



# ZGP323L OTP MCU Family

## Product Brief

PB015109-0208

### Overview

Zilog’s ZGP323L is an OTP-based member of the family of general-purpose microcontrollers. With 237 B of general-purpose RAM and up to 32 KB of OTP, Zilog’s CMOS microcontrollers offer fast-executing use of memory, sophisticated interrupts, input/output bit manipulation, automated pulse generation/reception, and internal key-scan pull-up transistors. ZGP323L is compatible with Zilog’s ZGR163L/ZGR323L families.

### Product Block Diagram

|                              |                 |                                |                               |
|------------------------------|-----------------|--------------------------------|-------------------------------|
| Watchdog Timer               |                 | Up to 32 KB OTP                | Power-On Reset                |
| T8 Timer Capture & Transmit  |                 | Z8® Core                       | 2 Comparators                 |
| T16 Timer Capture & Transmit |                 |                                | Low Battery Voltage Detection |
| 237 Bytes RAM                |                 | High Battery Voltage Detection |                               |
| Port 0<br>8 I/O              | Port 1<br>8 I/O | Port 2<br>8 I/O                | Port 3<br>8 I/O               |

### Features

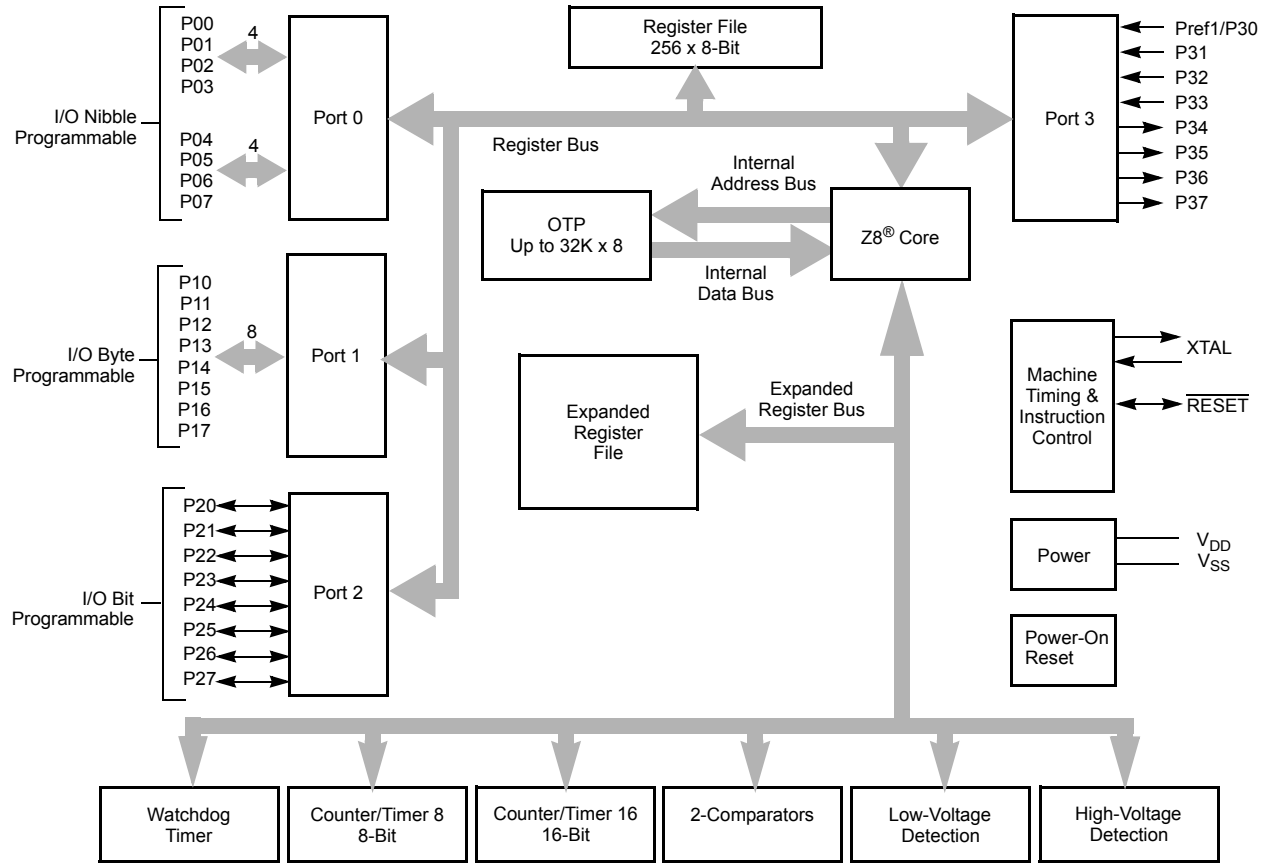
Key features of ZGP323L include:

