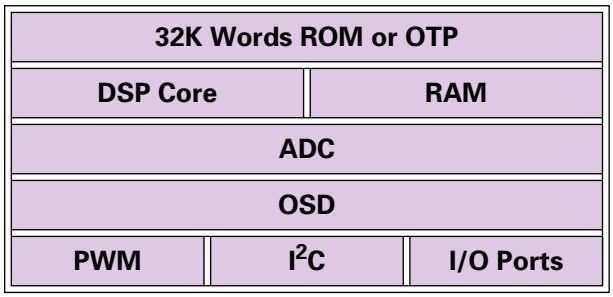
Z90365 and Z90361

32KWord Television Controller with On-Screen Display

PB002000-TVC1099

Product Block Diagram



General Description

The Z90365 and Z90361 are members of ZiLOG's Digital Signal Processor (DSP)-based TV controller family. They provide advanced On-Screen Display (OSD), Closed Caption and TV control features on a single chip. The Z90365 and Z90361 are the ROM and OTP versions respectively with 32KWords of ROM and programmable memory. Both have 640 words of RAM.

The single-cycle, DSP provides high processing power. It allows the Z90365 and Z90361 to support high character resolution, expanded color palette selections, expanded character accommodation, multiple character size choices and flexible, software-controlled character attributes. The Z90365 is an ideal choice for mid-to-high end TV products for both PAL and NTSC standards.

The Z9036x family consists of three basic devices:

- The Z90365 masked ROM
- The Z90361 One-Time-Programmable device
- The Z90369 In-Circuit Emulation (ICE) chip

In addition, ZiLOG provides a complete development suite for TV product development, which includes emulator, evaluation kit, C-Compiler, Application Programmer Interface (API), Zilog Developer Studio (ZDS) software, and font editor. These tools help TV developers work efficiently and effectively with quick time to market.

On-Screen Display Features

- 14 rows x 32 columns screen display
- 16x16, 16x18, and 16x20 pixel matrices
- 2X and 3X character stretch with smoothing
- 512-characters with configurable display attributes on character by character basis including:
  - Underlining / Italic / Blinking
  - Eight foreground and background colors
  - Character position offset delay
  - Background transparency
- 65 color palettes

