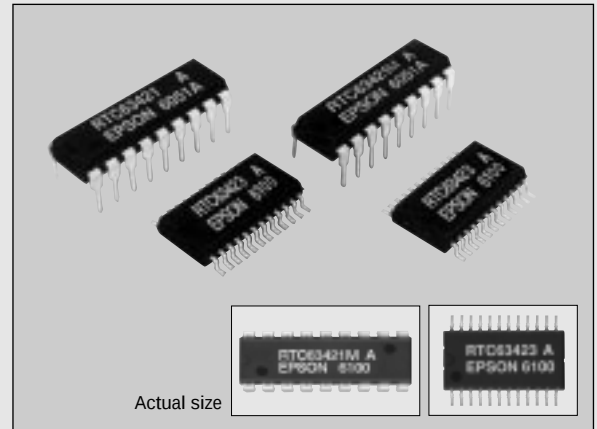


4-bit MULTIFUNCTIONAL REAL TIME CLOCK MODULE

RTC-63421/63421M/63423

- Built-in crystal unit allows adjustment-free efficient operation.
- Alarm interruption of sec. to month and day of week possible.
- Provided with microcomputer compatible bus interface.
- Standard signal output selectable in a range of 10min. to 1024 Hz.
- Either sec. to hour and day of week or sec. to year and day of week is selectable.
- Reference area of time /alarm register is settable. Provided with RAM bits.
(marked on "*" which is shown resistor table)
- Provided with START/STOP 30 second adjusting function.
- Similar mounting method (RTC-63423) to the used for normal type SMD IC.



Model	Applicable CPU
RTC-63421	Intel bus system
RTC-63421M	Motorola bus system
RTC-63423	"MOTEL" bus system

■ Specifications (characteristics)

■ Absolute Max. rating

Item	Symbol	Condition	Specifications	Unit
Power source voltage	V_{DD}	$T_a=25^\circ\text{C}$	-0.3 to 7.0	V
Input voltage	V_{IN}	$T_a=25^\circ\text{C}$	-0.3 to $V_{DD}+0.3$	
storage temperature	T_{STG}	RTC-63421 RTC-63421M	-55 to +85	$^\circ\text{C}$
		RTC-63423	-55 to +125	
Soldering condition	T_{SOL}	RTC-63421	Under 260°C within 10 sec. (lead part) (package should be less than 150°C)	
		RTC-63421M		
		RTC-63423	Twice at under 260°C within 10 sec. or under 230°C within 3 min.	

■ Operating range

Item	Symbol	Condition	Specifications	Unit
Operating voltage	V_{DD}	—	4.5 to 5.5	V
Operating temperature	T_{OPR}		-40 to +85	$^\circ\text{C}$
Data holding voltage	V_{DH}		2.0 to 5.5	V
CS data holding time	t_{CDR}	Refer to the data holding timing	2.0 min.	μs
Operation restoring time	t_R			

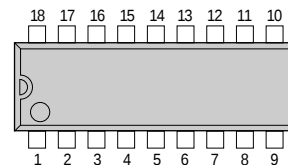
■ Frequency characteristics and current consumption characteristics

Item	Symbol	Condition	Specifications	Unit
Frequency tolerance	$\Delta f/f_0$	$T_a=25^\circ\text{C}$ $V_{DD}=5\text{V}$	63421A/63421MA	ppm
			63421B/63421MB	
			63423 A	
			63423	
Frequency temperature characteristics		-10 to +70 $^\circ\text{C}$ (25 $^\circ\text{C}$ reference temperature)	+10/-120	
		-30 to +85 $^\circ\text{C}$ (25 $^\circ\text{C}$ reference temperature)	+10/-220	
Aging	f_a	$V_{DD}=5\text{V}$, $T_a=25^\circ\text{C}$, first year	± 5 max.	ppm/Y
Shock resistance	S.R.	Three drops on a hard board from 75 cm or 3000G x 0.3ms x 1/2 sine wave x 3 directions	± 10 max.	ppm
Current consumption	I_{DD1}	CS1=0V	$V_{DD}=5\text{V}$	μA
	I_{DD2}		$V_{DD}=2\text{V}$	

Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.