- 2.0 V to 3.6 V operation
- Low power consumption—11 mW (typical @ 3 V)
- Three standby modes:
  - STOP—2 µA (typical)

- HALT—0.8 mA (typical)
- Low voltage reset
- Special architecture to automate both generation and reception of complex pulses or signals:
  - One programmable 8-bit counter/timer with two capture registers and two load registers
  - One programmable 16-bit counter/timer with one capture register and two reload registers
  - Programmable input glitch filter for pulse reception
- Six priority interrupts:
  - Three external
  - Two assigned to counter/timers
  - One low-voltage detection interrupt
- Low-voltage and high-voltage detection flags
- Programmable Watchdog Timer (WDT)
- Power-On Reset (POR) circuits
- Two independent comparators with programmable interrupt polarity
- Programmable EPROM options:
  - Port 0: 0–3 pull-up transistors
  - Port 0: 4–7 pull-up transistors
  - Port 1: 0–3 pull-up transistors
  - Port 1: 4–7 pull-up transistors
  - Port 2: 0–7 pull-up transistors
  - EPROM Protection
  - WDT enabled at POR
- Standard (0 °C to +70 °C), Extended (-40 °C to +105 °C), and Automotive (-40 °C to +125 °C) temperature ranges

## Architecture

Figure 1 displays the architecture of ZGP323L architecture.



Note: Refer to the specific package for available pins.

**Figure 1. Architectural Diagram**

## Ordering Information

Order the tools from Zilog®, providing the part numbers as given below:

| <b>32 KB Standard Temperature: 0 °C to +70 °C</b>      |                      |
|--|----------------------|
| <b>Part Number</b>                                     | <b>Description</b>   |
| ZGP323LSH4832G   | 48-pin SSOP 32K OTP  |
| ZGP323LSK4032E   | 40-pin CDIP* 32K OTP |
| ZGP323LSP4032G   | 40-pin PDIP 32K OTP  |
| ZGP323LSK2832E   | 28-pin CDIP* 32K OTP |
| ZGP323LSH2832G   | 28-pin SSOP 32K OTP  |
| ZGP323LSP2832G   | 28-pin PDIP 32K OTP  |
| ZGP323LSS2832G   | 28-pin SOIC 32K OTP  |
| ZGP323LSK2032E   | 20-pin CDIP* 32K OTP |
| ZGP323LSH2032G   | 20-pin SSOP 32K OTP  |
| ZGP323LSP2032G   | 20-pin PDIP 32K OTP  |
| ZGP323LSS2032G   | 20-pin SOIC 32K OTP  |
| <b>32 KB Extended Temperature: -40 °C to +105 °C</b>   |                      |
| <b>Part Number</b>                                     | <b>Description</b>   |
| ZGP323LEH4832G   | 48-pin SSOP 32K OTP  |
| ZGP323LEP4032G   | 40-pin PDIP 32K OTP  |
| ZGP323LEH2832G   | 28-pin SSOP 32K OTP  |
| ZGP323LEP2832G   | 28-pin PDIP 32K OTP  |
| ZGP323LES2832G   | 28-pin SOIC 32K OTP  |
| ZGP323LEH2032G   | 20-pin SSOP 32K OTP  |
| ZGP323LEP2032G   | 20-pin PDIP 32K OTP  |
| ZGP323LES2032G   | 20-pin SOIC 32K OTP  |
| <b>32 KB Automotive Temperature: -40 °C to +125 °C</b> |                      |
| <b>Part Number</b>                                     | <b>Description</b>   |
| ZGP323LAH4832G   | 48-pin SSOP 32K OTP  |
| ZGP323LAP4032G   | 40-pin PDIP 32K OTP  |
| ZGP323LAH2832G   | 28-pin SSOP 32K OTP  |
| ZGP323LAP2832G   | 28-pin PDIP 32K OTP  |
| ZGP323LAS2832G   | 28-pin SOIC 32K OTP  |
| ZGP323LAH2032G   | 20-pin SSOP 32K OTP  |
| ZGP323LAP2032G   | 20-pin PDIP 32K OTP  |

