



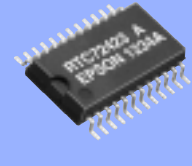
4-bit REAL TIME CLOCK MODULE

RTC-72421 RTC-72423

- Built-in crystal unit allows adjustment-free efficient operation.
- 24 h / 12 h changeable and leap year automatically adjustable (Gregorian calendar).



Product Number (Please contact us)
 RTC-72421 : Q42724211xxxx00
 RTC-72423 : Q42724231xxxx00



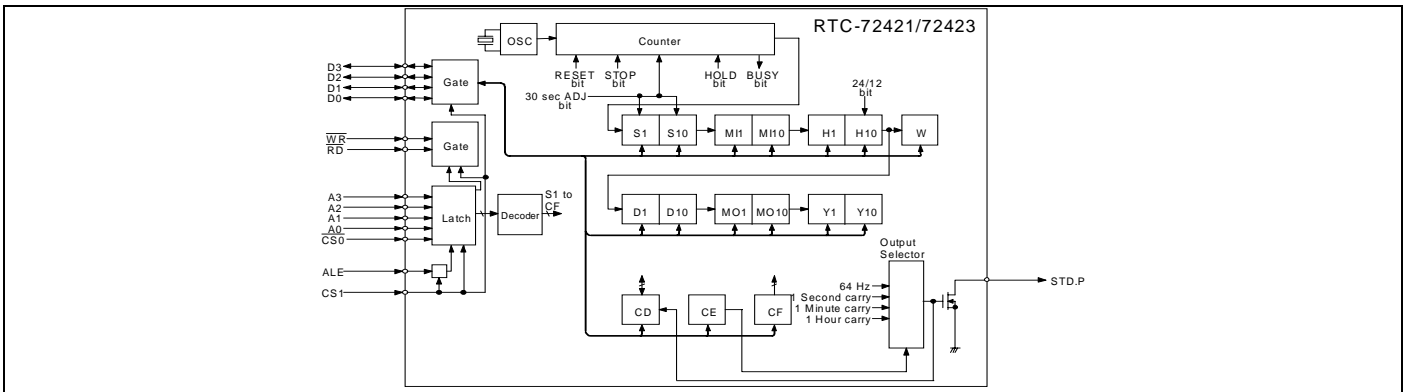
Actual size

RTC-72421

RTC-72423



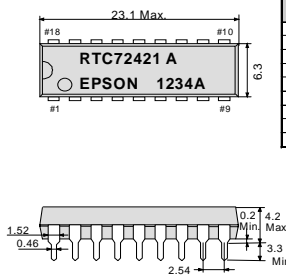
Block diagram



Terminal connection/External dimensions

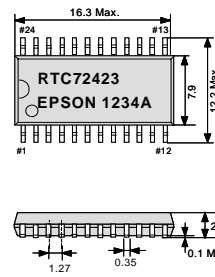
(Unit:mm)

● RTC-72421 (DIP 18-pin)



| No. | Pin terminal | No. | Pin terminal |
|-----|--------------|-----|--------------|
| 1 | STD.P | 18 | VDD |
| 2 | /CS0 | 17 | (VDD) |
| 3 | ALE | 16 | (VDD) |
| 4 | A0 | 15 | CS1 |
| 5 | A1 | 14 | C0 |
| 6 | A2 | 13 | D1 |
| 7 | A3 | 12 | D2 |
| 8 | /RD | 11 | D3 |
| 9 | GND | 10 | /WR |

● RTC-72423 (SOP 24-pin)



| No. | Pin terminal | No. | Pin terminal |
|-----|--------------|-----|--------------|
| 1 | STD.P | 24 | VDD |
| 2 | /CS0 | 23 | (VDD) |
| 3 | N.C. | 22 | (VDD) |
| 4 | ALE | 21 | N.C. |
| 5 | A0 | 20 | CS1 |
| 6 | N.C. | 19 | D0 |
| 7 | A1 | 18 | N.C. |
| 8 | N.C. | 17 | N.C. |
| 9 | A2 | 16 | D1 |
| 10 | A3 | 15 | D2 |
| 11 | /RD | 14 | D3 |
| 12 | GND | 13 | /WR |

Specifications (characteristics)

*Refer to application manual for details.

