

## Advance Information

MPC7450RXPXNS/D  
Rev. 0, 11/2001

MPC7450 Part Number  
Specification for the  
XPC7450RXnnnPx Series



### Motorola Part Numbers Affected:

XPC7450RX600PD  
XPC7450RX667PD  
XPC7450RX733PD

This document describes part-number-specific changes to recommended operating conditions and revised electrical specifications, as applicable, from those described in the general *MPC7450 RISC Microprocessor Hardware Specifications* (order # MPC7450EC/D).

Specifications provided in this document supersede those in the *MPC7450 RISC Microprocessor Hardware Specifications*, Rev. 4 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.motorola.com/semiconductors> or to your Motorola 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.

Part numbers addressed in this document are listed in Table A. For more detailed ordering information see Section 1.11, "Ordering Information."

**Table A. Part Numbers Addressed by this Data Sheet**

Motorola Part Number	Operating Conditions			Significant Differences from Hardware Specification
	CPU Frequency	V <sub>DD</sub>	T <sub>J</sub> (°C)	
XPC7450RX600PD	600 MHz	1.9 ± 50 mV	0 to 65	Modified voltage and temperature Specifications to achieve 600 MHz
XPC7450RX667PD	667 MHz	1.9 ± 50 mV	0 to 65	Modified voltage and temperature Specifications to achieve 667 MHz
XPC7450RX733PD	733 MHz	1.9 ± 50 mV	0 to 65	Modified voltage and temperature Specifications to achieve 733 MHz

**Note:** The X prefix in a Motorola part number designates a "Pilot Production Prototype" as defined by Motorola 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.

## Features

# 1.1 Features

This section summarizes changes to the features of the MPC7450 described in the *MPC7450 RISC Microprocessor Hardware Specifications*.

- Power management
  - 1.9-V processor core

## 1.4 General Parameters

This section summarizes changes to the general parameters of the MPC7450 described in the *MPC7450 RISC Microprocessor Hardware Specifications*.

- Core power supply 1.9 V  $\pm$  50 mV DC nominal

### 1.5.1 DC Electrical Characteristics

Table 4 provides the recommended operating conditions for the MPC7450 part numbers described herein.

**Table 4. Recommended Operating Conditions**

Characteristic	Symbol	Recommended Value	Unit
Core supply voltage	$V_{DD}$	1.9 V $\pm$ 50 mV	V
PLL supply voltage	$AV_{DD}$	1.9 V $\pm$ 50 mV	V
Die-junction temperature	$T_j$	0 to 65	$^{\circ}\text{C}$

**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 MPC7450 part numbers described herein.

**Table 7. Power Consumption for MPC7450**

	Processor (CPU) Frequency			Unit	Notes
	600 MHz	667 MHz	733 MHz		
<b>Full-Power Mode</b>					
Typical	18.4	20.5	22.5	W	1, 3
Maximum	24.7	26.8	29.5	W	1, 2
<b>Doze Mode</b>					
Maximum	—	—	—	W	1, 2, 4
<b>Nap Mode</b>					
Maximum	1.9	2.1	2.3	W	1, 2
<b>Sleep Mode</b>					
Maximum	1.0	1.1	1.2	W	1, 2
<b>Deep Sleep Mode (PLL Disabled)</b>					
Typical	650	720	790	mW	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  $V_{DD}$  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

## 1.5.2 AC Electrical Characteristics

The AC electrical characteristics and AC timing for all parts described herein are unaffected and comply with the *MPC7450 RISC Microprocessor Hardware Specifications*.

## 1.11 Ordering Information

### 1.11.1 Part Numbers Addressed by this Specification

Table 20 provides the ordering information for the MPC7450 part described in this document.

**Table 20. Part Marking Nomenclature Part Marking**

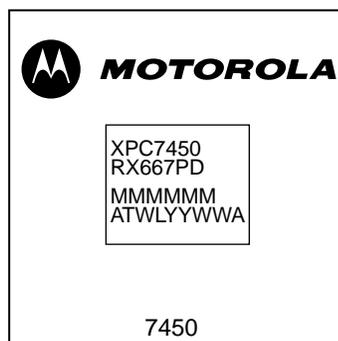
Product Code	Part Identifier	Package	Processor Frequency <sup>1</sup>	Application Modifier	Revision Level
XPC <sup>2</sup>	7450	RX = CBGA	600 667 733	P: 1.9 V ± 50 mV 0 to 65 °C	D: 2.04; PVR = 8000 0200

**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 Motorola part number designates a "Pilot Production Prototype" as defined by Motorola 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.



**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. Motorola Part Marking for BGA Device**



**Ordering Information**



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