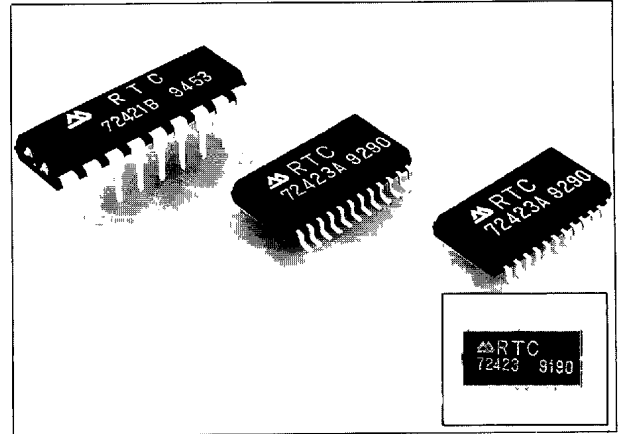


4-bit REAL TIME CLOCK MODULE

RTC-72421/72423

- The built-in quartz crystal makes regulation unnecessary and allows for easy design
- Direct bus-compatibility (120 ns. access time)
- ALE INPUT terminal available for 8048, 8051, and 8085 series
- Incorporates built-in Time (hour, minute, second), and Date (year, month, week, day) counters
- 12H/24H clock switchover function and automatic leap year setting
- Interrupt masking
- 30 seconds error adjustment function
- READ, WRITE, HOLD, STOP, RESET, and CHIP SELECT INPUTS
- Low current consumption and features a backup function



Specifications (characteristics)

Absolute Maximum Rating

Item	Symbol	Condition	Specifications	Unit
Power source voltage	V_{DD}	$T_a = 25^\circ\text{C}$	-0.3 to 7.0	V
Input and output voltage	$V_{I/O}$	$T_a = 25^\circ\text{C}$	GND -0.3 to $V_{DD} + 0.3$	V
Storage temperature	T_{STG}	RTC-72421	-55 to +85	$^\circ\text{C}$
		RTC-72423	-55 to +125	
Soldering condition	T_{SOL}	RTC-72421	Under 260°C within 10 sec (lead part) (package should be less than 150°C)	
		RTC-72423	Under 260°C within 10 sec \times up to 2 times 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}	RTC-72421	-10 to 70	$^\circ\text{C}$
		RTC-72423	-40 to 85	
Data holding voltage	V_{DH}		2.0 to 5.5	V
CSI 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

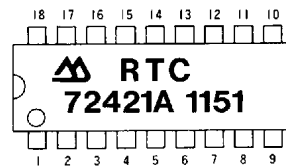
Item	Symbol	Condition	Specifications	Unit	
Frequency tolerance	$\Delta f/f_0$	$T_a = 25^\circ\text{C}$ $V_{DD} = 5\text{V}$	72421A	± 10	ppm
			72421B	± 50	
			72423A	± 20	
			72423	± 50	
Frequency temperature characteristics		-10 to +70°C (25°C reference temperature)	+10/-120		
Aging	f_a	$V_{DD} = 5\text{V}$, $T_a = 25^\circ\text{C}$, first year	± 5 MAX.	ppm/Y	
Shock resistance	S. R.	Drop test of 3 times on a hard board from 75cm height or 3000G \times 0.3ms \times 1/2 sine wave \times 3 directions	± 10 MAX.	ppm	
Current consumption	I_{DD1}	$CS_1 = 0\text{V}$	$V_{DD} = 5\text{V}$	10 MAX.	μA
	I_{DD2}	Exclude input/output current	$V_{DD} = 2\text{V}$	5 MAX.	

Electrical Characteristics

Item	Symbol	Condition	MIN	TYP	MAX	Unit	Applicable terminal
"H" input voltage (1)	V_{IH1}		2.2	-	-	V	All inputs other than CS_1
"L" input voltage (1)	V_{IL1}		-	-	0.8	V	
Input leak current (1)	I_{LK1}	$V_1 = V_{DD}/OV$	-	-	± 1	μA	Input other than D_0 to D_3
Input leak current (2)	I_{LK2}		-	-	± 10		
"L" output voltage (1)	V_{OL1}	$I_{OL} = 2.5\text{mA}$	-	-	0.4	V	D_0 to D_3
"H" output voltage	V_{OH}	$I_{OH} = -400\mu\text{A}$	2.4	-	-		
"L" output voltage (2)	V_{OL2}	$I_{OL} = 2.5\text{mA}$	-	-	0.4	V	STD.P
OFF leak current	I_{OFFLK}	$V_1 = V_{DD}/OV$	-	-	10	μA	
Input capacity	C_i	Input frequency 1MHz	-	10	-	pF	Input other than D_0 to D_3
			-	20	-		
"H" input voltage (2)	V_{IH2}	$V_{DD} = 2$ to 5.5V	$4/5V_{DD}$	-	-	V	CS_1
"L" input voltage (2)	V_{IL2}		-	-	$1/5V_{DD}$		

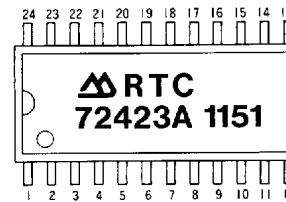
Terminal Connection

RTC-72421



- 1 STD P
- 2 \overline{CS}_1
- 3 ALE
- 4 A_0
- 5 A_1
- 6 A_2
- 7 A_3
- 8 \overline{RD}
- 9 GND
- 18 V_{DD}
- 17 (V_{DD})
- 16 (V_{DD})
- 15 CS_1
- 14 D_0
- 13 D_1
- 12 D_2
- 11 D_3
- 10 WR

RTC-72423



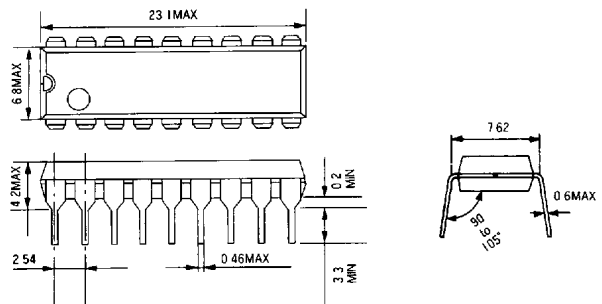
- 1 STD P
- 2 \overline{CS}_1
- 3 NC
- 4 ALE
- 5 A_0
- 6 NC
- 7 A_1
- 8 NC
- 9 A_2
- 10 A_3
- 11 \overline{RD}
- 12 GND
- 24 V_{DD}
- 23 (V_{DD})
- 22 (V_{DD})
- 21 NC
- 20 CS_1
- 19 D_0
- 18 NC
- 17 NC
- 16 D_1
- 15 D_2
- 14 D_3
- 13 WR

- (V_{DD1}) is to be same level of voltage as of V_{DD} . Do not connect it to any external terminals
- NC is not connected internally

External Dimensions

(Unit: mm)

RTC-72421



RTC-72423

