



# Z90T365 ROM, Z90T366 ROM, Z90T361 OTP

## *eZVision 32/64 KWord Television Controller with On-Screen Display*

PB003103-0301

PRODUCT BRIEF

### Product Block Diagram

<b>32/64 KWords ROM or OTP</b>		
<b>DSP Core</b>	<b>RAM</b>	
<b>ADC</b>		
<b>OSD Engine</b>		
<b>Hardware Cursor</b>		
<b>PWM</b>	<b>I<sup>2</sup>C</b>	<b>I/O Ports</b>

### General Description

ZiLOG's eZVision Z90T36x TV controller with On-Screen Display (OSD) is a highly integrated solution for television design. The Z90T36x features a high-speed 16-bit, advanced Digital Signal Processor (DSP) and powerful OSD engine. Flexible and sophisticated, the OSD includes video display attributes, semi-transparency, programmable color palettes, and a hardware cursor for easy user interface. The Z90T36x supports parental control, closed captioning, and Extended Data System (XDS).

The Z90T36x is an ideal choice for mainstream television sets for both PAL and NTSC standards.

The Z90T36x family consists of three basic devices

- the Z90T365 masked ROM (32 KWords)
- the Z90T366 masked ROM (64 KWords)
- the Z90T361 One Time Programmable (OTP) device

In addition, ZiLOG provides a comprehensive development suite for television system developers including an emulator capable of OTP programming, OSD evaluation board, C-compiler, Application Programming Interface (API), ZiLOG's Developer Studio (ZDS) software, and Graphical User Interface (GUI) OSD design tools. These tools enable TV developers to work efficiently and effectively to bring new products to market.

### On-Screen Display Features

- Relocatable CGROM for large and multiple character sets
- 16x16, 16x18, and 16x20 pixel matrices
- Hardware cursor with 4 colors per pixel and pixel-by-pixel positioning
- Semi-transparency, blinking, multi-color icons, italic, bold and underline characters
- Integrated Vertical Blank Interval (VBI) decoding

### TV Control Features

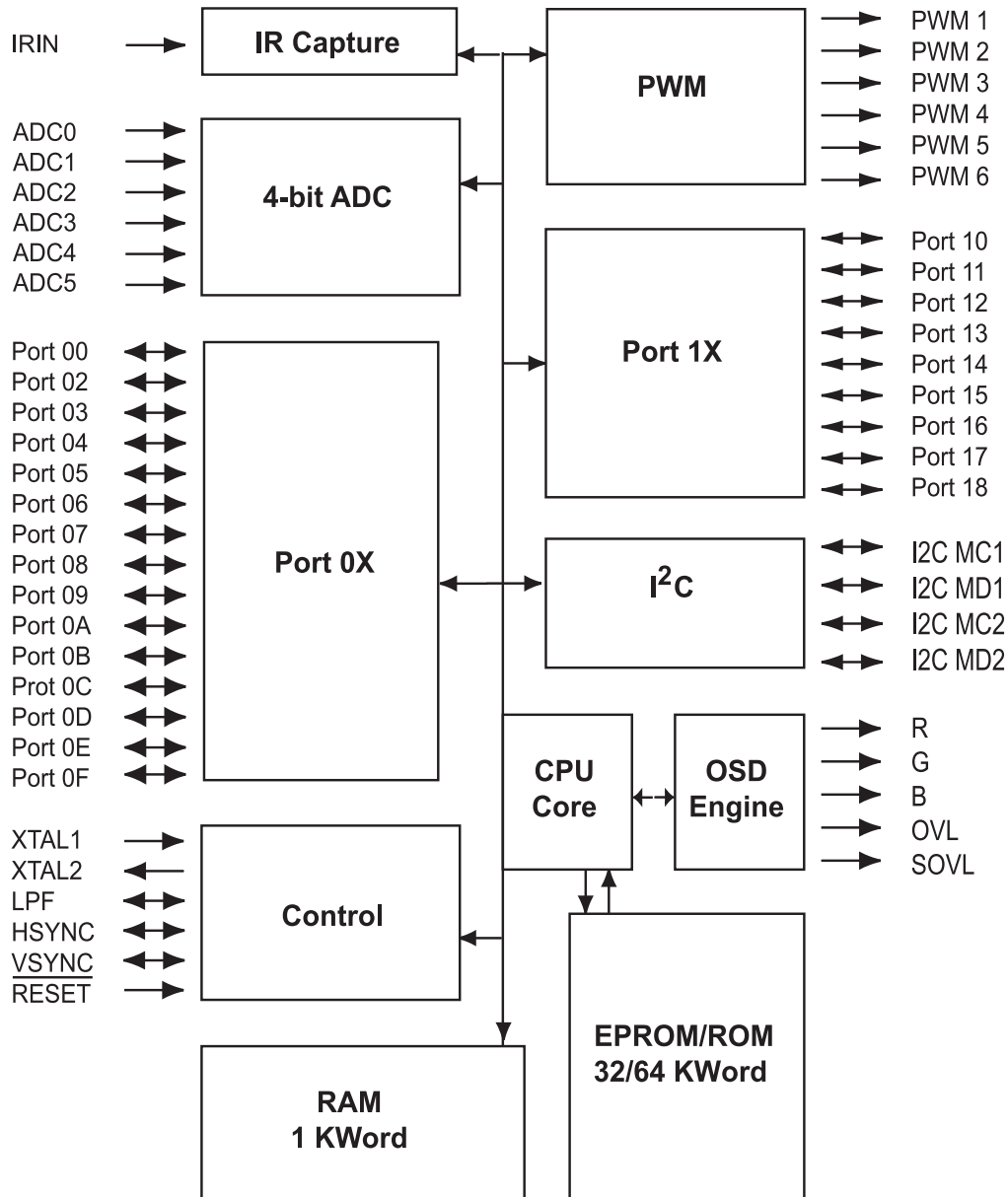
- Six Channel, 4-bit Analog-to-Digital Converter that supports:
  - Automatic frequency tuning
  - Analog front-panel buttons
  - Audio level input adjustment
  - VBI decoding
- Six Pulse Width Modulators (PWM) to control video, audio, and tuners
- I<sup>2</sup>C bus interface
- Twenty-four programmable I/Os
- On-chip Infrared (IR) capture register

