ZILOG

ADVANCE INFORMATION SPECIFICATION

Z86L29

6K INFRARED (IR) REMOTE CONTROLLER (ZIRC™)

GEC GEORGE BROWN

ELECTRONICS DIVISION

A Division of GEC Australia Limited (Inc. in NSW)

Sydney
Tel (02) 638 1888
Fax (02) 638 1798

Adelaide
Tel (08) 352 2222
Fax (08) 352 3999

Perth
Tel (09) 381 4040
Fax (09) 381 4033

Melbourne
Tel (03) 878 8111
Fax (03) 877 3351

Newcastle
Tel (049) 42 2140
Fax (049) 42 2080

Brisbane
Tel (07) 252 3876
Fax (07) 252 2924

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ADVANCE INFORMATION

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ADVANCE PRODUCT SPECIFICATION

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FEATURES

- 8-bit CMOS microcontroller, 18-pin DIP
- Low cost
- 2.0 to 3.6 volt operating range
- Low power consumption - 50 mW (typical)
- 4 high-current outputs at 2 volts
  - 7 ma source (1)
  - 10 ma sink (3)
- Two standby modes - STOP and HALT
- 14 input/output lines (2 with Comparator inputs)
- All digital inputs are CMOS level
- 6 Kbytes of ROM
- 125 bytes of RAM
- Three Expanded Register File Control Registers
- Two programmable 8-bit Counter/Timers
- 6-bit programmable prescaler
- Six vectored, priority interrupts from five different sources
- Clock speed 8 MHz
- Brown-out protection
- Watch-Dog/Power-On Reset Timer
- Two comparators with programmable interrupt polarity
- On-chip oscillator that accepts a crystal, ceramic resonator, LC, RC, or external clock drive.

GENERAL DESCRIPTION

The Z86L29 (ZIRC™) is a low voltage Consumer Controller Processors (CCP™) ideal for IR Remote applications which introduces a new level of sophistication to single-chip architecture. The Z86L29 is a member of the Z8® single-chip microcontroller family with 6 Kbytes of ROM, and 124 bytes of RAM. The device is housed in an 18-pin DIP, and is CMOS compatible. Zilog's Z86L29 CMOS microcontroller offers fast execution, more efficient use of memory, more sophisticated interrupts, input/output bit manipulation capabilities, and easy hardware/software system expansion along with low cost and low power consumption.

The Z86L29 architecture is characterized by Zilog's 8-bit microcontroller core with an Expanded Register File to allow access to register mapped peripheral and I/O circuits. The CCP offers a flexible I/O scheme, and a number of ancillary features that are useful in many industrial, automotive, hand held, battery operated and advanced scientific applications.

For device applications that demand powerful I/O capabilities, the CCP fulfills this with 14 pins dedicated to input and output. These lines are grouped into two ports, and are configurable under software control to provide timing, status signals, or parallel I/O.

Three basic address spaces are available to support this wide range of configurations; Program Memory, Register File, and Expanded Register File. The Register File is composed of 125 bytes of general-purpose registers, two I/O Port registers and 14 Control and Status registers. The Expanded Register File consists of three control registers.

To unburden the program from coping with real-time problems such as counting/timing and input/output data communication, the Z86L29 offers two on-chip counter/timers with a large number of user selectable modes, and two on-board comparators that can process analog signals with a common reference voltage (Figure 1).

