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).

RoHS Compliant

Product Number (Please contact us)
RTC-72421 : Q42724212xxxx00
RTC-72423 : Q42724232xxxx00





Actual size

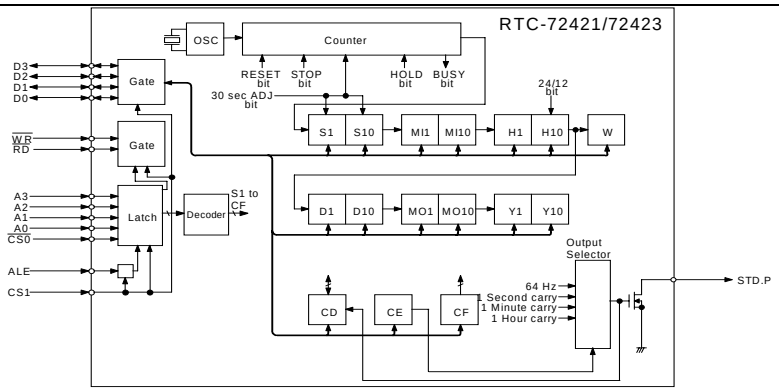
RTC-72421



RTC-72423



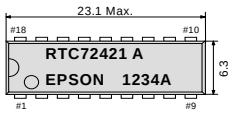
Block diagram



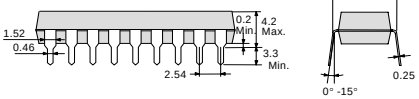
Terminal connection/External dimensions

(Unit:mm)

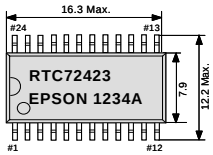
● **RTC-72421 (DIP 18-pin)**



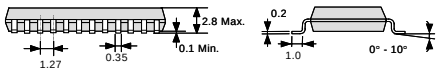
No.	Pin terminal	No.	Pin terminal
1	STD.P	18	VDD
2	/CS0	17	(VDD)
3	ALE	16	(VDD)
4	A0	15	CS1
5	A1	14	C0
6	A2	13	D1
7	A3	12	D2
8	/RD	11	D3
9	GND	10	/WR



● **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



Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

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	VI/O	Ta=+25 °C	GND-0.3	VDD+0.3	V
Storage temperature *	TSTG	RTC-72421	-55	+85	°C
		RTC-72423	-55	+125	°C

*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	V
Operating temperature	TOPR	RTC-72421	-10	+70	°C
		RTC-72423	-40	+85	°C

Stored as bare produc after unpacking

Frequency characteristics

Item	Symbol	Condition		Range	Unit
Frequency precision	Δf /f	Ta=+25 °C VDD=5.0 V	72421A	±10	×10-6
			72421B	±50	
			72423A	±20	
			72423	±50	
Frequency temperature characteristics	TOP	-10 °C to +70 °C (+25 °C)		+10 / -120	
		-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	VDD=5 V	—	1	10	μA	—
	IDD2		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		STD.P
OFF leak current	IOFFLK	V1=VDD/0 V			—	10/-10	μA	
Input capacity	C1	Input frequency 1 MHz			10	—	pF	Input other than D0 to D3
					20			D0 to D3, STD.P
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		D0 to D3

“QMEMS” EPSON TOYOCOM

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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PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

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.

WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than 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/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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

Pb Free	►Pb free.
RoHS Compliant	►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.)
For Automotive	►The products have been designed for high reliability applications such as Automotive.

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