Z8PE002

0.5K GENERAL-PURPOSE MCU WITH 14 I/O LINES

PB001001-0601

PRODUCT BLOCK DIAGRAM

0.5K ROM (OTP)		
Z8Plus Core	64 Bytes RAM	
Two 8-Bit Timers/One 16-Bit PWM Timer		
1 Comparator	One 16-Bit Timer	
14 Total I/O Pins		
POR/V$_{BO}$	WDT	2 Ports

FEATURES

- All Instructions Execute in one 1-µs Instruction Cycle with a 10-MHz Crystal

- Operating Speed, DC: 10 MHz

- Six Addressing Modes: R, IR, X, D, RA, and IM

- 14 Total Input/Output Pins

- One 8-Bit I/O Port (Port A)
  – I/O Bit Programmable
  – Each Bit Programmable as Push-Pull or Open Drain

- One 6-Bit I/O Port (Port B)
  – I/O Bit-Programmable
  – Includes Special Functionality: Stop-Mode Recovery Input, Comparator Inputs, Selectable Edge Interrupts, and Timer Output

- One Analog Comparator

- 16-Bit Programmable Watch-Dog Timer (WDT)

- Software Programmable Timers Configurable as:
  – Two 8-Bit Standard Timers and One 16-Bit Standard Timer
  – One 16-Bit Standard Timer and One 16-Bit Pulse Width Modulator (PWM) Timer

- On-Chip Oscillator that accepts an External Crystal (XTAL), a Ceramic Resonator, an Inductor Capacitor (LC), or an External Clock

- Optional External Resistor Capacitor (RC)

- Voltage Brown-Out/Power-On Reset (V$_{BO}$/POR)

- Programmable Options:
  – EPROM Protect
  – RC Oscillator

- Power Reduction Modes:
  – HALT Mode with Peripheral Units Active
  – STOP Mode For Minimum Power Dissipation

- 3.0V–5.5V Operating Range @ 0ºC to +70ºC

- 4.5V–5.5V Operating Range @ –40ºC to +105ºC

GENERAL DESCRIPTION

The Z8PE002 is the newest member of the Z8Plus Microcontroller (MCU) family. Like the Z8E000 and Z8E001, the Z8PE002 offers easy software development, debug, prototyping, and an attractive One-Time Programmable (OTP) solution. For applications demanding powerful I/O capabilities, the Z8PE002's dedicated input and output lines are grouped into two ports, and are configurable under software control. Both the 8-bit and 16-bit on-chip timers, with several user-selectable modes, administer real-time tasks such as counting/timing and I/O data communications.

