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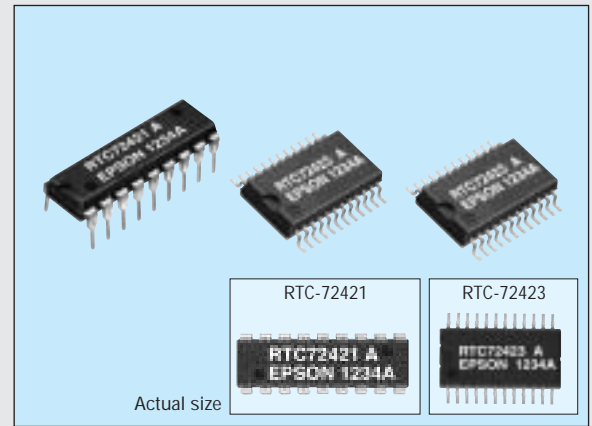
4-bit REAL TIME CLOCK MODULE

RTC-72421/72423

Product number (please refer to page 2)

Q4272421xxxxxx00**Q4272423xxxxxx00**

- Built-in crystal unit allows adjustment-free efficient operation.
- 12/24 h clock switchover function and automatic leap year setting.
- Interrupt masking.



The details are mentioned in the application manual.

<http://www.epsondevice.com>**Specifications (characteristics)****Absolute Max. rating**

| Item | Symbol | Condition | Min. | Max. | Unit |
|--------------------------|------------------|------------------------|----------|----------------------|------|
| Supply voltage | V _{DD} | T _a =+25 °C | -0.3 | 7.0 | V |
| Input and output voltage | V _{I/O} | T _a =+25 °C | GND -0.3 | V _{DD} +0.3 | |
| Storage temperature * | T _{STG} | 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 | V _{DD} | — | 4.5 | 5.5 | V |
| Supply voltage | V _{CLK} | — | 2.0 | 5.5 | V |
| Operating temperature * | T _{OPR} | RTC-72421 | -10 | 70 | °C |
| | | RTC-72423 | -40 | 85 | |

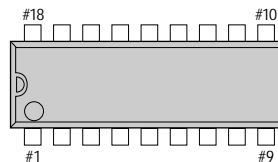
*No condensation

Frequency characteristics

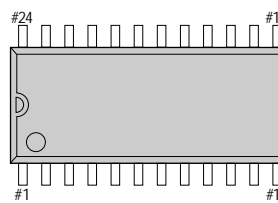
| Item | Symbol | Condition | Range | Unit | |
|---------------------------------------|-------------------|---|----------|--------------------------|--------------------|
| Frequency tolerance | Δf/f ₀ | T _a =+25 °C | 72421 A | ±10 | x 10 ⁻⁶ |
| | | | 72421 B | ±50 | |
| | | V _{DD} =5 V | 72423 A | ±20 | |
| | | | 72423 | ±50 | |
| Frequency temperature characteristics | T _{OP} | -10 °C to +70 °C (Reference at +25 °C) | +10/-120 | x 10 ⁻⁶ | |
| | | -40 °C to +85 °C (Reference at +25 °C) | +10/-220 | | |
| Frequency voltage characteristics | f/V | T _a =+25 °C V _{DD} =2.0 V to 5.5 V | ±5 Max. | x 10 ⁴ /V | |
| Aging | f _a | V _{DD} =5 V, T _a =+25 °C, first year | ±5 Max. | x 10 ⁻⁶ /year | |

DC characteristics

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Applicable terminal |
|------------------------|--------------------|--|---------------------|---------------------|------|------|---------------------------------------|
| Current consumption | I _{DD1} | CS ₁ =0 V Exclude input/output current | — | 1 | 10 | μA | — |
| | I _{DD2} | V _{DD} =5 V V _{DD} =2 V | — | 0.9 | 5 | | |
| "H" input voltage (1) | V _{IH1} | — | 2.2 | — | — | V | All inputs other than CS ₁ |
| "L" input voltage (1) | V _{IL1} | — | — | 0.8 | — | V | CS ₁ |
| Input leak current (1) | I _{LK1} | V ₁ =V _{DD} /0 V | — | ±1 | — | μA | Input other than Do to D ₃ |
| Input leak current (2) | I _{LK2} | | | ±10 | | | |
| "L" output voltage (1) | V _{OL1} | I _{OL} =2.5 mA | 2.4 | 0.4 | — | V | Do to D ₃ |
| "H" output voltage | V _{OH} | I _{OH} =-400 μA | — | — | — | V | — |
| "L" output voltage (2) | V _{OL2} | I _{OL} =2.5 mA | — | 0.4 | — | V | — |
| Off leak current | I _{OFFLK} | V ₁ =V _{DD} /0 V | — | 10 | — | μA | STD.P |
| Input capacity | C ₁ | Input frequency 1 MHz | 10 | — | — | pF | Input other than Do to D ₃ |
| | | | 20 | — | — | | |
| "H" input voltage (2) | V _{IH2} | V _{DD} =2 to 5.5 V | 4/5 V _{DD} | — | — | V | CS ₁ |
| "L" input voltage (2) | V _{IL2} | V _{DD} =2 to 5.5 V | — | 1/5 V _{DD} | — | V | CS ₁ |

Terminal connection**RTC-72421**

| No. | Pin terminal | No. | Pin terminal |
|-----|-----------------|-----|--------------------|
| 1 | STD.P | 18 | V _{DD} |
| 2 | CS ₁ | 17 | (V _{DD}) |
| 3 | ALE | 16 | (V _{DD}) |
| 4 | A ₀ | 15 | CS ₂ |
| 5 | A ₁ | 14 | D ₀ |
| 6 | A ₂ | 13 | D ₁ |
| 7 | A ₃ | 12 | D ₂ |
| 8 | RD | 11 | D ₃ |
| 9 | GND | 10 | WR |

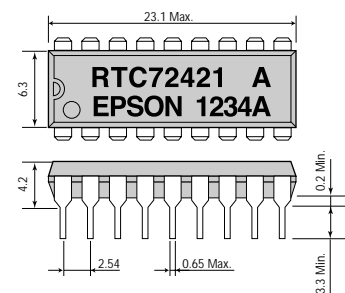
RTC-72423

| No. | Pin terminal | No. | Pin terminal |
|-----|-----------------|-----|--------------------|
| 1 | STD.P | 24 | V _{DD} |
| 2 | CS ₁ | 23 | (V _{DD}) |
| 3 | NC | 22 | (V _{DD}) |
| 4 | ALE | 21 | NC |
| 5 | A ₀ | 20 | CS ₂ |
| 6 | NC | 19 | D ₀ |
| 7 | A ₁ | 18 | NC |
| 8 | NC | 17 | NC |
| 9 | A ₂ | 16 | D ₁ |
| 10 | A ₃ | 15 | D ₂ |
| 11 | RD | 14 | D ₃ |
| 12 | GND | 13 | WR |

- (V_{DD}) and V_{DD} are to have the same level of voltage. Do not connect it to any external terminals.
- NC is not connected internally.

External dimensions

(Unit: mm)

RTC-72421 (DIP 18-pin)**RTC-72423 (SOP 24-pin)**