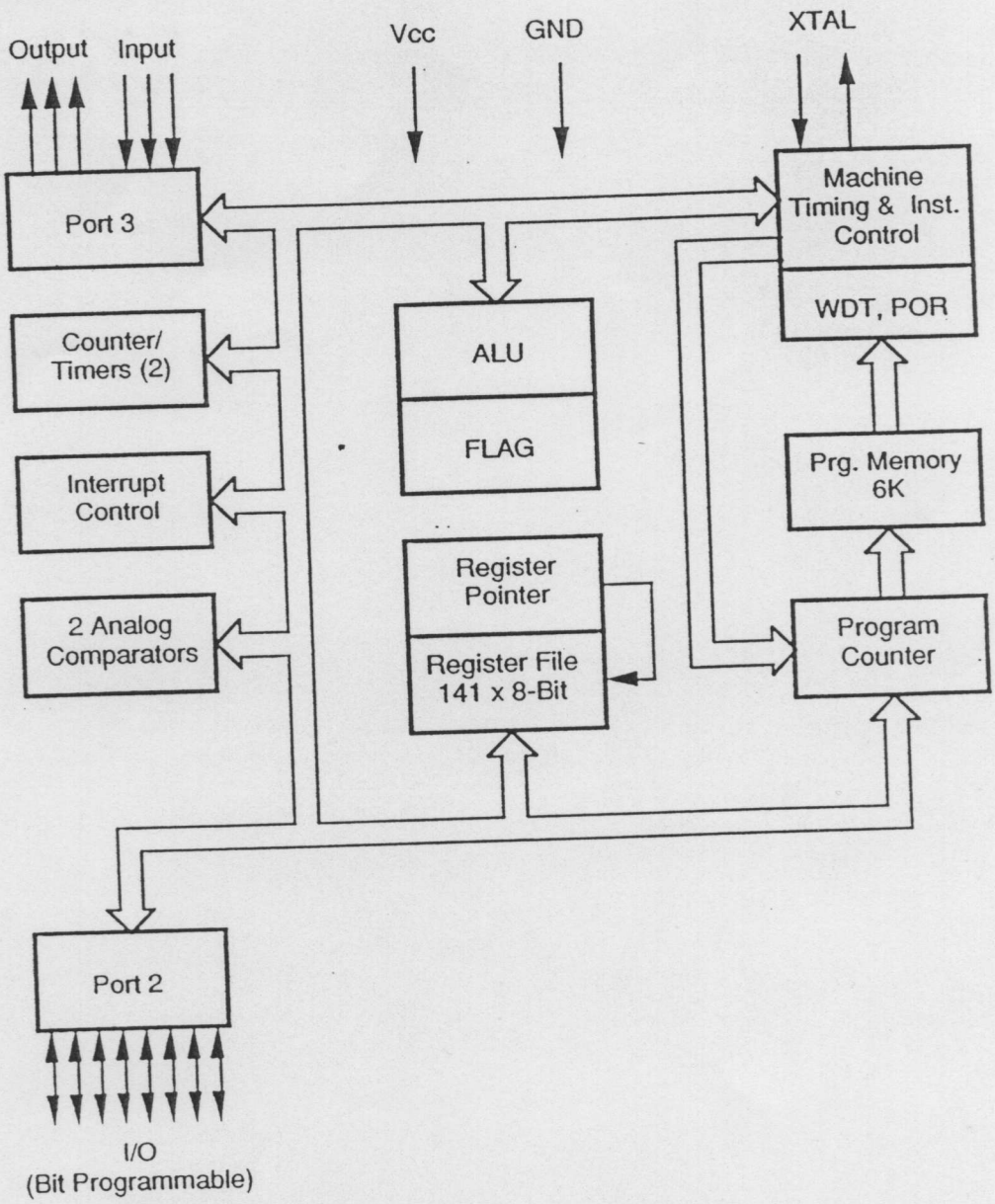

Figure 1. Functional Block Diagram

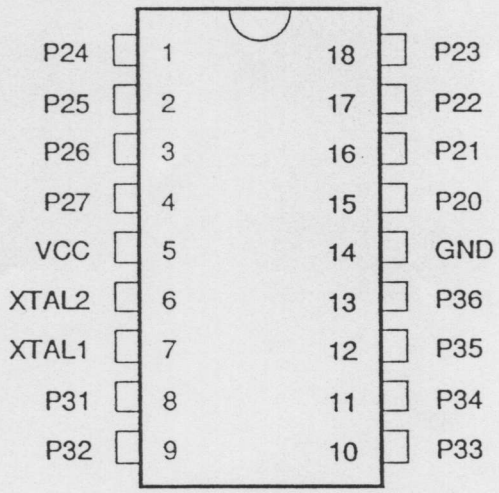

Figure 2. Pin Configuration

PIN DESCRIPTION

Table 1. Pin Identification

No	Symbol	Function	Direction
1-4	P24-7	Port 2 pins 4, 5, 6, 7	In/Output
5	V_{CC}	Power Supply	
6	XTAL2	Crystal Oscillator Clock	Output
7	XTAL1	Crystal Oscillator Clock	Input
8-10	P31-3	Port 3 pins 1, 2, 3	Fixed Input
11-13	P34-6	Port 3 pins 4, 5, 6	Fixed Output
14	GND	Ground	
15-18	P20-3	Port 2 pins 0, 1, 2, 3	In/Output

XTAL1. *Crystal 1* (time-based input). This pin connects a parallel-resonant crystal, ceramic resonator, LC or RC network or an external single-phase clock to the on-chip oscillator input.

