

**Z i L O G**

# Z86L972/Z86L973/Z86L974

## Low-Voltage Microcontrollers

PB007002-1102

Product Brief

### Product Block Diagram

4K/8K/16K Bytes of ROM			
233 Bytes General-Purpose RAM		256 Bytes Executable RAM	
Z8 Core			
8-Bit C/T (T8)		16-Bit C/T (T16)	8-Bit GP C/T (T1)
Port 2	Port 4	Port 5	Port 6

### General Description

The Z86L972/Z86L973/Z86L974 are low-voltage general-purpose Z8<sup>®</sup> microcontrollers.

The Z86L972/Z86L973/Z86L974 family is designed to be used in a wide variety of embedded control applications, such as appliances, battery chargers, IR remotes, keyboards, and security systems.

### Operating Characteristics

- 8-MHz operation
- 2.3 V to 5.5 V operating voltage
- Low power consumption with three standby modes:
  - Stop
  - Halt
  - Low voltage standby
- Low-battery detection flag
- Low-voltage protection circuit (VBO)
- Watch-dog timer and power-on reset circuits

### Key Features

- 4K/8K/16K bytes of ROM
- 256 bytes of executable RAM
- Two independent analog comparators
- VDD power filter
- Constant current source

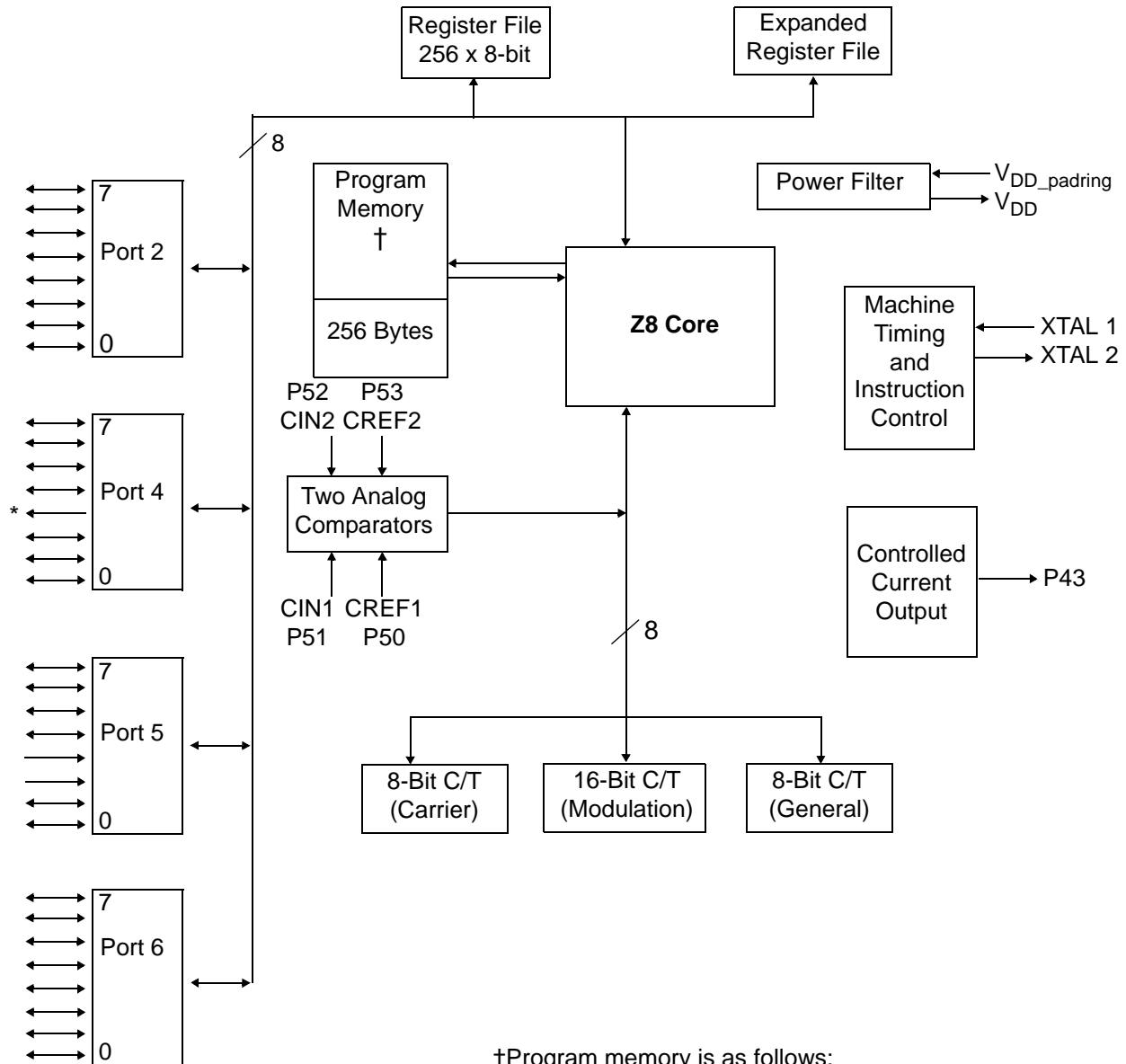
### Counter/Timer Structure

- Programmable 8-bit counter/timer (T8) with two 8-bit capture registers and two 8-bit load registers
- Programmable 16-bit counter/timer (T16) with one 16-bit capture register pair and one 16-bit load register pair
- General-purpose 8-bit counter/timer (T1) with 6-bit prescaler

