

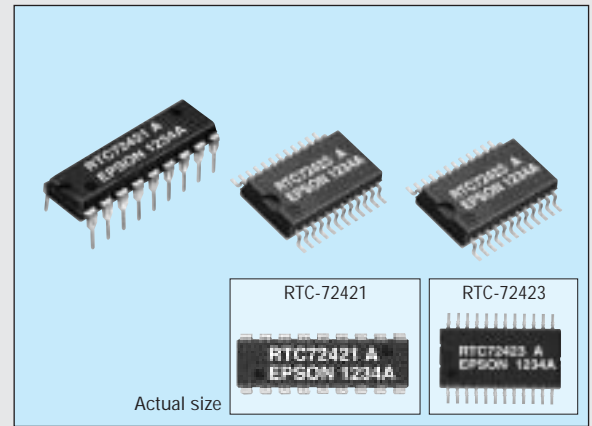
## 4-bit REAL TIME CLOCK MODULE

# 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 <sub>DD</sub>	T <sub>a</sub> =+25 °C	-0.3	7.0	V
Input and output voltage	V <sub>I/O</sub>	T <sub>a</sub> =+25 °C	GND -0.3	V <sub>DD</sub> +0.3	
Storage temperature *	T <sub>STG</sub>	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 <sub>DD</sub>	—	4.5	5.5	V
Supply voltage	V <sub>CLK</sub>	—	2.0	5.5	V
Operating temperature *	T <sub>OPR</sub>	RTC-72421	-10	70	°C
		RTC-72423	-40	85	

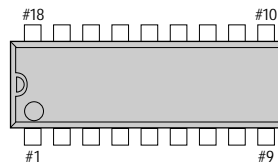
\*No condensation

**Frequency characteristics**

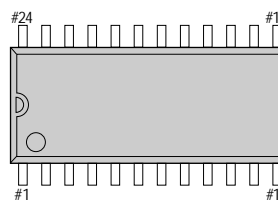
Item	Symbol	Condition	Range	Unit	
Frequency tolerance	Δf/f <sub>0</sub>	T <sub>a</sub> =+25 °C	72421 A	±10	x 10 <sup>-6</sup>
			72421 B	±50	
		V <sub>DD</sub> =5 V	72423 A	±20	
			72423	±50	
Frequency temperature characteristics	T <sub>OP</sub>	-10 °C to +70 °C (Reference at +25 °C)	+10/-120	x 10 <sup>-6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

**DC characteristics**

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

**Terminal connection****RTC-72421**

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

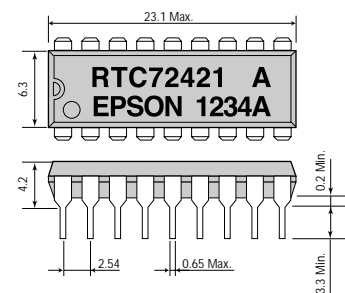
**RTC-72423**

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

- (V<sub>DD</sub>) and V<sub>DD</sub> 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)**