Absolute Max. rating

| Item | Symbol | Condition | Min. | Max. | Unit |
|-----------------------|--------|-----------|---------|---------|------|
| Supply voltage | VDD | Ta=+25 °C | -0.3 | +7.0 | V |
| Input voltage | VIO | Ta=+25 °C | GND-0.3 | VDD+0.3 | |
| Storage temperature * | TSTG | RTC-72421 | -55 | +85 | °C |
| | | RTC-72423 | -55 | +125 | |

*Stored as bare product after unpacking

Operating range

| Item | Symbol | Condition | Min. | Max. | Unit |
|-----------------------|--------|-----------|------|------|------|
| Power voltage | VDD | — | 4.5 | 5.5 | V |
| Clock voltage | VCLK | — | 2.0 | 5.5 | |
| Operating temperature | TOPR | RTC-72421 | -10 | +70 | °C |
| | | RTC-72423 | -40 | +85 | |

Stored as bare product after unpacking

Frequency characteristics

| Item | Symbol | Condition | Range | Unit |
|---------------------------------------|--------|----------------------------------|------------|-------------------------|
| Frequency precision | Δf / f | Ta=+25 °C VDD=5.0 V | 72421A | ±10 |
| | | | 72421B | ±50 |
| | | | 72423A | ±20 |
| | | | 72423 | ±50 |
| Frequency temperature characteristics | TOP | -10 °C to +70 °C (+25 °C) | +10 / -120 | ×10 ⁻⁶ |
| | | -40 °C to +85 °C (+25 °C) | +10 / -220 | |
| Frequency voltage characteristics | f/V | Ta=+25 °C, VDD=2.0 V to 5.5 V | ±5.0 Max. | ×10 ⁻⁶ /V |
| Aging | fa | Ta=+25 °C, VDD=5.0 V, First year | ±5.0 Max. | ×10 ⁻⁶ /year |

DC characteristics

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Applicable terminal |
|------------------------|---------|--|---------|------|---------|------|----------------------------------|
| Current consumption | IDD1 | CS1= 0 V Exclude input/output current | — | 1 | 10 | μA | — |
| | IDD2 | VDD=5 V VDD=2 V | — | 0.9 | 5 | | — |
| HIGH input voltage (1) | VIH1 | — | 2.2 | — | — | V | All inputs other than CS1 |
| LOW input voltage (1) | VIL1 | — | — | 0.8 | — | | |
| LOW output voltage (1) | VOL1 | IOL=2.5 mA | — | — | 0.4 | V | D0 to D3 |
| HIGH output voltage | VOH | IOH=-400 μA | 2.4 | — | — | | |
| LOW output voltage (2) | VOL2 | IOL=2.5 mA | — | — | 0.4 | μA | STD.P |
| OFF leak current | IoffFLK | V1=VDD/0 V | — | — | 10/-10 | | |
| Input capacity | C1 | Input frequency 1 MHz | — | 10 | — | pF | Input other than D0 to D3, STD.P |
| | | | — | 20 | — | | |
| HIGH input voltage (2) | VIH2 | VDD=2.0 V to 5.5 V | 4/5 VDD | — | — | V | CS1 |
| LOW input voltage (2) | VIL2 | — | — | — | 1/5 VDD | | |
| Input leak current (1) | ILK1 | V1=VDD/0 V | — | — | 1/-1 | μA | Input other than D0 to D3 |
| Input leak current (2) | ILK2 | — | — | — | 10/-10 | | |

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In order to meet customer needs in a rapidly advancing digital, broadband and ubiquitous society, we are committed to offering products that are one step ahead of the market and a rank above the rest in quality. To achieve our goals, we follow a “3D (three device) strategy” designed to drive both horizontal and vertical growth. We will to grow our three device categories of “Timing Devices”, “Sensing Devices” and “Optical Devices”, and expand vertical growth through a combination of products from these categories.

A Quartz MEMS is any high added value quartz device that exploits the characteristics of quartz crystal material but that is produced using MEMS (micro-electro-mechanical system) processing technology.

Market needs are advancing faster than previously imagined toward smaller, more stable crystal products, but we will stay ahead of the curve by rolling out products that exceed market speed and quality requirements. We want to further accelerate the 3D strategy by QMEMS.

Quartz devices have become crucial in the network environment where products are increasingly intended for broadband, ubiquitous applications and where various types of terminals can transfer information almost immediately via LAN and WAN on a global scale. Epson Toyocom Corporation addresses every single aspect within a network environment. The new corporation offers “Digital Convergence” solutions to problems arising with products for consumer use, such as, core network systems and automotive systems.



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At Epson Toyocom, all environmental initiatives operate under the Plan-Do-Check-Action(PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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In order to provide high quality and reliable products and services that meet customer needs, Epson Toyocom made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS 16949 is a global standard based on QS-9001, a severe standard corresponding to the requirements from the automobile industry.

► Explanation of the mark that are using it for the catalog

| | |
|--|---|
| | ► Pb free. |
| | ► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.) |
| | ► The products have been designed for high reliability applications such as Automotive. |

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/ traffic control equipment / and others requiring equivalent reliability.
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