Product introduction

The BJ8M601A is a single chip 8-bit MCU based on RISC architecture with built-in 2K× 16-bit MTP program memory. It is manufactured using an advanced CMOS process with low power consumption characteristics and low operating voltage capability. The chip integrates a multi-channel 12-bit A/D converter, as well as two timer modules that provide timing, counting and PWM functions. Internal watchdog, low voltage reset, low voltage detection functions ensure the reliable operation of the system. At the same time, it provides a rich clock options, including internal fast clock, internal slow clock, external crystal clock and external input clock, so that users can use flexibly. In addition, the MCU includes rich IO resources and can be widely used in various products.

Application field

Consumer electronics, small appliances, etc.

CPU characteristics

RISC architecture, 1T kernel.
8 layers of hardware stack.

Store

Program memory: 2K x 16bits.
Data RAM: 128 x 8bits.

Instruction set

68 instructions.

Interrupt

Unique interrupt entry address (08h).

8 interrupt source(T0/T1/INT0.1/LVD/ADC/PWM0.1).

I/O port

There are 14 I/O ports in total, and P12 provides input only.
All pins can be individually programmed.
8 pins have wake up function: P1.
14 pins have an internal pull-up function.
7 pins have an internal pull-down function: P1.
7 pins have open drain: P1.
2 external interrupts: P15 (external interrupt 1), P17(P01) (external interrupt 0).
2 pins have 40mA low drive capacity P03, P13.

Timer/counter

Timer/counter 0
   8-bit basic timer/counter.
   Supports the pre-division function.
Timer/counter 1
   Automatic loading of 16-bit timer/counter.
   2 PWM channels, support complementary output and dead zone can be matched.
   Supports the pre-division function.

12-bit ADC

10 external input channels.
3 internal channels (internal reference voltage, internal VDD/4, internal GND).
AD Reference voltage: VDD, external reference voltage, internal reference voltage (2V, 3V, 4V).

Watchdog timer

Supports the pre-division function.
Can configure overflow reset or wake up.

Clock system

Internal RC oscillator (master clock)
   Frequency: 1MHz, 8MHz, 16MHz, error: ±1%.
Internal RC oscillator (WDT clock)
   Frequency: 128KHz, error: ±3%.
External crystal oscillator can be configured
   Supports 32768Hz to 16MHz external crystal oscillator.
   Supports crystal and ceramic oscillators.
External RC oscillator
   Frequency: 100KHz~10MHz, error: ±5%.
External clock source
   Operating frequency: 32768Hz~16MHz.
Can work with dual clocks
   Oscillator can be divided frequency: 1, 2, 4, 8.

Working mode

Common mode: Both high-speed and low-speed clocks work properly.
Low-speed mode: Only the low-speed clock works properly.
STOP mode: All clocks stop working.
IDLE mode: The CPU stops working and peripherals can work.

Low voltage reset (LVR)

Low voltage reset options: 1.8V, 2.3V, 2.7V, 3.0V, 3.3V, 3.6V, 3.9V.
Reset time: 140us, 6.5ms, 18ms, 72ms, 228ms.

Low Voltage Detection (LVD)

Low voltage detection options: 2.2V, 2.4V, 2.6V, 2.9V, 3.2V, 3.8V, 4.1V.
Can be configured to generate interrupts.

Low power mode

The power consumption in STOP mode is less than 1.2uA.
I/O, level trigger mode for external interrupts, RTC mode for timer 0, and watchdog wakeup.

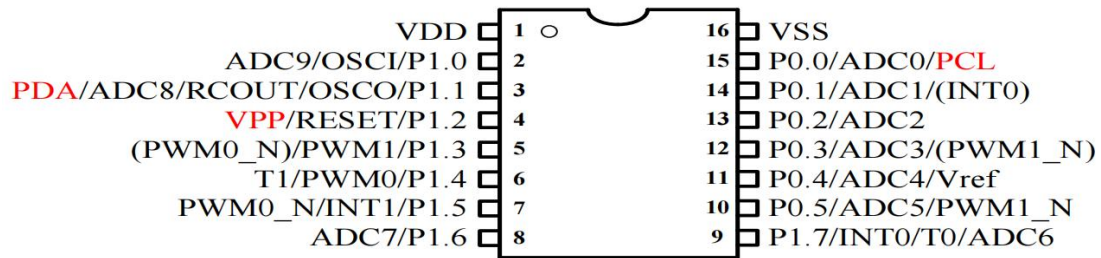### Operating temperature range

-40℃ ~ +85℃.

Voltage operating range

2.0V~5.5V.

Anti-interference capability

ESD: Better than ±4000V.
EFT: better than ±4000V.

Pin assignment diagram

SOP16

```
                              VDD ▭ 1  ○        16 ▭ VSS
                     ADC9/OSCI/P1.0 ▭ 2        15 ▭ P0.0/ADC0/PCL
      PDA/ADC8/RCOUT/OSCO/P1.1 ▭ 3        14 ▭ P0.1/ADC1/(INT0)
                  VPP/RESET/P1.2 ▭ 4        13 ▭ P0.2/ADC2
            (PWM0_N)/PWM1/P1.3 ▭ 5        12 ▭ P0.3/ADC3/(PWM1_N)
                       T1/PWM0/P1.4 ▭ 6        11 ▭ P0.4/ADC4/Vref
               PWM0_N/INT1/P1.5 ▭ 7        10 ▭ P0.5/ADC5/PWM1_N
                          ADC7/P1.6 ▭ 8         9 ▭ P1.7/INT0/T0/ADC6
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SOP14

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                              VDD ▭ 1  ○        14 ▭ VSS
                     ADC9/OSCI/P1.0 ▭ 2        13 ▭ P0.0/ADC0/PCL
      PDA/ADC8/RCOUT/OSCO/P1.1 ▭ 3        12 ▭ P0.1/ADC1/(INT0)
                  VPP/RESET/P1.2 ▭ 4        11 ▭ P0.2/ADC2
            (PWM0_N)/PWM1/P1.3 ▭ 5        10 ▭ P0.3/ADC3/(PWM1_N)
                       T1/PWM0/P1.4 ▭ 6         9 ▭ P0.4/ADC4/Vref
               PWM0_N/INT1/P1.5 ▭ 7         8 ▭ P1.7/INT0/T0/ADC6
```