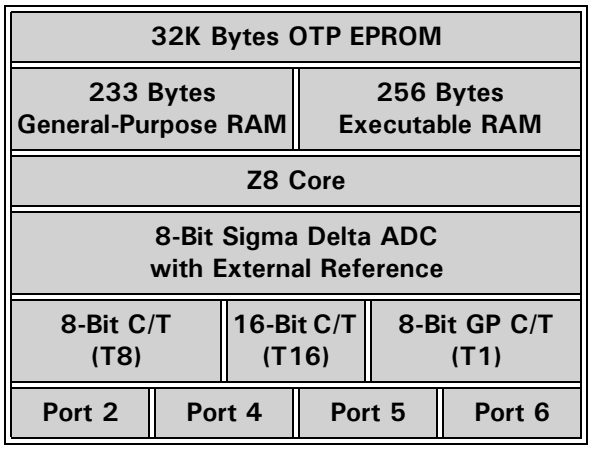
PB002700-IRR1199

Z86D99

Low-Voltage Z8 OTP Microcontroller with ADC

Product Block Diagram



General Description

The Z86D99 is a low-voltage general-purpose one-time programmable Z8® microcontroller with an integrated four-channel 8-bit sigma delta analog-to-digital converter.

The Z86D99 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
- 3.0 V to 5.5 V operating voltage
- Low power consumption (40 mW typical) with three standby modes:
  - Stop (2 µA typical)
  - Halt (0.8 mA typical)
  - Low voltage standby
- Low-battery detection flag
- Low-voltage protection circuit (VBO)
- Watchdog timer and power-on reset circuits

Key Features

- 32K bytes of OTP EPROM
- 256 bytes of executable RAM
- 8-bit sigma delta A/D converter with external voltage references (not available in the 28-pin configuration)
- Two independent analog comparators
- VDD power filter (40/44-pin configuration only)
- Constant current source (100 mA)

Counter/Timer Structure

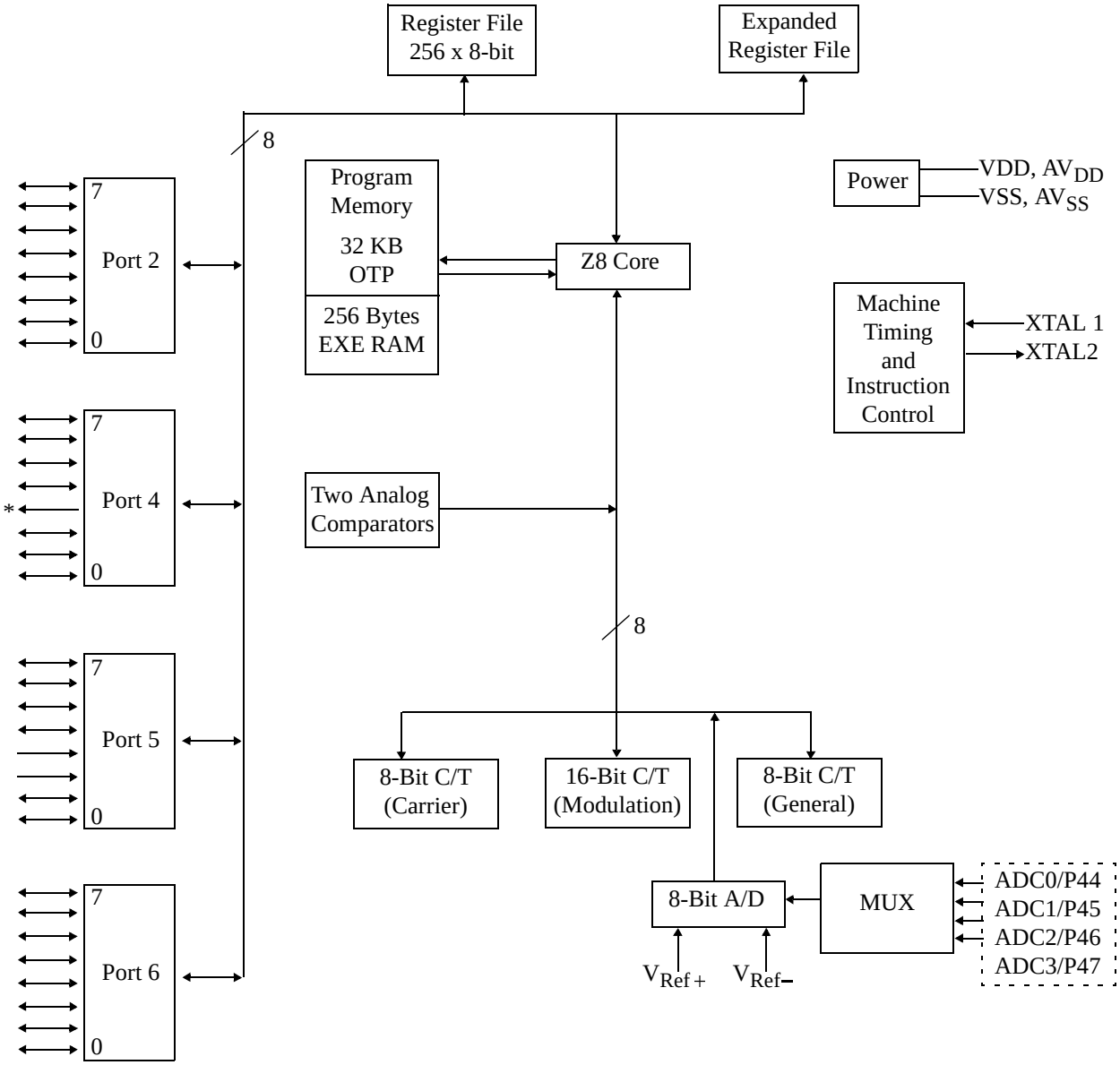
- Programmable 8-bit counter/timer (T8) with two 8-bit capture registers and two 8-bit load registers
- Programmable 16-bit counter/timer (T16) with one 16-bit capture register pair and one 16-bit load register pair
- General-purpose 8-bit counter/timer (T1) with 6-bit prescaler

