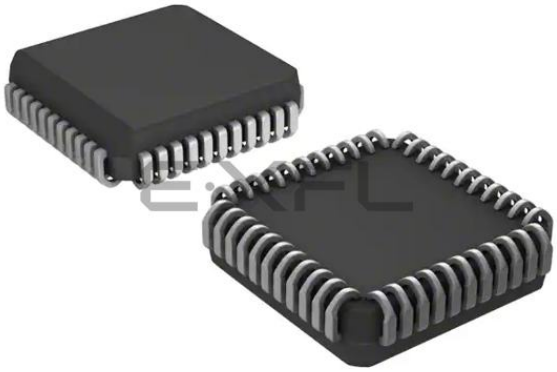
Zilog - Z86E6116VSC00TR Datasheet



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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Obsolete
Core Processor	Z8
Core Size	8-Bit
Speed	16MHz
Connectivity	UART/USART
Peripherals	-
Number of I/O	32
Program Memory Size	16KB (16K x 8)
Program Memory Type	OTP
EEPROM Size	-
RAM Size	236 x 8
Voltage - Supply (Vcc/Vdd)	4.5V ~ 5.5V
Data Converters	-
Oscillator Type	Internal
Operating Temperature	0°C ~ 70°C (TA)
Mounting Type	Surface Mount
Package / Case	44-LCC (J-Lead)
Supplier Device Package	-
Purchase URL	https://www.e-xfl.com/product-detail/zilog/z86e6116vsc00tr

List of Figures

Figure 1. Z86E61/E63 Functional Block Diagram 3
Figure 2. 40-Pin DIP Pin Configuration 4
Figure 3. 44-Pin PLCC Pin Configuration 6
Figure 4. 40-Pin DIP Pin Configuration 8
Figure 5. 44-Pin PLCC Pin Configuration 9
Figure 6. Port 0 Configuration 13
Figure 7. Port 1 Configuration 14
Figure 8. Port 2 Configuration 15
Figure 9. Port 3 Configuration 16
Figure 10. Serial Data Formats 17
Figure 11. Program Memory Configuration 18
Figure 12. Data Memory Configuration 20
Figure 13. Register File 21
Figure 14. Register Pointer 22
Figure 15. Counter/Timers Block Diagram 23
Figure 16. Interrupt Block Diagram 24
Figure 17. Oscillator Configuration 25
Figure 18. EPROM Read 29
Figure 19. EPROM Program and Verity 30
Figure 20. Programming EPROM, RAM Protect, and 4K Size Selection 31
Figure 21. Programming EPROM, RAM Protect, and 16K Size Selection 32
Figure 22. Intelligent Programming Flowchart 33
Figure 23. Test Load Diagram 34
Figure 24. External I/O or Memory Read/Write Timing 36
Figure 25. Additional Timing 38
Figure 26. Input Handshake Timing 39
Figure 27. Output Handshake Timing 40
Figure 28. Serial I/O Register (F0H: Read/Write) 41
Figure 29. Timer Mode Register (F1H: Read/Write) 41
Figure 30. Counter/Timer 1 Register (F2H: Read/Write) 42
Figure 31. Prescaler 1 Register (F3H: Write Only) 42
Figure 32. Counter/Timer 0 Register (F4H: Read/Write) 42
Figure 33. Prescaler 0 Register (F5H: Write Only) 43
Figure 34. Port 2 Mode Register (F6H: Write Only) 43

Figure 35. Port 3 Mode Register (F7H: Write Only) 44
Figure 36. Port 0 and 1 Mode Register (F8H: Write Only) 45
Figure 37. Interrupt Priority Register (F9H: Write Only) 46
Figure 38. Interrupt Request Register (FAH: Read/Write) 46
Figure 39. Interrupt Mask Register (FBH: Read/Write) 47
Figure 40. Flag Register (FCH: Read/Write) 47
Figure 41. Register Pointer Register (FDH: Read/Write) 48
Figure 42. Stack Pointer Register (FEH: Read/Write) 48
Figure 43. Stack Pointer Register (FFH: Read/Write) 48
Figure 44. Typical ICC vs. Frequency 49
Figure 45. Typical ICC1 vs. Frequency 50
Figure 46. Instruction Formats 53
Figure 47. Opcode Map 60
Figure 48. 40-Pin DIP Package Diagram 61
Figure 49. 44-Pin PLCC Package Diagram 61
Figure 50. 44-Pin LQFP Package Diagram 62