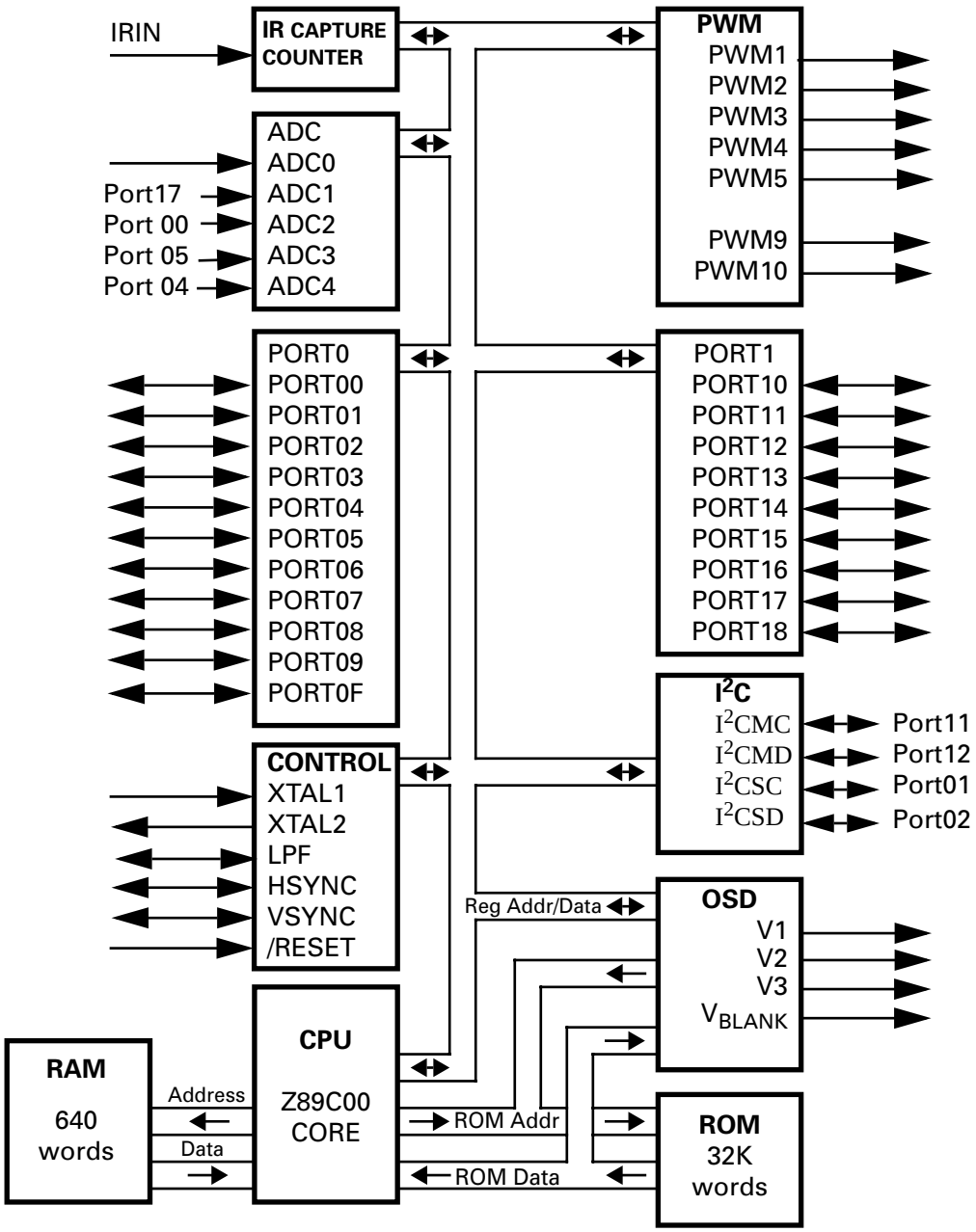
TV Control Features

- Five Channel, 4-bit Analog-to-Digital Converter (ADC) which supports:
  - Automatic frequency tuning (AFT)
  - Analog keypad entry
  - Audio level input adjustment
  - Video Blanking Interval (VBI) decoding
- Seven Pulse Width Modulators (PWM) to control video, audio and external Voltage Synthesis Tuner (VST)
- Master/Slave I^2C bus interface.
- Twenty programmable I/Os
- On-chip Horizontal Synchronization (H_{SYNC}) and Vertical Synchronization (V_{SYNC}) generation circuits
- On-chip Infrared (IR) capture register

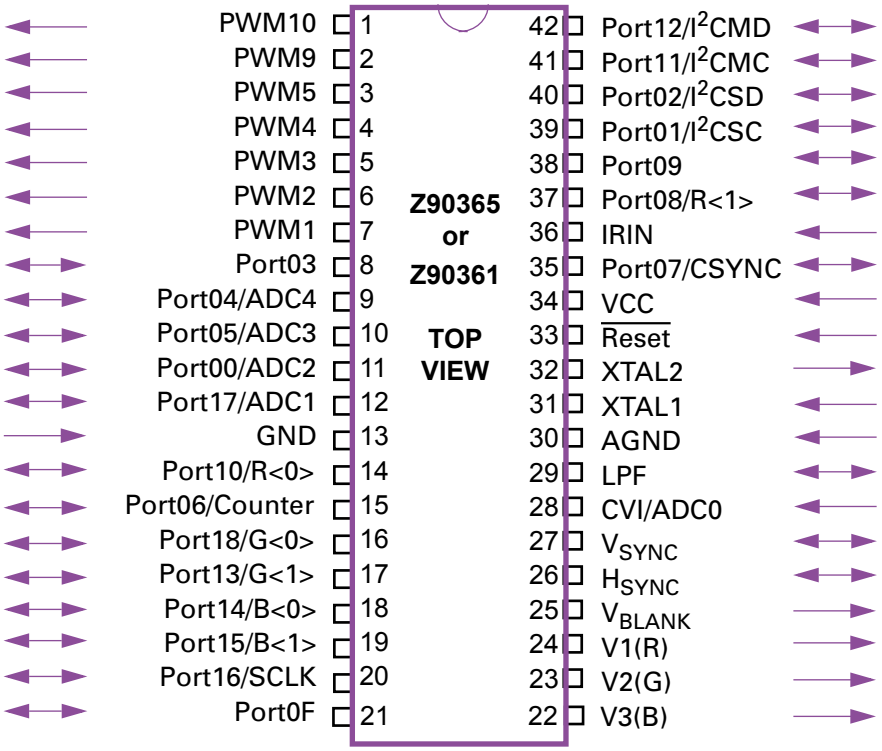
Controller Features

- 16-bit Single-cycle instruction execution
- Phase Lock Loop (PLL), controlled by a 32KHz external crystal
- 32KWord ROM or OTP with flexible Character Generation ROM
- 640 Words of RAM
- 42-pin SDIP package