| <b>32 KB Automotive Temperature: –40 °C to +125 °C</b> |                     |
|--|---------------------|
| <b>Part Number</b>                                     | <b>Description</b>  |
| ZGP323LAS2032G   | 20-pin SOIC 32K OTP |
| <b>16 KB Standard Temperature: 0 °C to +70 °C</b>      |                     |
| <b>Part Number</b>                                     | <b>Description</b>  |
| ZGP323LSH4816G   | 48-pin SSOP 16K OTP |
| ZGP323LSP4016G   | 40-pin PDIP 16K OTP |
| ZGP323LSH2816G   | 28-pin SSOP 16K OTP |
| ZGP323LSP2816G   | 28-pin PDIP 16K OTP |
| ZGP323LSS2816G   | 28-pin SOIC 16K OTP |
| ZGP323LSH2016G   | 20-pin SSOP 16K OTP |
| ZGP323LSP2016G   | 20-pin PDIP 16K OTP |
| ZGP323LSS2016G   | 20-pin SOIC 16K OTP |
| <b>16 KB Extended Temperature: –40 °C to +105 °C</b>   |                     |
| <b>Part Number</b>                                     | <b>Description</b>  |
| ZGP323LEH4816G   | 48-pin SSOP 16K OTP |
| ZGP323LEP4016G   | 40-pin PDIP 16K OTP |
| ZGP323LEP2816G   | 28-pin PDIP 16K OTP |
| ZGP323LEH2816G   | 28-pin SSOP 16K OTP |
| ZGP323LES2816G   | 28-pin SOIC 16K OTP |
| ZGP323LES2016G   | 20-pin PDIP 16K OTP |
| ZGP323LEH2016G   | 20-pin SSOP 16K OTP |
| ZGP323LEP2016G   | 20-pin PDIP 16K OTP |
| <b>16 KB Automotive Temperature: –40 °C to +125 °C</b> |                     |
| <b>Part Number</b>                                     | <b>Description</b>  |
| ZGP323LAH4816G   | 48-pin SSOP 16K OTP |
| ZGP323LAP4016G   | 40-pin PDIP 16K OTP |
| ZGP323LAH2816G   | 28-pin SSOP 16K OTP |
| ZGP323LAP2816G   | 28-pin PDIP 16K OTP |
| ZGP323LAS2816G   | 28-pin SOIC 16K OTP |
| ZGP323LAH2016G   | 20-pin SSOP 16K OTP |
| ZGP323LAP2016G   | 20-pin PDIP 16K OTP |
| ZGP323LAS2016G   | 20-pin SOIC 16K OTP |

| <b>8 KB Standard Temperature: 0 °C to +70 °C</b>      |                    |
|---|--------------------|
| <b>Part Number</b>                                    | <b>Description</b> |
| ZGP323LSH4808G  | 48-pin SSOP 8K OTP |
| ZGP323LSP4008G  | 40-pin PDIP 8K OTP |
| ZGP323LSH2808G  | 28-pin SSOP 8K OTP |
| ZGP323LSP2808G  | 28-pin PDIP 8K OTP |
| ZGP323LSS2808G  | 28-pin SOIC 8K OTP |
| ZGP323LSH2008G  | 20-pin SSOP 8K OTP |
| ZGP323LSP2008G  | 20-pin PDIP 8K OTP |
| ZGP323LSS2008G  | 20-pin SOIC 8K OTP |
| <b>8 KB Extended Temperature: -40 °C to +105 °C</b>   |                    |
| <b>Part Number</b>                                    | <b>Description</b> |
| ZGP323LEH4808G  | 48-pin SSOP 8K OTP |
| ZGP323LEP4008G  | 40-pin PDIP 8K OTP |
| ZGP323LEH2808G  | 28-pin SSOP 8K OTP |
| ZGP323LEP2808G  | 28-pin PDIP 8K OTP |
| ZGP323LES2808G  | 28-pin SOIC 8K OTP |
| ZGP323LEH2008G  | 20-pin SSOP 8K OTP |
| ZGP323LEP2008G  | 20-pin PDIP 8K OTP |
| ZGP323LES2008G  | 20-pin SOIC 8K OTP |
| <b>8 KB Automotive Temperature: -40 °C to +125 °C</b> |                    |
| <b>Part Number</b>                                    | <b>Description</b> |
| ZGP323LAH4808G  | 48-pin SSOP 8K OTP |
| ZGP323LAP4008G  | 40-pin PDIP 8K OTP |
| ZGP323LAH2808G  | 28-pin SSOP 8K OTP |
| ZGP323LAP2808G  | 28-pin PDIP 8K OTP |
| ZGP323LAS2808G  | 28-pin SOIC 8K OTP |
| ZGP323LAH2008G  | 20-pin SSOP 8K OTP |
| ZGP323LAP2008G  | 20-pin PDIP 8K OTP |
| ZGP323LAS2008G  | 20-pin SOIC 8K OTP |
| <b>4 KB Standard Temperature: 0 °C to +70 °C</b>      |                    |
| <b>Part Number</b>                                    | <b>Description</b> |
| ZGP323LSH4804G  | 48-pin SSOP 4K OTP |
| ZGP323LSP4004G  | 40-pin PDIP 4K OTP |
| ZGP323LSH2804G  | 28-pin SSOP 4K OTP |

