
ePS6610

**RISC II Series
Microcontroller**

**Product
Specification**

DOC. VERSION 1.1

ELAN MICROELECTRONICS CORP.


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Specification Revision History

| Doc. Version | Revision Description | Date |
|--------------|---|------------|
| 0.1 | Initial version | 2008/8/12 |
| 0.2 | Added the code options: the Port A set and operating voltage set (Section 6) Modified the Electrical characteristics for VDD=1.5V: The pull-up R and current of the I/O ports, and ROP & RON (Section 9.1) Added a Power-on reset voltage on Section 9.1 Added a 3V Operating Voltage Added an Electrical characteristics for VDD=3V (Section 9.2) Added the application circuit for VDD=3.0V (Section 10) | 2009/11/2 |
| 0.3 | 1. Added an Electrical Characteristics section. 2. Added attention (the Point 6th). 3. Modified the block diagram. | 2009/12/29 |
| 1.0 | Upgraded to version 1.0 | 2010/03/31 |
| 1.1 | 1. Deleted the VDD=3.0V Electrical Characteristics entries. 2. Modify Operating voltage only has 1.5V | 2010/11/09 |

1 General Description

The **ePS6610** is an 8-bit RISC MCU embedded with a 5×40 LCD driver along with two 8-bit timers, one 16-bit general timer, and a watchdog timer. It has also on-chip 1.2K bytes RAM and 8K words program ROM. It is highly ideal for advance scientific calculator application, particularly those requiring high performance and low cost solution.

The MCU core is one of ELAN's second generation RISC based IC's, known as RISC II (RII) series. The core was specifically designed for low power and portable device applications. The ePS6610 also supports Fast mode, Slow mode, Idle mode, as well as Sleep mode to enhance its low power consumption features.

IMPORTANT NOTES

- Do not use Register BSR (02h) Bit 7 ~ Bit 4.
- Do not use Register BSR1 (05h) Bit 7 ~ Bit 4.
- Check the range of BSR and BSR1, which should be from 0x00~0x09.
- Do not use LCD RAM 28h ~ FFh.
- Do not use Register JDNZ at FSR1 (04h) special register.
- Do not use PUSH, POP by "MOV A,r" to avoid affecting S_Z.

1.1 Application

- Calculating machine

2 Features

2.1 MCU

- 8 bit RISC MCU
- Operating voltage: 1.2V~1.8V
- Clock Source: Dual system clock
 - Low-frequency: 32kHz Internal RC oscillator / Crystal oscillator
 - High-frequency: 200kHz / 300kHz / 500kHz External RC oscillator
- One Instruction cycle time = 2 × System clock time
- Program ROM addressing: Max. of 8K words
- 128 bytes un-banked RAM including special registers and common registers
- 10×128 bytes banked RAM



- Max. of 32 levels of RAM stack
- Table Look-up function is fast and highly efficient when combined with Repeat instruction
- Register-to-Register move instruction
- Compare and Branch in one instruction (2 cycles)
- Single Repeat function (256 repeat times max.)
- Decimal ADD and SUB instruction
- Full range Call and Jump ability (2 cycles)

2.2 Peripheral Configuration

- 16 general I/O pins (Port A, Port B)
- 5 / 4 / 3 COM × 40 SEG LCD driver (embedded)
- One 16-bit timer (Timer 0) with event counter function
- One 8-bit timer (Timer 1) with wake-up function
- One 8-bit timer (Timer 2)
- One 8-bit Watchdog Timer
- Key I/O function with 64 keys maximum

2.3 Internal Specification

- Watchdog Timer with its own on-chip RC oscillator
- MCU operating modes: Sleep Mode, Idle Mode, Slow Mode, and Fast Mode
- Supports RC and Crystal oscillation for system clock
- MCU wake-up function consists of input wake up and Timer 1 wake up
- MCU interrupt function consist of Input port interrupt and Timer interrupt (Timers 0 ~ 2)