BLOCK DIAGRAM
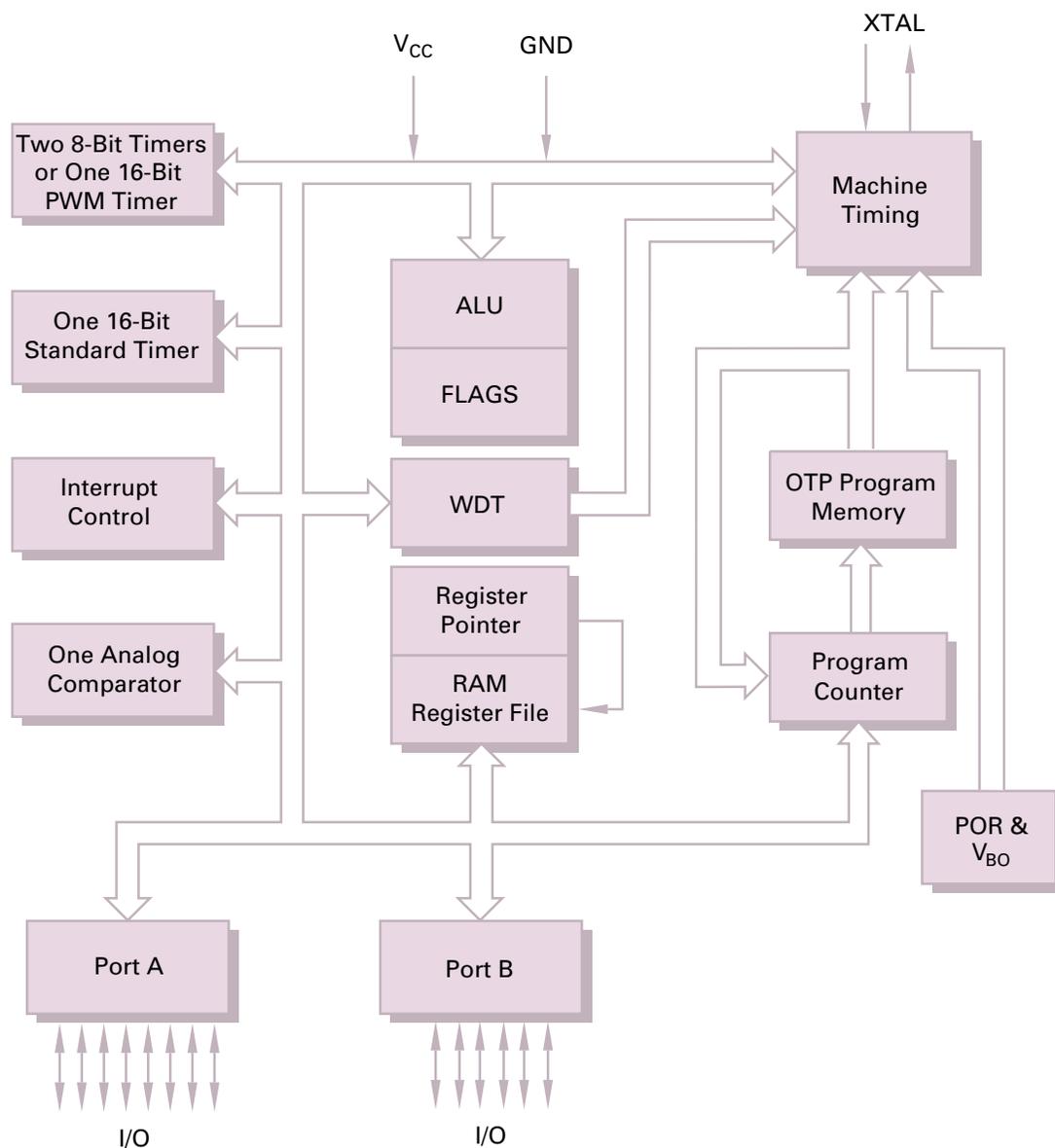
Pin-Outs and Pin Direction

Z8PE002 Pin Diagram

```
              ┌──────┐
  PB1 ─ 1     │        │     18 ─ PB0
  PB2 ─ 2     │        │     17 ─ XTAL1
  PB3 ─ 3     │ Z8PE002│     16 ─ XTAL2
  PB4 ─ 4     │18-Pin  │     15 ─ V_SS
  PB5 ─ 5     │  DIP/  │     14 ─ V_CC
  PA7 ─ 6     │  SOIC  │     13 ─ PA0
  PA6 ─ 7     │(Top    │     12 ─ PA1
  PA5 ─ 8     │ View)  │     11 ─ PA2
  PA4 ─ 9     │        │     10 ─ PA3
              └──────┘
```

