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MC68HC908JK1
MC68HRC908JK1
MC68HC908JK3
JC68HRC908JK3
MC68HC908JL3
MC68HRC908JL3
Technical Data

M68HC08
Microcontrollers

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Section 1. General Description

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1.2 Introduction

The MC68H(R)C908JL3 is a member of the low-cost, high-performance M68HC08 Family of 8-bit microcontroller units (MCUs). The M68HC08 Family is based on the customer-specified integrated circuit (CSIC) design strategy. All MCUs in the family use the enhanced M68HC08 central processor unit (CPU08) and are available with a variety of modules, memory sizes and types, and package types.

Table 1-1. Summary of Device Variations

Device	FLASH Memory Size	Pin Count
MC68H(R)C908JL3	4096 bytes	28 pins
MC68H(R)C908JK3	4096 bytes	20 pins
MC68H(R)C908JK1	1536 bytes	20 pins

All references to the MC68H(R)C908JL3 in this data book apply equally to the MC68H(R)C908JK3 and MC68H(R)C908JK1, unless otherwise stated.

1.3 Features

Features of the MC68H(R)C908JL3 include the following:

- High-performance M68HC08 architecture
- Fully upward-compatible object code with M6805, M146805, and M68HC05 Families
- Low-power design; fully static with stop and wait modes
- 5V and 3V operating voltages
- 8MHz internal bus operation
- RC-oscillator circuit or crystal-oscillator options
- In-system FLASH programming
- FLASH security¹
- User FLASH memory
 - 4096 bytes for MC68H(R)C908JL3/JK3
 - 1536 bytes for MC68H(R)C908JK1
- 128 bytes of on-chip random-access memory (RAM)
- 2-channel, 16-bit timer interface module (TIM)
- 12-channel, 8-bit analog-to-digital converter (ADC)
- 23 general purpose I/O ports for MC68H(R)C908JL3:
 - 7 keyboard interrupt with internal pull-up
 - 10 LED drivers
 - 2 × 25mA open-drain I/O with pull-up
 - 2 ICAP/OCAP/PWM
- 15 general purpose I/O ports for MC68H(R)C908JK3/JK1:
 - 1 keyboard interrupt with internal pull-up (with RC oscillator option selected)
 - 4 LED drivers
 - 2 × 25mA open-drain I/O with pull-up
 - 2 ICAP/OCAP/PWM

1. No security feature is absolutely secure. However, Freescale's strategy is to make reading or copying the FLASH difficult for unauthorized users.

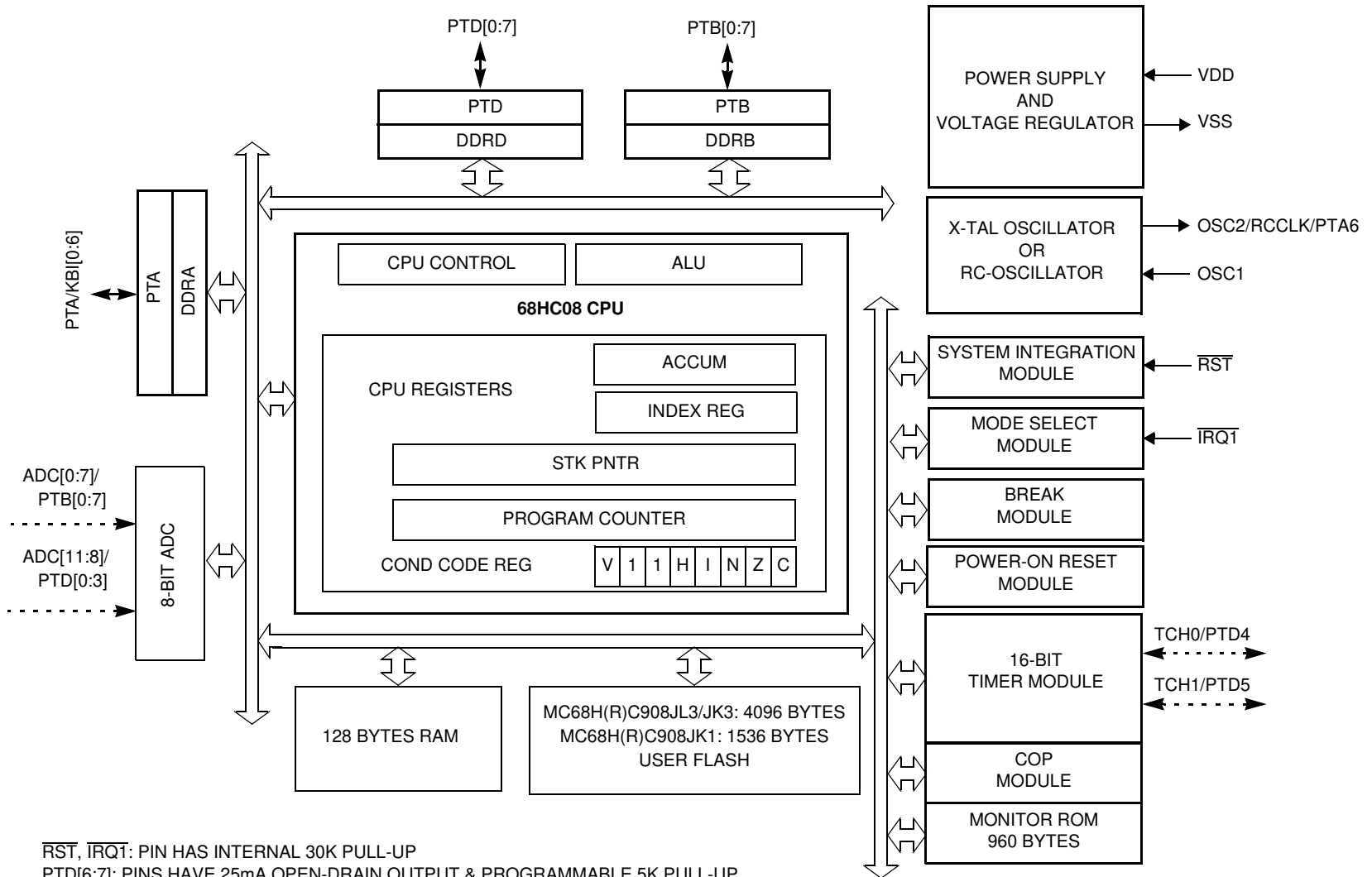
- System protection features:
 - Optional computer operating properly (COP) reset
 - Optional low-voltage detection with reset and selectable trip points for 3V and 5V operation.
 - Illegal opcode detection with reset
 - Illegal address detection with reset
- Master reset pin with internal pull-up and power-on reset
- $\overline{\text{IRQ1}}$ with programmable pull-up and schmitt-trigger input
- 28-pin PDIP and 28-pin SOIC packages for MC68H(R)C908JL3
- 20-pin PDIP and 20-pin SOIC packages for MC68H(R)C908JK3/JK1

