REAL TIME CLOCK MODULE (I²C-Bus)

Low current consumption

RX8010SJ

Product Number
RX8010SJ : X1B000242000100

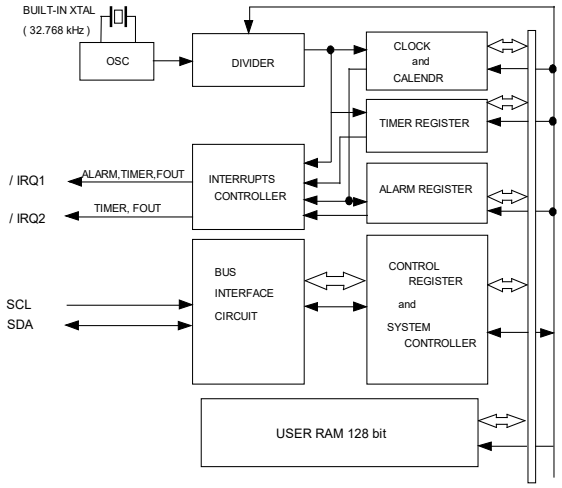


- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : I²C-Bus interface (400 kHz)
- Operating voltage range : 1.6 V to 5.5 V
- Wide voltage for time keeping. : 1.1 V to 5.5 V
- Low backup current : 160 nA / 3 V (Typ.)
- Frequency output function : C-MOS or Open-Drain output
- Built-in user RAM : 128 bit (8 bit x 16, SRAM)
- The various functions include full calendar, alarm, timer, etc.
- This product is conform to industrial standard SOP8 package, and it can be mounted to the common land pattern.

Epson prepared Linux driver for development.
(http://www5.epsondevice.com/en/information/support/linux_rtc/)

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Block diagram



Overview

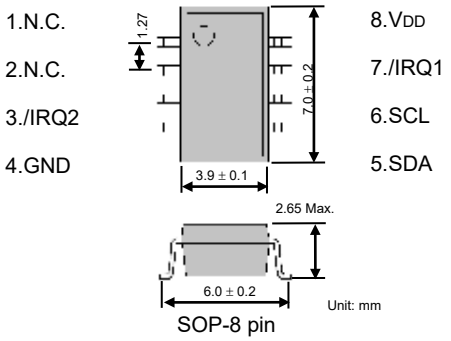
- **Interface Type**
  - I²C-Bus high-speed bus specifications. (400 kHz)
- **Frequency output function**
  - It may select a CMOS or open drain output
  - Output frequency can be selected as 32.768kHz, 1024Hz, 1Hz.
- **Timer function**
  - Timer function can be set up between 1/4096 second and 65535 hours.
  - Timing period are 1hour, 1min, 64Hz, 4096Hz.
  - It is recorded automatic to TF-bit at the time of event occurrence, and possible to output with /IRQ1 or /IRQ2 pin.
- **Alarm function**
  - Alarm function can be set to day of week, day, hour, and minute.
  - It is recorded automatic to AF-bit at the time of event occurrence, and possible to output with /IRQ1 pin.
- **User RAM**
  - 128 bit (8 bit x 16, SRAM)

Pin Function

Signal Name	Input / Output	Function
SCL	Input	This is a shift clock input pin for serial data transmission.
SDA	Input/Output	This is the data input/output pin for serial data transfer.
/ IRQ1	Output	This pin outputs interrupt signals ("L" level) for alarm, timer, time update, and 32.768kHz. This is an N-ch open-drain output.
/ IRQ2	Output	This pin outputs interrupt signals ("L" level) for timer and FOUT. This is a C-MOS output.
VDD	Supply	This is a power-supply pin.
GND	Supply	This pin is connected to a ground.

Terminal connection / External dimensions (Unit:mm)

RX8010SJ



SOP-8 pin

The metal case inside of the molding compound may be exposed on the top or bottom of this product. This purely cosmetic and does not have any effect on quality, reliability or electrical specs.

Specifications (characteristics)

∗ **Refer to application manual for details.**

■ Recommended Operating Conditions

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power voltage	VDD	—	1.6	3.0	5.5	V
Clock voltage	VCLK	—	1.1	3.0	5.5	V
Operating temperature	TOPR	—	-40	+25	+85	°C

■ Frequency characteristics

Item	Symbol	Conditions	Rating	Unit
Frequency tolerance	Δf/f	Ta = +25 °C VDD = 3.0 V	B: 5 ± 23 *	× 10⁻⁶
Oscillation Start-up time	tSTA	Ta = +25 °C VDD = 1.6 V ~ 5.5 V	1 Max.	s
		Ta = -40 °C to +85 °C VDD = 1.6V ~ 5.5V	3 Max.	s

*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	IBK	Input pins are "L" fCLK = 0 Hz, /IRQ1,2 = OFF TSEL2="1"	VDD = 5 V	-	-	350	nA
			VDD = 3 V	-	160	320	
	I32k	fCLK = 0 Hz, /IRQ1: 32.768 kHz ON, /IRQ2: OFF	VDD = 5 V	-	0.60	1.10	µA
			VDD = 3 V	-	0.52	0.90	

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

	►Pb free.
	►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.)
	►Designed for automotive general equipment.
	►Designed for automotive applications related to driving and safety.

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