| <b>4 KB Standard Temperature: 0 °C to +70 °C</b>                           |                            |
|--|----------------------------|
| <b>Part Number</b>   | <b>Description</b>         |
| ZGP323LSP2804G   | 28-pin PDIP 4K OTP         |
| ZGP323LSS2804G   | 28-pin SOIC 4K OTP         |
| ZGP323LSH2004G   | 20-pin SSOP 4K OTP         |
| ZGP323LSP2004G   | 20-pin PDIP 4K OTP         |
| ZGP323LSS2004G   | 20-pin SOIC 4K OTP         |
| <b>4 KB Extended Temperature: -40 °C to +105 °C</b>                        |                            |
| <b>Part Number</b>   | <b>Description</b>         |
| ZGP323LEH4804G   | 48-pin SSOP 4K OTP         |
| ZGP323LEP4004G   | 40-pin PDIP 4K OTP         |
| ZGP323LEH2804G   | 28-pin SSOP 4K OTP         |
| ZGP323LEP2804G   | 28-pin PDIP 4K OTP         |
| ZGP323LES2804G   | 28-pin SOIC 4K OTP         |
| ZGP323LEH2004G   | 20-pin SSOP 4K OTP         |
| ZGP323LEP2004G   | 20-pin PDIP 4K OTP         |
| ZGP323LES2004G   | 20-pin SOIC 4K OTP         |
| <b>4 KB Automotive Temperature: -40 °C to +125 °C</b>                      |                            |
| <b>Part Number</b>   | <b>Description</b>         |
| ZGP323LAH4804G   | 48-pin SSOP 4K OTP         |
| ZGP323LAP4004G   | 40-pin PDIP 4K OTP         |
| ZGP323LAH2804G   | 28-pin SSOP 4K OTP         |
| ZGP323LAP2804G   | 28-pin PDIP 4K OTP         |
| ZGP323LAS2804G   | 28-pin SOIC 4K OTP         |
| ZGP323LAH2004G   | 20-pin SSOP 4K OTP         |
| ZGP323LAP2004G   | 20-pin PDIP 4K OTP         |
| ZGP323LAS2004G   | 20-pin SOIC 4K OTP         |
| <b>Development Tools</b>   |                            |
| <b>Part Number</b>   | <b>Description</b>         |
| ZGP323ICE02ZEMG  | ZGP323 In-Circuit Emulator |
| ZLP323ICE01ZAC*  | 40/48-Pins Accessory Kit   |
| Note: *This kit has been replaced by an improved version, ZCRMZNICE02ZACG. |                            |
| ZCRMZNICE02ZACG  | 40/48-Pin Accessory Kit    |
| ZGP32300200ZPR (USB)   | Programming system         |



- ▶ **Notes:** \* Windowed Cerdip. These units are intended to be used for engineering code development only. Zilog® does not recommend/guarantee this package for production use.

Zilog Developer Studio II (ZDS II) Integrated Development Environment, ZDS II—Crimzon+GP, is also available.



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