■ Terminal connection

● RTC-63421/63421M

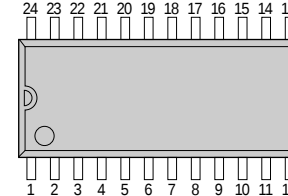


No.	63421/63421M	No.	63423
1	INTERRUPT	1	INTERRUPT
2	CS ₀	2	CS ₀
3	ALE	3	ALARM
4	A ₀	4	ALE
5	A ₁	5	A ₀
6	A ₂	6	30sec.Adj
7	A ₃	7	A ₁
8	RD (E *1)	8	68/80
9	GND	9	A ₂
10	WR (R/W *1)	10	A ₃
11	D ₃	11	RD (E *2)
12	D ₂	12	GND
13	D ₁	13	WR (R/W *2)
14	D ₀	14	D ₃
15	CS ₁	15	D ₂
16	(V _{DD})	16	D ₁
17	(V _{DD})	17	1Hz
18	V _{DD}	18	D ₀
		19	CS ₁
		20	STOP/START
		21	NC
		22	(V _{DD})
		23	(V _{DD})
		24	V _{DD}

* 1=63421M

* 2=Motorola bus system

● RTC-63423

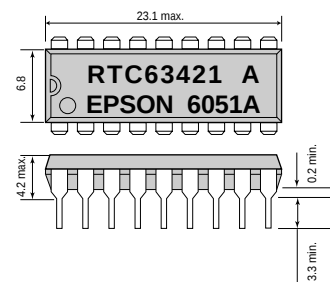


- (V_{DD}) is to be same level as V_{DD}. Do not connect it to any external terminals.
- NC is not connected internally.

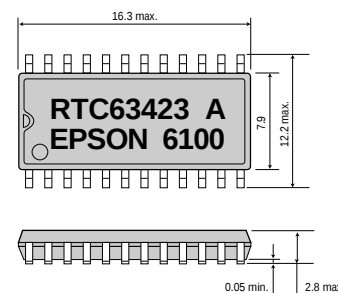
■ External dimensions

(Unit: mm)

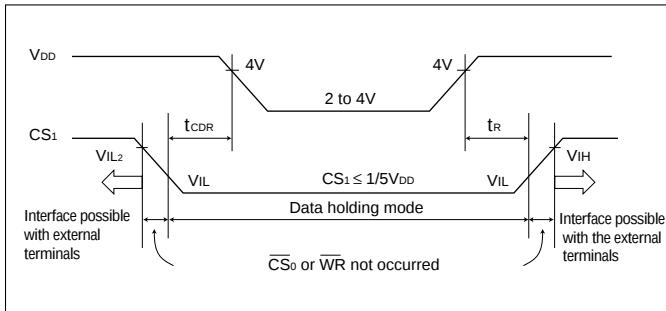
● RTC-63421/63421M



● RTC-63423



■ Data holding timing



■ Register table

Address	Symbol of register	BANK 0				Real time register name
		D ₃	D ₂	D ₁	D ₀	
0	R-S ₁	r-s ₈	r-s ₄	r-s ₂	r-s ₁	1 - sec. digit register
1	R-S ₁₀	*	r-s ₄₀	r-s ₂₀	r-s ₁₀	10 - sec. digit register
2	R-MI ₁	r-mi ₈	r-mi ₄	r-mi ₂	r-mi ₁	1 - min. digit register
3	R-MI ₁₀	*	r-mi ₄₀	r-mi ₂₀	r-mi ₁₀	10 - min. digit register
4	R-H ₁	r-h ₈	r-h ₄	r-h ₂	r-h ₁	1 - hour digit register
5	R-H ₁₀	*	r-PM/AM	r-h ₂₀	r-h ₁₀	10 - hour digit register
6	R-D ₁	r-d ₈	r-d ₄	r-d ₂	r-d ₁	1 - day digit register
7	R-D ₁₀	*		r-d ₂₀	r-d ₁₀	10 - day digit register
8	R-MO ₁	r-mo ₈	r-mo ₄	r-mo ₂	r-mo ₁	1 - month digit register
9	R-MO ₁₀	*			r-mo ₁₀	10 - month digit register
A	R-Y ₁	r-y ₈	r-y ₄	r-y ₂	r-y ₁	1 - year digit register
B	R-Y ₁₀	r-y ₈₀	r-y ₄₀	r-y ₂₀	r-y ₁₀	10 - year digit register
C	R-W	*	r-w ₄	r-w ₂	r-w ₁	Week register
D	C _D	IT/PLS ₂	IT/PLS ₁	MASK ₂	MASK ₁	Control register D
E	C _E	IRQ · FLAG ₀	RESET	IRQ · FLAG ₂	IRQ · FLAG ₁	Control register E
F	C _F	BANK ₁ BANK ₀	STOP	30 sec. ADJ	READ FLAG	Control register F