XTAL2. *Crystal 2* (time-based output). This pin connects a parallel-resonant crystal, ceramic resonator, LC or RC network to the on-chip oscillator output.

Port 2 P20-P27. Port 2 is an 8-bit, bidirectional, CMOS compatible I/O port. These eight I/O lines can be configured under software control to be an input or output, independently. Bits programmed as outputs may be globally programmed as either push-pull or open drain (Figure 3).

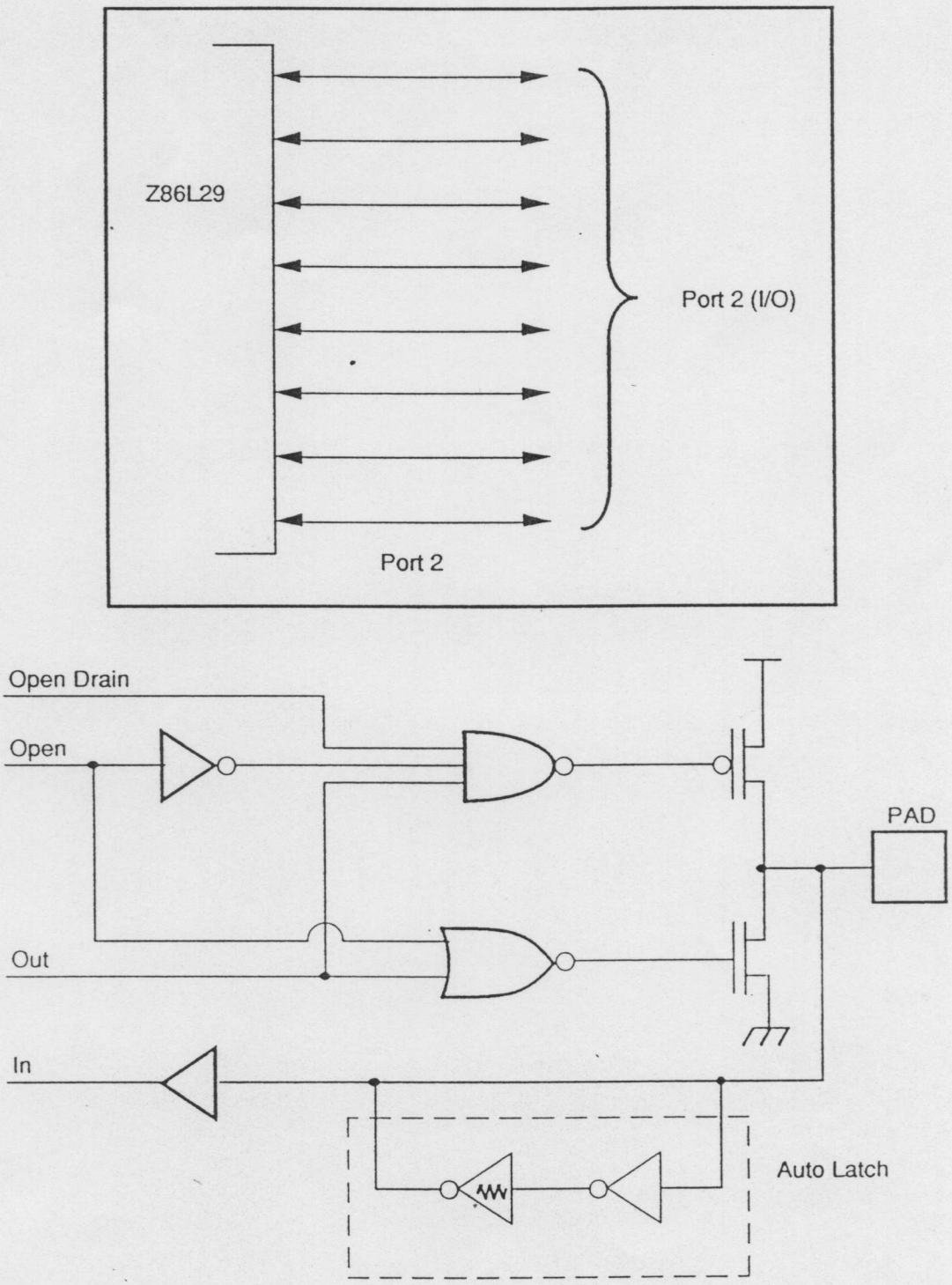

Figure 3. Port 2 Configuration

Port 3 P31-P36. Port 3 is a 6-bit, CMOS-compatible port with three fixed input and three fixed output lines. These six lines consist of three fixed input (P31-P33) and three fixed output port (P34-P36) lines. P31, P32 and P33, are standard CMOS inputs and P34, P35, are open drain outputs and P36 is a push-pull output. Two on-board comparators can process analog signals on P31 and P32 with reference to the voltage on P33. The analog function is enabled by programming Port 3 Mode Register (bit 1). P31 and P32 are programmable as falling, rising, or both edge triggered interrupts (IRQ register bits 6 and 7). P33 is the comparator reference voltage input. Access to Counter/Timer 1 is made through P31 (T_{IN}) and P36 (T_{OUT}), (Figure 4a).