FEATURES

- 8-Bit CMOS Microcontroller
- 40-Pin DIP, 44-Pin PLCC, 44-Pin LQFP Style Packages
- 4.5V to 5.5V Operating Range
- Clock Speeds: 16 and 20 MHz
- Low Power Consumption: 275 mW (max)
- Fast Instruction Pointer: 1.0 ms 0 12 MHz
- Two Standby Modes: STOP and HALT
- 32 Input/Output Lines
- Full-Duplex UART
- All Digital Inputs are TTL Levels
- Auto Latches
- High Voltage Protection on High Voltage Inputs
- RAM and EPROM Protect
- EPROM:
  - 16 Kbytes Z86E61
  - 32 Kbytes Z86E63
- 256 Bytes Register File
  - 236 Bytes of General-Purpose RAM
  - 16 Bytes of Control and Status Registers
  - 4 Bytes for Ports
- Two Programmable 8-Bit Counter/Timers. Each with 6-Bit Programmable Prescaler
- Six Vectored, Priority Interrupts from Eight Different Sources
- On-Chip Oscillator that accepts a Crystal, Ceramic Resonator, LC, or External Clock Drive

GENERAL DESCRIPTION

The Z86E61/E63 microcontrollers are members of the Z8® single-chip microcontroller family with 16K/32 Kbytes of EPROM and 236 bytes of general-purpose RAM. Offered in 40-pin DIP, 44-pin PLCC or 44-Pin LQFP package styles, these devices are pin-compatible EPROM versions of the Z86C61/ 63. The ROMless pin option is available on the 44-pin versions only.

With 4 Kbytes of ROM and 236 bytes of general-purpose RAM, the Z86E61/E63 offers fast execution, efficient use of memory, sophisticated interrupts, input/output bit manipulation capabilities, and easy hardware/software system expansion.

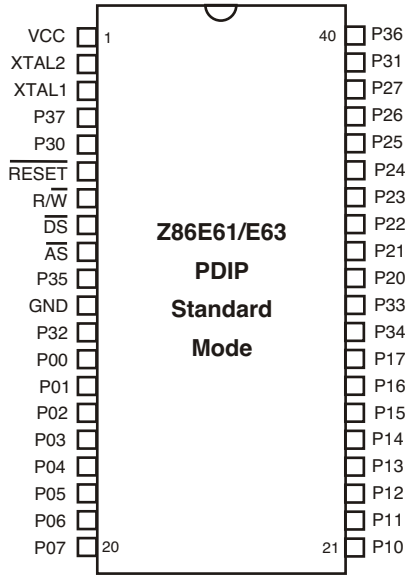
For applications demanding powerful I/O capabilities, the Z86E61/E63 offers 32 pins dedicated to input and output. These lines are grouped into four ports. Each port consists of eight lines, and is configurable under software control to provide timing, status signals, serial or parallel I/O with or without handshake, and an address/data bus for interfacing external memory.

The Z86E61/E63 can address both external memory and preprogrammed ROM, making it well suited for high-volume applications or where code flexibility is required. There are three basic address spaces available to support this configuration: Program Memory, Data Memory, and 236 general-purpose registers.

To unburden the system from coping with real-time tasks such as counting/timing and serial data communication, the Z86E61/E63 offers two on-chip counter/timers with a large number of user selectable modes (Figure 1).

