

REAL TIME CLOCK MODULE (I²C-Bus)
Low current consumption



Product Number
RX-8564LC : Q418564C2000100

RX-8564LC

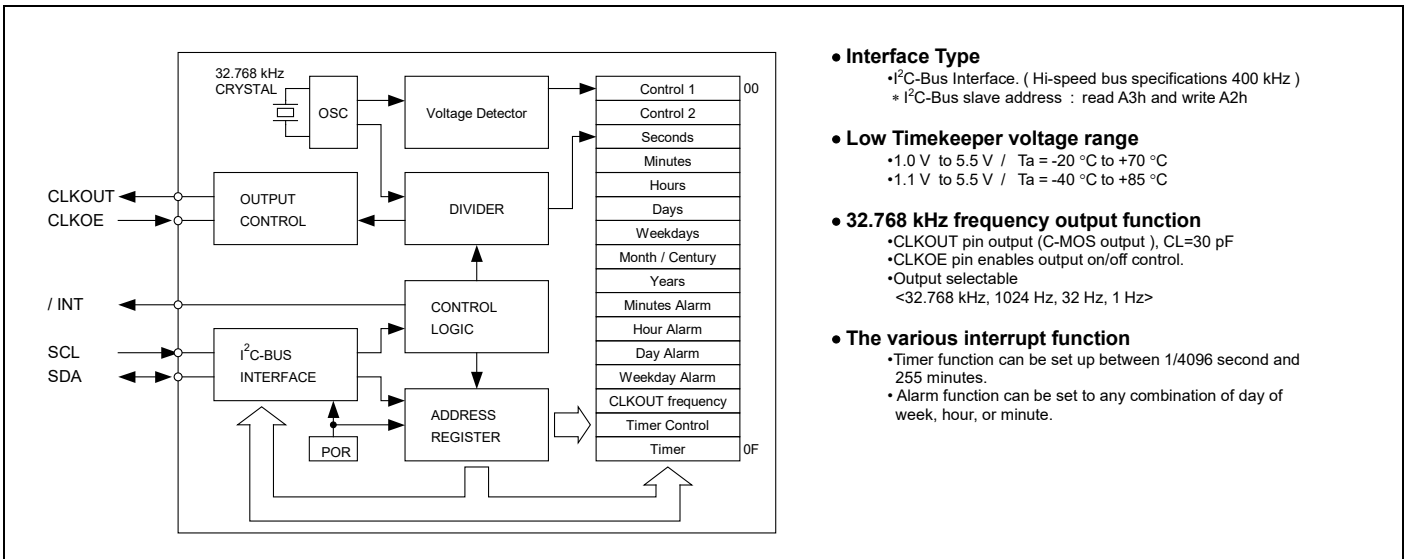
- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : I²C-Bus Interface (400 kHz)
- Operating voltage range : 1.8 : V to 5.5 V
- Timekeeper voltage range : 1.0 : V to 5.5 V / -20 °C to +70 °C
- Low backup current : 275 : nA / 3.0 V(Typ.)
- 32.768 kHz frequency output function : C-MOS output With Control Pin
- The various functions include full calendar, alarm, timer, and power supply voltage monitoring function