Input/Output and Interrupts

- Twenty-nine bidirectional I/Os with programmable resistive pull-up transistors (Twenty-one I/Os are available in the 28-pin configuration.)
- 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

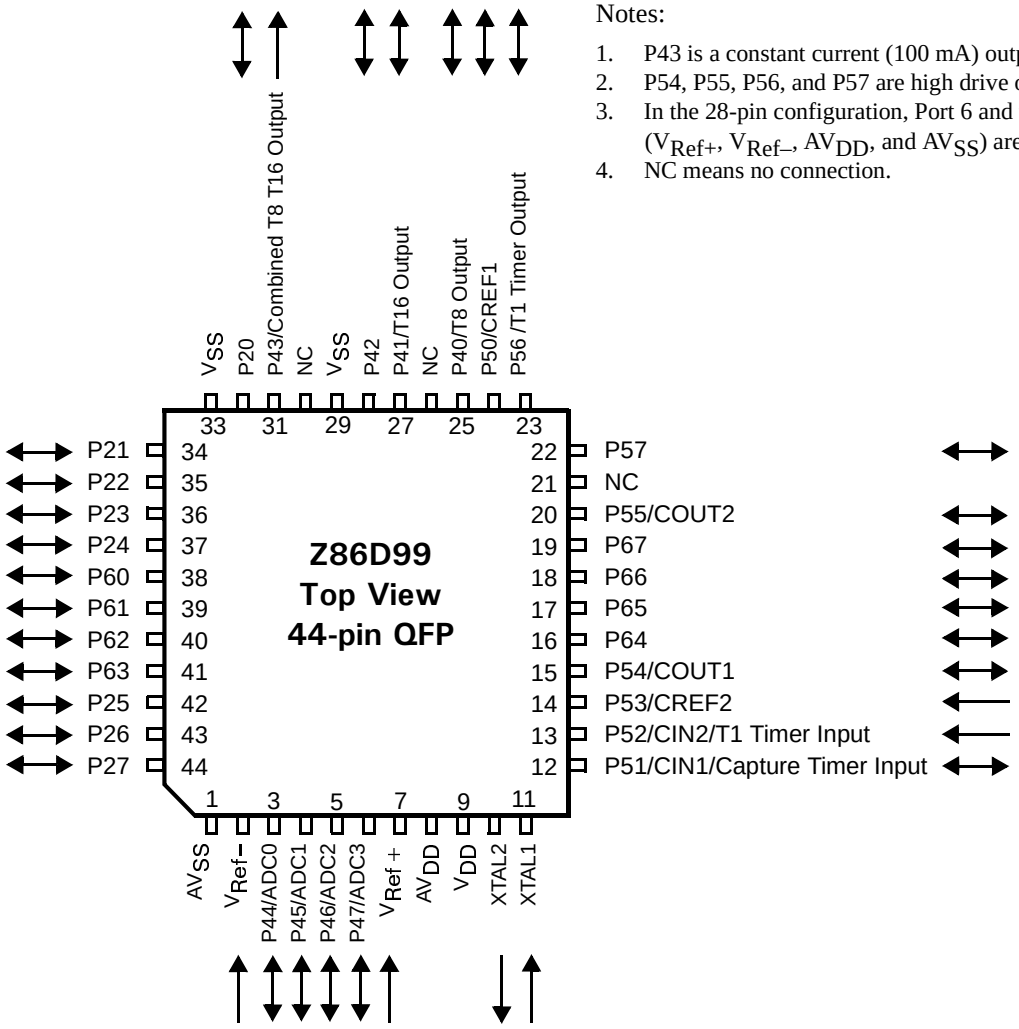
ZiLOG Worldwide Headquarters • 910 E. Hamilton Avenue • Campbell, CA 95008
Telephone: 408.558.8500 • Fax: 408.558.8300 • Internet: http://www.zilog.com

Block Diagram of Z86D99



*Constant Current Source (100 mA)

Pin-Outs and Pin Direction



Notes:

1. P43 is a constant current (100 mA) output source.
2. P54, P55, P56, and P57 are high drive outputs.
3. In the 28-pin configuration, Port 6 and the ADC (V_{Ref+}, V_{Ref-}, AV_{DD}, and AV_{SS}) are not available.
4. NC means no connection.

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:

- Z86L9900ZEM Emulator/Programmer
- ZiLOG Developer Studio (ZDS)
- ZiLOG C-Compiler

Related Products

Z8 microcontrollers of interest are as follows:

Z86L99	ROM equivalent of Z86D99 (16K ROM, 2 V to 3.6 V operation)
Z86L88	Low-voltage IR Controller (16K ROM, 28 pin)
Z86L87	Low-voltage IR Keyboard Controller (16K ROM, 40 pin)

Electrical Features Summary

- 50 µA Maximum Supply Current
- 3.0 V to 5.5 V Operating Range

Ordering Information

Part	PSI	Description
Z86D990	Z86D99008PSC	40-pin PDIP
Z86D990	Z86D99008FSC	44-pin QFP
Z86D991	Z86D99108SSC	28-pin SOIC (ADC not available)
Emulator	Z86L9900ZEM	Emulator/Programmer