### Controller Features

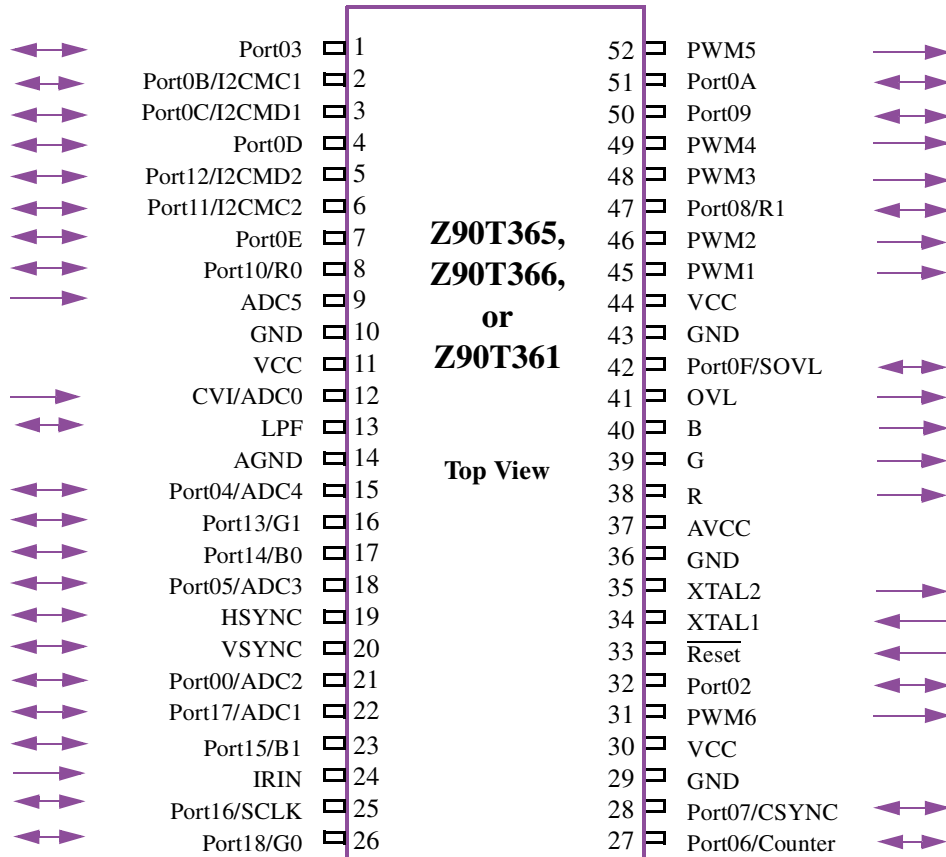
- 16-bit Single-cycle instruction execution
- Phase Lock Loop (PLL), controlled by a 32 KHz external crystal
- 32/64 KWord ROM or OTP with re-locatable Character Generation ROM
- 1 KWord of RAM
- 52-pin SDIP package



