REAL TIME CLOCK MODULE (I^2C-Bus)

High-Stability

RoHS Compliant

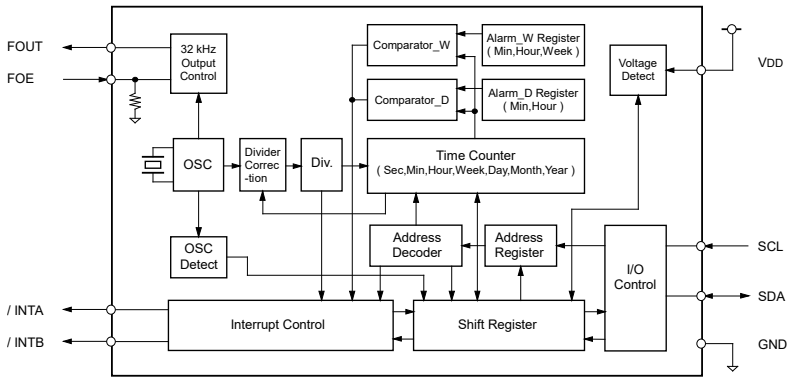
Product Number
RX-8025SA AA : Q41802552000100
RX-8025SA AC : Q41802551000200

RX-8025SA



- Built-in 32.768 kHz crystal unit : Frequency adjusted for high accuracy ($\pm 5 \times 10^{-6}$ / T_a = +25 °C)
- Interface Type : I^2C-Bus Interface (400 kHz)
- Operating voltage range : 1.70 V to 5.5 V
- Wide voltage for timekeeping : 1.15 V to 5.5 V
- Various detection Functions : Ex. Oscillation stop detection function
- Low backup current : 0.48 µA / 3 V (Typ.)
- 32.768 kHz frequency output function : C-MOS output with OE pin.
- The various functions include full calendar, Dual alarm, Periodic interruption.

Block diagram



Overview

- **Features built-in 32.768 kHz crystal unit**
  - Frequency adjusted for high accuracy.
    ($\pm 5 \times 10^{-6}$ / T_a = +25 °C)
    (Equivalent to ±13 seconds of monthly deviation)
- **The various detection function**
  - Power supply voltage monitoring function (with selectable detection threshold)
  - Stop detection function
  - Power-on reset detection function
- **Alarm function and Periodic interrupt function**
  - The periodic interrupt outputs.
    Dual Alarm function.
    (Date of the week , Hour , minute)
    (Month, Day, Hour, Minute)

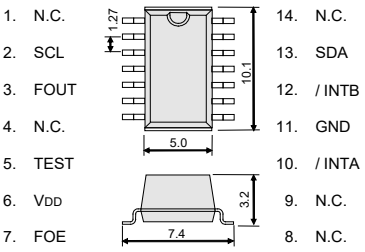
Pin Function

Signal Name	Input / output	Function
SCL	Input	Serial clock input pin
SDA	Bi-directional	Data input and output pin
FOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS)
FOE	Input	(see table below)
/ INTA	Output	Interrupt output A pin (N-ch open drain)
/ INTB	Output	Interrupt output B pin (N-ch open drain)
TEST	—	* Used by the manufacture for testing. (Do not connect externally.)
VDD	—	Connected to a positive power supply.
GND	—	Connected to a ground.

FOE input	/CLEN1 bit	/CLEN2 bit	FOUT output
L	X	X	OFF (LOW)
H	0	0	32.768 kHz
	0	1	32.768 kHz
	1	0	32.768 kHz
	1	1	OFF(LOW)

Terminal connection / External dimensions (Unit:mm)

RX – 8025 SA



SOP – 14 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	—	1.7	3.0	5.5	V
Clock voltage	VCLK	—	1.15	3.0	5.5	V
Operating temperature	TOPR	—	-40	+25	+85	°C

■ Frequency characteristics

Item	Symbol	Conditions	Range	Unit
Frequency tolerance	Δ f / f	Ta = +25 °C VDD = 3.0 V	AA: 5 ± 5 *1) AC: 0 ± 5 *2)	× 10^{-6}
Oscillation start-up time	tSTA	Ta = +25 °C VDD = 2.0 V	1 Max.	s
Frequency voltage characteristics	f / V	Ta = +25 °C VDD = 2.0 V to 5.5 V	± 1 Max.	× 10^{-6}

*1) *2) Equivalent to ±13 seconds of monthly deviation (excluding offset).

■ Current consumption characteristics

Ta = -40 °C to +85 °C

Item	Symbol	Conditions		Min.	Typ.	Max.	Unit
Curent Consumption	IBK	fSCL = 0Hz FOE = GND FOUT ; output OFF(LOW)	VDD = 5 V	-	0.60	1.80	µA
			VDD = 3 V	-	0.48	1.20	
	I32k	fSCL = 0Hz VDD, FOE = 5.5 V FOUT ; output ON (Output=OPEN; CL = 0 pF)	VDD = 5.5 V	-	3.0	6.5	µA

■ Power supply detection voltage

Ta = -30 °C to +70 °C

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
High-voltage mode	VDETH	VDD pin	1.90	2.10	2.30	V
Low-voltage mode	VDETL	VDD pin	1.15	1.30	1.45	V

►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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