Features of the CPU08 include the following:

- Enhanced HC05 programming model
- Extensive loop control functions
- 16 addressing modes (eight more than the HC05)
- 16-bit index register and stack pointer
- Memory-to-memory data transfers
- Fast 8×8 multiply instruction
- Fast 16/8 divide instruction
- Binary-coded decimal (BCD) instructions
- Optimization for controller applications
- Efficient C language support

1.4 MCU Block Diagram

Figure 1-1 shows the structure of the MC68H(R)C908JL3.



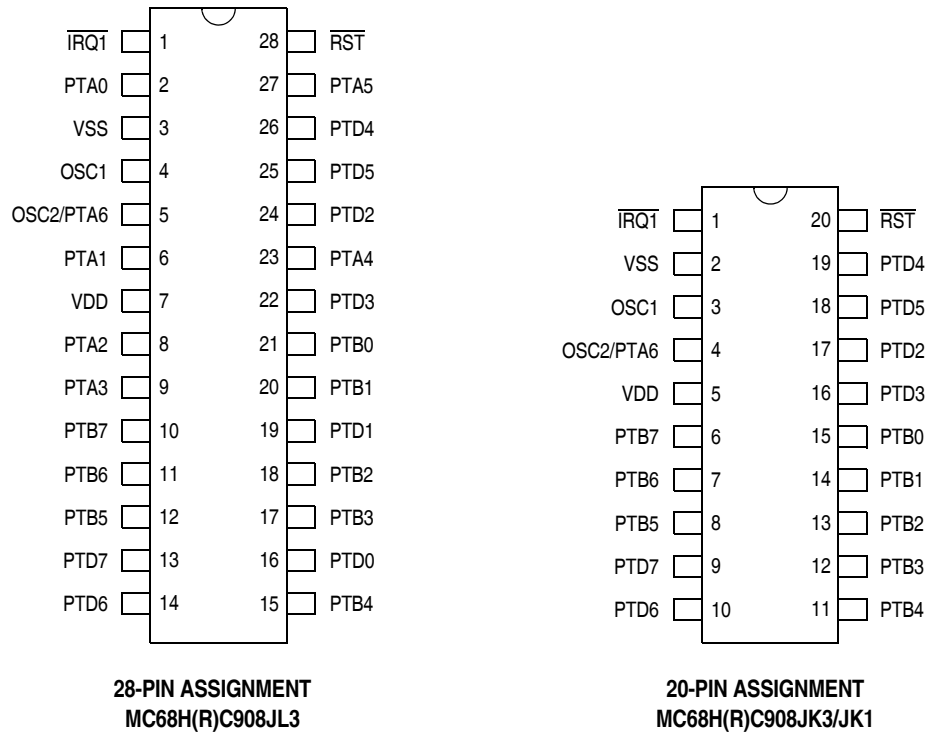
RST, IRQ1: PIN HAS INTERNAL 30K PULL-UP
 PTD[6:7]: PINS HAVE 25mA OPEN-DRAIN OUTPUT & PROGRAMMABLE 5K PULL-UP
 PTA[0:5], PTD[2:3], PTD[6:7]: PIN HAS LED DRIVE
 PTA[0:6]: PINS HAVE PROGRAMMABLE KEYBOARD INTERRUPT AND PULL-UP
 PTA[0:5] and PTD[0:1]: NOT AVAILABLE ON 20-PIN DEVICES – MC68H(R)C908JK3/JK1

Figure 1-1. MCU Block Diagram



1.5 Pin Assignments

The MC68H(R)C908JL3 is available in 28-pin packages and the MC68H(R)C908JK3/JK1 in 20-pin packages. **Figure 1-2** shows the pin assignment for the two packages.



Pins not bonded out on 20-pin package:
PTA0, PTA1, PTA2, PTA3, PTA4, PTA5,
PTD0, PTD1.

Figure 1-2. MCU Pin Assignments