Block Diagram of Z90365 and Z90361



Pin-Outs and Pin Direction



Development Tools & Support

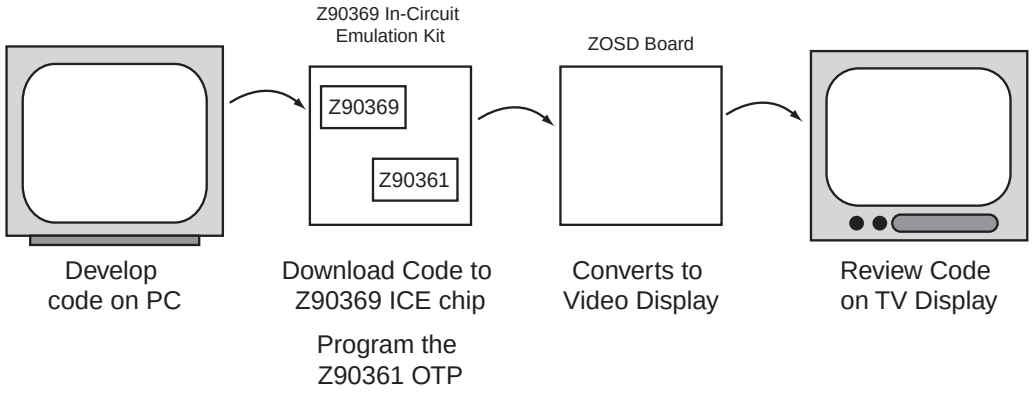
Available in One-Time Programmable (OTP) and MASK ROM Versions, the Z90365 and Z90361 fulfill Prototype and Production Requirements.

The Z90365 uses ICEbox™ (In-Circuit Emulator) tools (Z9036900ZEM) to make Programming and Debugging easy and convenient. ZiLOG Developer Studio (ZDS) provides easy code generation and program management.

For code development, ZiLOG offers its specialized Application Program Interface (API) for OSD. API deals directly with proper sequencing and timing when interfacing with hardware, shielding the user application program from tedious and error prone details.

The Z8933200ZCO, an OSD evaluation board (ZOSD) is used to synchronize the emulator with a video display. Refer to the diagram below for a suggested code development environment.

The Z9036100ZDP is the adapter used to program the Z90361 OTP. ZiLOG also offers the Z8933200TSC Protopak to verify code on a television.



Related Products

Z9037x	Dual Scan TV controller for Progressive Scan
Z9035x	Advanced TV controller with 64 KWords of ROM, Programmable Palette, and Cursor
Z9036x	Advanced TV controller with 32 KWords of ROM
Z86129	Closed Caption Decoder (CCD)
Z86229	Closed Caption Decoder (CCD) with Second I^2C Address Select
Z86131	Auto Time Set
Z86130	Smart V-Chip
Z86230	Smart V-Chip with Second I^2C Address Select

Electrical Features Summary

- 40 mA Maximum Supply Current
- 4.50 V to 5.50 V Operating Range

Z9036X Device Selection

Device	Application	ROM (Words)	RAM (Words)	Pkg	I^2C	IR Capture	ADC	Bit I/O (max)	PWM (8-bit/14-bit)
Z90365	TV Receiver Controller	32K	640	42-Pin SDIP	Yes	Yes	5 Ch	20	5/2
Z90361	TV Receiver Controller	32K OTP	640	42-Pin SDIP	Yes	Yes	5 Ch	20	5/2

Ordering Information

Part	PSI	Description
Z90361	Z9036112PSC	OTP TV Controller
Z90365	Z9036512PSC Rxxxx*	Masked ROM TV Controller
Emulator	Z9036900ZEM	Emulator/ Programmer
Protopak	Z8933200TSC	Protopak for code verification
Evaluation Board	Z8933200ZCO	OSD Evaluation Board
OTP Programming Adapter	Z9036100ZDP	OTP Programming Adapter Kit

* xxxx is a unique ROM number assigned to each customer code

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