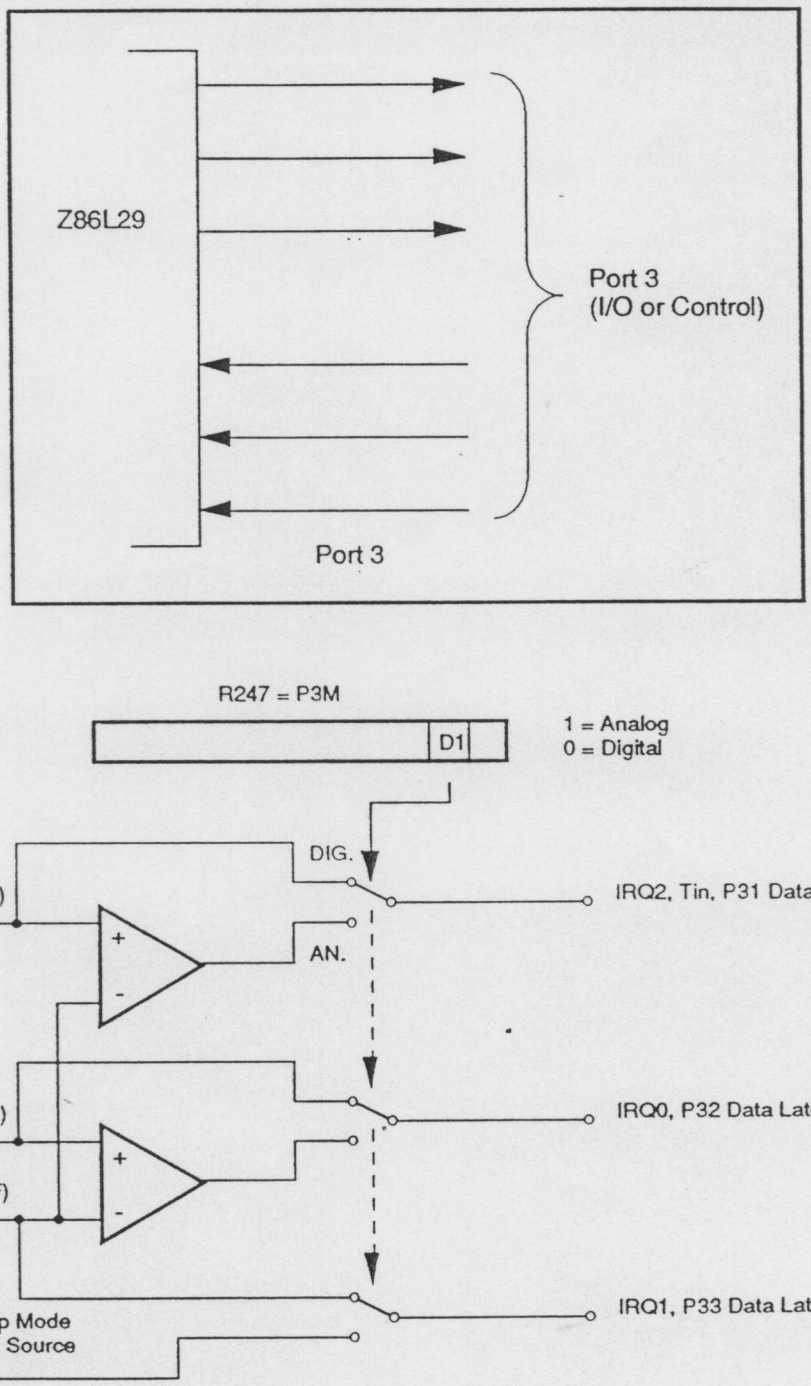

Figure 4a. Port 3 Configuration

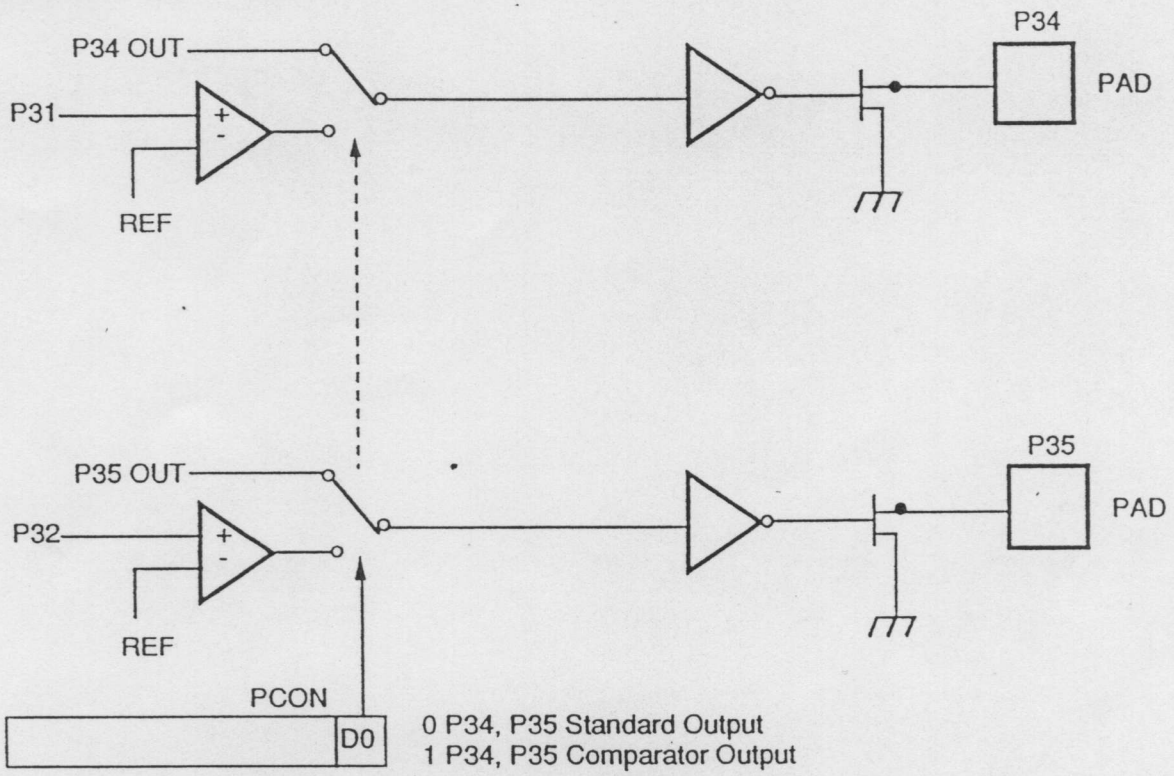

Figure 4b. Port 3 Configuration

Comparator Inputs. Port 3, P31 and P32 each have a comparator front end. The comparator reference voltage, P33, is common to both comparators. In analog mode, the P33 input functions as a reference voltage to the comparators. The internal P33 register and its corresponding IRQ1 is connected to the STOP Mode Recovery source selected by the SMR. In this mode, any of the STOP Mode Recovery sources can be used to toggle the P33 bit or generate IRQ1. In digital mode, P33 can be used as a Port 3 register input or IRQ1 source (Figure 13). Comparator outputs may be programmed to be outputted on P34 and P35 via the PCON register. (Figures 4a, 4b and 14b).

Auto Latch. The auto latch puts valid CMOS levels on all CMOS inputs that are not externally driven. This reduces excessive supply current flow in the input buffer when it is not being driven by any source.