### Input/Output and Interrupts

- Twenty-nine bidirectional I/Os with programmable resistive pull-up transistors
- Sixteen I/Os are selectable as stop-mode recovery sources.
- Six interrupt vectors with nine interrupt sources
  - Three external sources
  - Two comparator interrupts
  - Three timer interrupts
  - One low-voltage detector

## Block Diagram of Z86L972/Z86L973/Z86L974

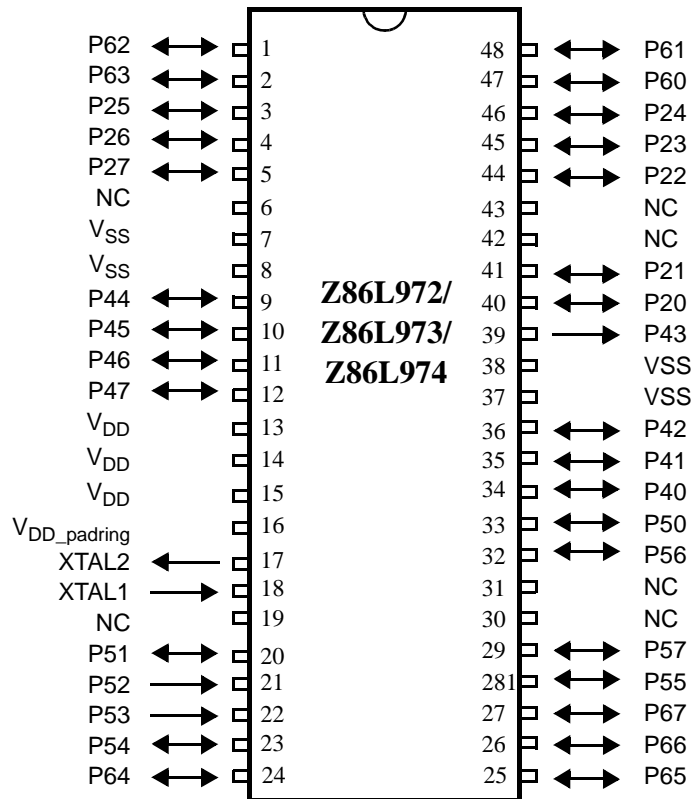


†Program memory is as follows:

Z86L972	4K ROM
Z86L973	8K ROM
Z86L974	16K ROM

\*Controlled Current Output

## Pin-Outs and Pin Direction



### Notes:

1. All VSS pins must be connected to ground.
2. All VDD pins must be connected to the same filtering capacitor.
3. NC is no connection to the die.
4. Power must be connected to VDD\_pading. Current passes to VDD through the internal power filter.

## User Selectable Option Bits

- RC/other (LC, resonator, or crystal)
- Watchdog timer default state
- 32-kHz crystal
- Port 6 enable
- Ports 20-27 pull-up transistor
- Ports 40-42 pull-up transistor
- Ports 44-47 pull-up transistor
- Ports 50-51 pull-up transistor
- Ports 54-57 pull-up transistor
- Ports 60-63 pull-up transistor
- Ports 64-67 pull-up transistor



## Development Suite

The following development tools are available for the programming and debugging of this device:

- Z86L9900100ZEM Emulator/Programmer
- ZiLOG Developer Studio (ZDS)

## Related Products

Z8 microcontrollers of interest are as follows:

Z86L990	Z86L974 with 4-Channel, 8-Bit Sigma Delta Analog-to-Digital Converter
Z86L88	Low-Voltage IR Controller (16K ROM, 28 pin)

## Electrical Features Summary

- 50 mA Maximum Supply Current
- 2.3 V to 5.5 V Operating Range

## Ordering Information

Part	PSI	Description
Z86D99 (OTP)	Z86D990PZ008SC	40-pin PDIP
	Z86D990HZ008SC	48-pin SSOP
Z86L97Mask ROM)	Z86L972PZ008SC	40-pin PDIP
	Z86L972HZ008SC	48-pin SSOP
	Z86L973PZ008SC	40-pin PDIP
	Z86L973HZ008SC	48-pin SSOP
	Z86L974PZ008SC	40-pin PDIP
	Z86L974HZ008SC	48-pin SSOP
Emulator	Z86L9900100ZEM	Emulator/Programmer
Adapter	Z86D9900100ZDH	48 SSOP Adapter
Evaluation Board	Z86L9900100ZCO	Evaluation Board



## **Document Disclaimer**

©2002 by ZiLOG, Inc. All rights reserved. Information in this publication concerning the devices, applications, or technology described is intended to suggest possible uses and may be superseded. ZiLOG, INC. DOES NOT ASSUME LIABILITY FOR OR PROVIDE A REPRESENTATION OF ACCURACY OF THE INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED IN THIS DOCUMENT. ZILOG ALSO DOES NOT ASSUME LIABILITY FOR INTELLECTUAL PROPERTY INFRINGEMENT RELATED IN ANY MANNER TO USE OF INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED HEREIN OR OTHERWISE. Devices sold by ZiLOG, Inc. are covered by warranty and limitation of liability provisions appearing in the ZiLOG, Inc. Terms and Conditions of Sale. ZiLOG, Inc. makes no warranty of merchantability or fitness for any purpose. Except with the express written approval of ZiLOG, use of information, devices, or technology as critical components of life support systems is not authorized. No licenses are conveyed, implicitly or otherwise, by this document under any intellectual property rights.