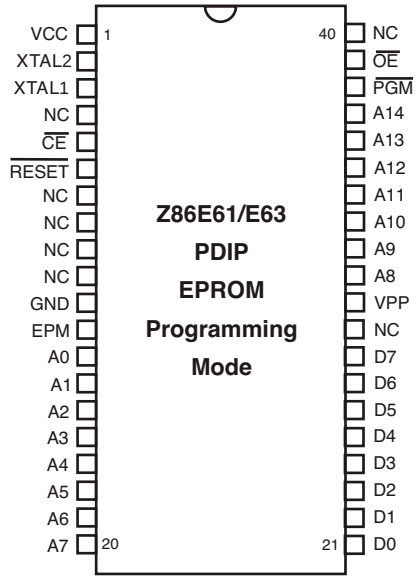
Power connections follow conventional descriptions below:

Connection	Circuit	Device
Power	V_{CC}	V_{DD}
Ground	GND	V_{SS}



Pin Description - Standard Mode

XTAL2	Crystal Oscillator Clock	Output
XTAL1	Crystal Oscillator Clock	Input
$\overline{RESET}$	Reset	Input
R/$\overline{W}$	Read/Write	Output
$\overline{DS}$	Data Strobe	Output
$\overline{AS}$	Address Strobe	Output
P00-P07 Port 0	8 bit Genaral IO	Input/Output
P10-P17 Port 1	8 bit Genaral IO	Input/Output
P20-P27 Port 2	8 bit Genaral IO	Input/Output
P30-P33 Port 3	4 bit Input	Input
P34-P37 Port 3	4 bit Output	Output
GND	Ground	Input
VCC	Power Supply	Input



Pin Description - EPROM Programming Mode

XTAL2	Crystal Oscillator Clock	Output
XTAL1	Crystal Oscillator Clock	Input
CE	Chip Enable	Input
$\overline{RESET}$	Reset	Input
$\overline{EPM}$	EPROM Prog Mode	Input
A0-A14	15-bit Address bus	Input
D7-D0	8-bit Data bus	Input/Output
VPP	Prog Voltage	Input
PGM	Prog Mode	Input
$\overline{OE}$	Output Enable	Input
$\overline{NC}$	Not Connected	Input
GND	Ground	Input
VCC	Power Supply	Input

Port 1 can be placed in high-impedance state along with Port 0, $\overline{AS}$, $\overline{DS}$, and R/$\overline{W}$, allowing the MCU to share common resources in multiprocessor and DMA applications. Data transfers are controlled by assigning P33 as a Bus Acknowledge input, and P34 as a Bus Request output (Figure 7).

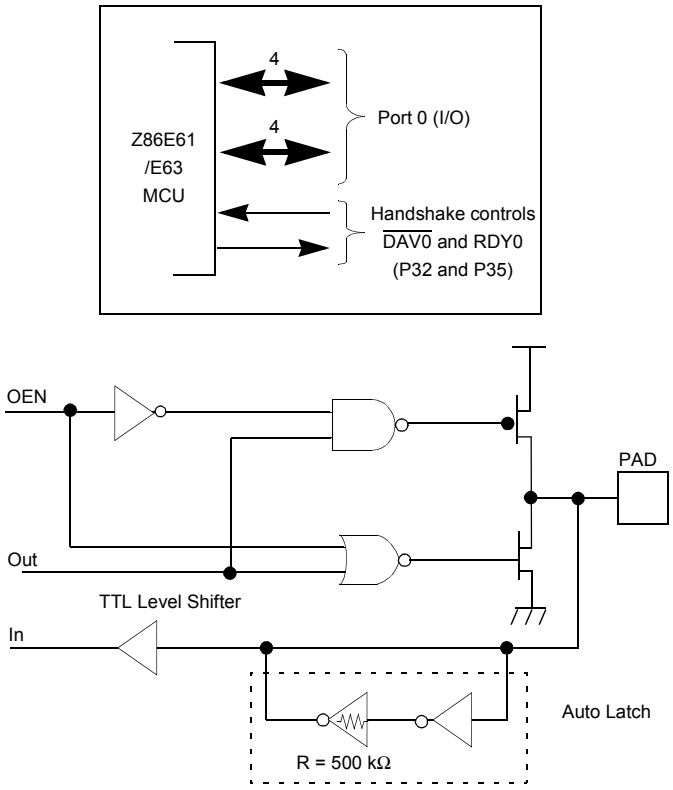


Figure 6. Port 0 Configuration