Z8PE002 Pin Diagram

```
              ┌──────┐
  PB1 ─ 1     │        │     20 ─ PB0
  PB2 ─ 2     │        │     19 ─ XTAL1
  PB3 ─ 3     │        │     18 ─ XTAL2
  PB4 ─ 4     │ Z8PE002│     17 ─ V_SS
  PB5 ─ 5     │20-Pin  │     16 ─ V_CC
  NC  ─ 6     │ SSOP   │     15 ─ NC
  PA7 ─ 7     │(Top    │     14 ─ PA0
  PA6 ─ 8     │ View)  │     13 ─ PA1
  PA5 ─ 9     │        │     12 ─ PA2
  PA4 ─ 10    │        │     11 ─ PA3
              └──────┘
```
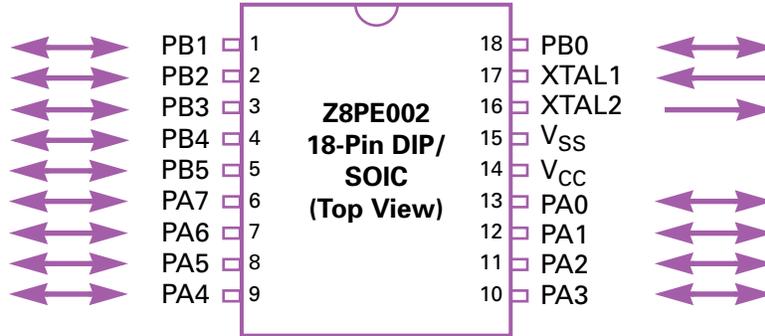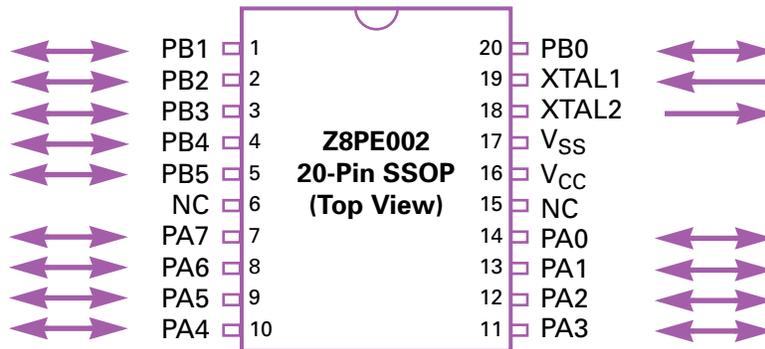
APPLICATIONS AND SUPPORT TOOLS

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

- Z8ICE001ZEM Emulator/Programmer

- Z86E0700ZDP 18-Pin SOIC to 18-Pin DIP Adapter

- Z8E00101ZDH 20-Pin SSOP to 18-Pin DIP Adapter

- Z8PE0030000ZDP—Z8PE002 Upgrade Kit for Z8ICE000ZEM and Z8ICE010ZEM

RELATED PRODUCTS

Z8Plus MCU's of interest are:

Z8E000	Z8Plus 0.5K ROM/32 bytes RAM OTP with 13 I/O
Z8E001	Z8Plus 1K ROM/64 bytes RAM OTP with 13 I/O
Z8PE003	Z8Plus 1K ROM OTP with V_{BO}/POR

ELECTRICAL FEATURES SUMMARY

- 500 nA maximum STOP Mode Current

- 3.0V–5.5V Operating Range @ 0ºC to +70ºC

Z8PLUS DEVICE SELECTION

Device	Applications	Package	ROM	RAM (Bytes)	Comparators	I/O	PWM
Z8PE002	General Purpose MCU	18 DIP/SOIC 20 SSOP	0.5K OTP	64	1	14	1

ORDERING INFORMATION

Part	PSI	Description
Z8PE002	Z8PE002PZ010SC	18-Pin DIP Standard Temperature
	Z8PE002SZ010SC	18-Pin SOIC Standard Temperature
	Z8PE002HZ010SC	20-Pin SSOP Standard Temperature
	Z8PE002PZ010EC	18-Pin DIP Extended Temperature
	Z8PE002SZ010EC	18-Pin SOIC Extended Temperature
	Z8PE002HZ010EC	20-Pin SSOP Extended Temperature
Z8ICE001ZEM	Z8ICE001ZEM	Emulator/Programmer
Z86E0700ZDP	Z86E0700ZDP	18-Pin SOIC to 18-Pin DIP Adapter
Z8E00101ZDH	Z8E00101ZDH	20-Pin SSOP to 18-Pin DIP Adapter
Z8PE0030000ZDP	Z8PE0030000ZDP	Upgrade Kit for Z8ICE000ZEM and Z8ICE010ZEM

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