* The I²C-Bus is a trademark of NXP Semiconductors



Block diagram

Overview



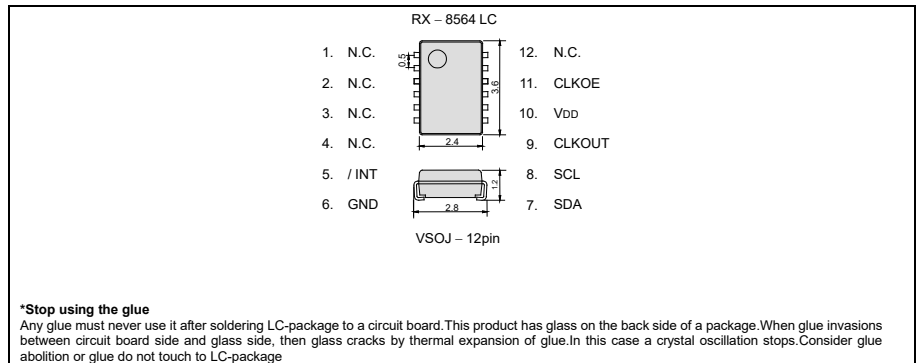
- **Interface Type**
 - I²C-Bus Interface. (Hi-speed bus specifications 400 kHz)
 - * I²C-Bus slave address : read A3h and write A2h
- **Low Timekeeper voltage range**
 - 1.0 V to 5.5 V / Ta = -20 °C to +70 °C
 - 1.1 V to 5.5 V / Ta = -40 °C to +85 °C
- **32.768 kHz frequency output function**
 - CLKOUT pin output (C-MOS output), CL=30 pF
 - CLKOE pin enables output on/off control.
 - Output selectable
 - <32.768 kHz, 1024 Hz, 32 Hz, 1 Hz>
- **The various interrupt function**
 - Timer function can be set up between 1/4096 second and 255 minutes.
 - Alarm function can be set to any combination of day of week, hour, or minute.

Pin Function

Terminal connection / External dimensions

(Unit:mm)

Signal Name	Input/Output	Function															
SCL	Input	Serial clock input pin.															
SDA	Bi-directional	Data input and output pin.															
CLKOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS) CLKOE pin control the condition of CLKOUT with FE-bit, etc.															
CLKOE	Input	<table border="1"> <thead> <tr> <th>CLKOE pin input</th> <th>FE bit</th> <th>CLKOUT pin output (C-MOS)</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td>1</td> <td>Output (LOW)</td> </tr> <tr> <td></td> <td>0</td> <td>OFF (LOW)</td> </tr> <tr> <td>LOW</td> <td>1</td> <td>OFF (LOW)</td> </tr> <tr> <td></td> <td>0</td> <td>OFF (LOW)</td> </tr> </tbody> </table>	CLKOE pin input	FE bit	CLKOUT pin output (C-MOS)	HIGH	1	Output (LOW)		0	OFF (LOW)	LOW	1	OFF (LOW)		0	OFF (LOW)
CLKOE pin input	FE bit	CLKOUT pin output (C-MOS)															
HIGH	1	Output (LOW)															
	0	OFF (LOW)															
LOW	1	OFF (LOW)															
	0	OFF (LOW)															
/INT	Output	Interrupt output (N-ch open drain)															
V _{DD}	—	Connected to a positive power supply.															
GND	—	Connected to a ground.															



Specifications (characteristics)

* Refer to application manual for details.

Recommended Operating Conditions

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power voltage	V _{DD}	—	1.8	3.0	5.5	V
Clock voltage	V _{CLK}	—	V _{LOW}	3.0	5.5	V
Operating temperature	T _{OPR}	—	-40	+25	+85	°C

Low voltage detection

Item	Symbol	Conditions	Typ.	Max.	Unit
Low voltage detection	V _{LOW}	LC Ta = -20 °C ~ +70 °C Ta = -40 °C ~ +85 °C	0.9 0.9	1.2 1.3	V

Frequency characteristics

Item	Symbol	Conditions	Rating	Unit
Frequency tolerance	Δf/f	Ta = +25 °C V _{DD} = 3.0 V	B: 5 ± 23 *	× 10 ⁻⁶

* Please ask for tighter tolerance. (Equivalent to ±1 minute of monthly deviation)

Current consumption characteristics

Ta = -40 °C to +85 °C

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Current Consumption	I _{BK}	f _{SCL} = 0 Hz CLKOE = GND CLKOUT ; output OFF (LOW)	V _{DD} = 5 V	-	330	800	nA
		V _{DD} = 3 V	-	275	700		
Current Consumption	I _{32k}	f _{SCL} = 0 Hz CLKOE = V _{DD} CLKOUT ; 32.768 kHz output ON (Output=OPEN ; CL = 0 pF)	V _{DD} = 5 V	-	2.5	3.4	μA
		V _{DD} = 3 V	-	1.5	2.2		

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