## Block Diagram of Z90T365, Z90T366, and Z90T361



## Pin-Outs and Pin Direction



## Development Suite

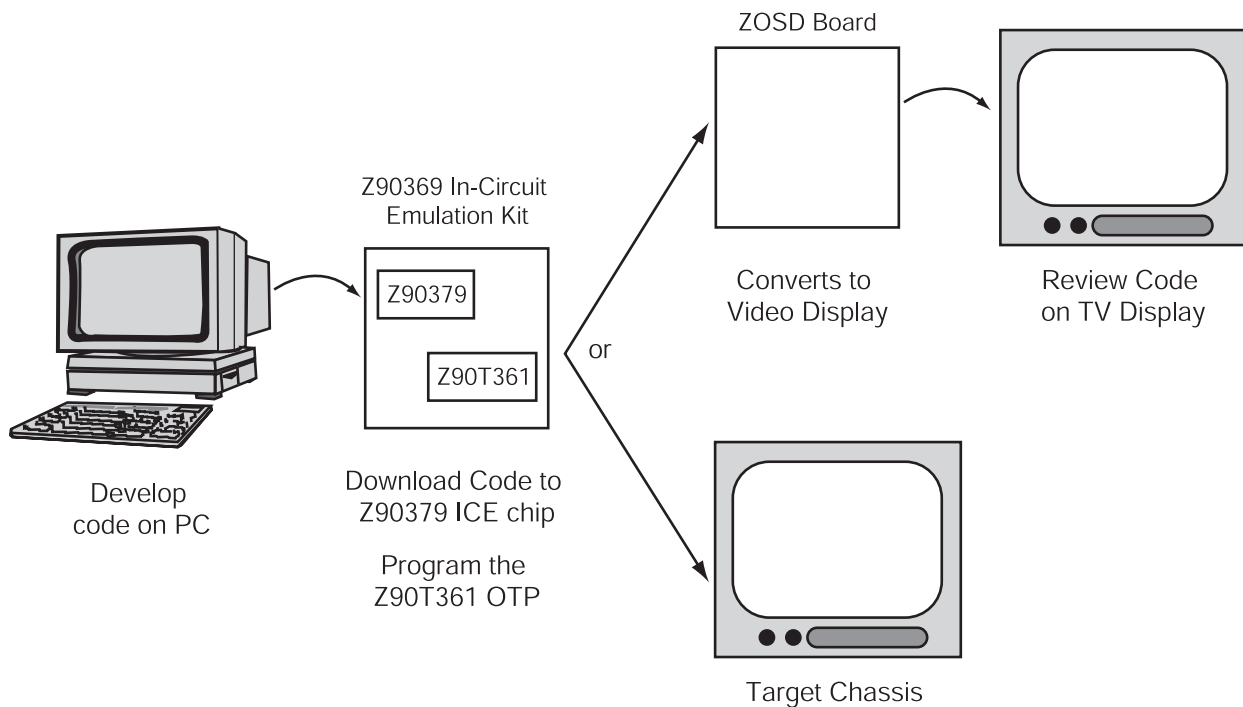
Available in One-Time Programmable (OTP) and MASK ROM Versions, the Z90T365, Z90T366, and Z90T361 fulfill Prototype and Production Requirements. The Z90T36x uses ICEbox™ In-Circuit Emulator tools (Z9036900ZEM) to make Programming and Debugging easy and convenient.

ZiLOG Developer Studio (ZDS) provides easy code generation and program management.

For code development, ZiLOG offers its proven Application Programming Interface (API) for OSD.

The API deals directly with proper sequencing and timing when interfacing with hardware, shielding the user application programmer from tedious and error prone details.

The Z9034600ZCO, 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. ZiLOG also offers the Z9034600TSC 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 <sup>2</sup> C Address Select
Z86131	Auto Time Set
Z86130	Smart V-Chip
Z86230	Smart V-Chip with Second I <sup>2</sup> C Address Select

## Electrical Features Summary

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

## Z90T36x Device Selection

Device	Application	ROM (Words)	RAM (Words)	Pkg	I <sup>2</sup> C	IR Capture	ADC	Bit I/O (max)	PWM (8-bit)
Z90T365	TV Receiver Controller	32K	1K	52-Pin SDIP	Yes	Yes	6 Ch	24	6
Z90T366	TV Receiver Controller	64K	1K	52-Pin SDIP	Yes	Yes	6 Ch	24	6
Z90T361	TV Receiver Controller	64K OTP	1K	52-Pin SDIP	Yes	Yes	6 Ch	24	6

## Ordering Information

Part	PSI	Description
Z90T361	Z90T36116PSC	OTP TV Controller
Z90T365	Z90T36516PSC Rxxxx*	Masked ROM TV Controller
Z90T366	Z90T36616PSC Rxxxx*	Masked ROM TV Controller
Emulation Kit	Z9036900ZEM	Emulator/ Programmer
Adapter	Z90T36100ZDP	OTP programming adapter
Protopak	Z9034900TSC	Protopak for code verification
Evaluation Board	Z9034600ZCO	OSD Evaluation Board

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



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