Symbol of register	BANK 1				Alarm register name
	D ₃	D ₂	D ₁	D ₀	
A-S ₁	a-s ₈	a-s ₄	a-s ₂	a-s ₁	1 - sec. digit register
A-S ₁₀	*	a-s ₄₀	a-s ₂₀	a-s ₁₀	10 - sec. digit register
A-MI ₁	a-mi ₈	a-mi ₄	a-mi ₂	a-mi ₁	1 - min. digit register
A-MI ₁₀	*	a-mi ₄₀	a-mi ₂₀	a-mi ₁₀	10 - min. digit register
A-H ₁	a-h ₈	a-h ₄	a-h ₂	a-h ₁	1 - hour digit register
A-H ₁₀	*	a-PM/AM	a-h ₂₀	a-h ₁₀	10 - hour digit register
A-D ₁	a-d ₈	a-d ₄	a-d ₂	a-d ₁	1 - day digit register
A-D ₁₀	*		a-d ₂₀	a-d ₁₀	10 - day digit register
A-MO ₁	a-mo ₈	a-mo ₄	a-mo ₂	a-mo ₁	1 - month digit register
A-MO ₁₀	*			a-mo ₁₀	10 - month digit register
A-W	*	r-w ₄	a-w ₂	a-w ₁	Week register
A-EMB	ae ₈	ae ₄	ae ₂	ae ₁	Area define register
C _c	*		TEST ₂	TEST ₁	Test register
C _D	*	CY ₂	CY ₁	CY ₀	Control register D
C _E	HD/SFT	24/12	CAL	D · P	Control register E
C _F	Same as BANK 0				Control register F

■ Switching characteristics

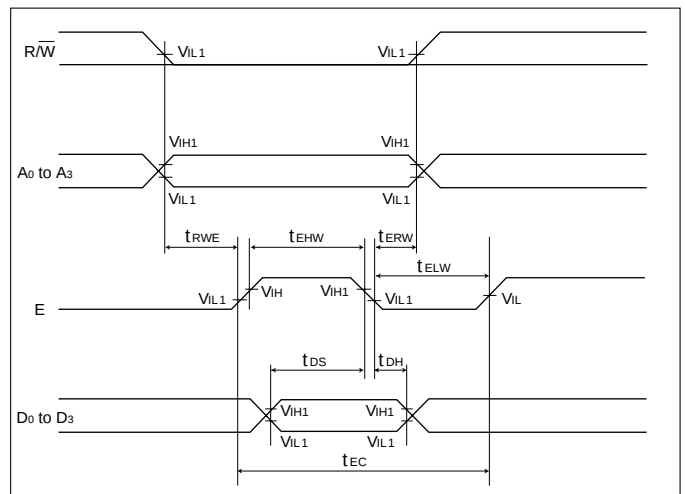
Motorola bus system

(V_{DD} = 5V ± 0.5V, T_a = 0 to + 70°C)

Item	Symbol	Min.	Max.	Unit
R/ $\overline{W}$, address setup time	t _{RWE}	100	—	ns
E "H" pulse width	t _{EHW}	220		
R/ $\overline{W}$, address hold time	t _{ERW}	20		
E "L" pulse width	t _{ELW}	220		
E cycle time	t _{EC}	500		
DATA setup time	t _{DS}	180		
DATA hold time	t _{DH}	20	120	
E to data (CL=150pF)	t _{RD}	—		
Data hold	t _{ED}	10	—	

Switching characteristics on the Intel bus system are the same as those for the RTC-6242 series.

■ Write mode



■ Read mode

