 1 GHz.

Note: The X prefix in a Freescale part number designates a “Pilot Production Prototype” as defined by Freescale SOP 3-13. These are from a limited production volume of prototypes manufactured, tested, and Q.A. inspected on a qualified technology to simulate normal production. 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.

1.1 Features

This section summarizes changes to the features of the MPC7455 described in the *MPC7455 RISC Microprocessor Hardware Specifications*.

- Power management
  - 1.85-V processor core

1.4 General Parameters

- Core power supply: 1.85 V ±50 mV DC nominal

1.5.1 DC Electrical Characteristics

Table 4 provides the recommended operating conditions for the MPC7455 part number described herein.

Table 4. Recommended Operating Conditions

Characteristic	Symbol	Recommended Value	Unit
Core supply voltage	V_{DD}	1.85 V ±50 mV	V
PLL supply voltage	AV_{DD}	1.85 V ±50 mV	V
Die-junction temperature	T_j	0 to 75	°C

Note: These are the recommended and tested operating conditions. Proper device operation outside of these conditions is not guaranteed.

Table 7 provides the power consumption for the MPC7455 part number described herein.

Table 7. Power Consumption for MPC7455

	Processor (CPU) Frequency	Unit	Notes
	1000 MHz		
Full-Power Mode			
Typical	35.5	W	1, 3
Maximum	50.0	W	1, 2
Doze Mode			
Typical	—	W	1, 2, 4
Nap Mode			
Typical	3.7	W	1, 2
Sleep Mode			
Typical	1.7	W	1, 2
Deep Sleep Mode (PLL Disabled)			
Typical	1.1	W	1, 3

Notes:
1. These values apply for all valid processor bus and L3 bus ratios. The values do not include I/O supply power (OV_{DD} and GV_{DD}) or PLL supply power (AV_{DD}). OV_{DD} and GV_{DD} power is system dependent, but is typically <20% of V_{DD} power. Worst case power consumption for AV_{DD} < 3 mW.
2. Maximum power is measured at nominal V_{DD} while running an entirely cache-resident, contrived sequence of instructions which keep the execution units, with or without AltiVec™, maximally busy.
3. Typical power is an average value measured at nominal V_{DD} and 65°C in a system while running a typical code sequence.
4. Doze mode is not a user-definable state; it is an intermediate state between full-power and either nap or sleep mode. As a result, power consumption for this mode is not tested.

1.11 Ordering Information

1.11.1 Part Numbers Addressed by This Specification

Table 20 provides the ordering information for the MPC7455 part described in this document.

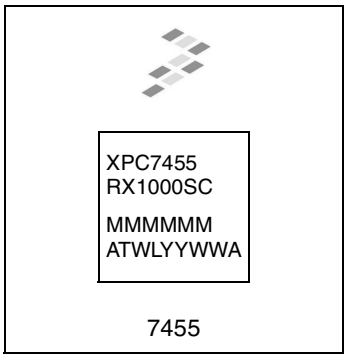
Table 20. Part Marking Nomenclature

XPC	74*n*5	RX	*nnnn*	*x*	*x*
Product Code	**Part Identifier**	**Package**	**Processor Frequency[1]**	**Application Modifier**	**Revision Level**
XPC [2]	7455	RX = CBGA	1000	S: 1.85 V ±50 mV 0 to 75°C	C: 2.1; PVR = 8001 0201

Notes:
1. Processor core frequencies supported by parts addressed by this specification only. Parts addressed by other specifications may support other maximum core frequencies.
2. The X prefix in a Freescale part number designates a “Pilot Production Prototype” as defined by Freescale SOP 3-13. These are from a limited production volume of prototypes manufactured, tested, and Q.A. inspected on a qualified technology to simulate normal production. 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.

1.11.3 Part Marking

Parts are marked as the example shown in Figure 27.



CBGA

Notes:
MMMMMM is the 6-digit mask number.
ATWLYYWWA is the traceability code.
CCCCC is the country of assembly. This space is left blank if parts are assembled in the United States.

Figure 27. Freescale Part Marking for CBGA Device

Document Revision History

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

Table B. Document Revision History

Rev. No.	Date	Editor/ Writer	Substantive Change(s)
0.1	07/19/2005	NB	Changed document order number (was MPC7455RXSXPNS, Rev. 0). Updated to Freescale template.
0	04/2002	NB/ME	Initial release.

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