

## REAL TIME CLOCK MODULE (I<sup>2</sup>C-Bus)

High-Stability

# RX-8025SA

- Built-in 32.768 kHz crystal unit
- Interface Type
- Operating voltage range
- Wide voltage for timekeeping
- Various detection Functions
- Low backup current
- 32.768 kHz frequency output function
- The various functions include full calendar, Dual alarm, Periodic interruption.

: Frequency adjusted for high accuracy  
 $(\pm 5 \times 10^{-6} / T_a = +25^\circ C)$

: I<sup>2</sup>C-Bus Interface (400 kHz)

: 1.70 V to 5.5 V

: 1.15 V to 5.5 V

: Ex. Oscillation stop detection function

: 0.48  $\mu$ A / 3 V (Typ.)

: C-MOS output with OE pin.

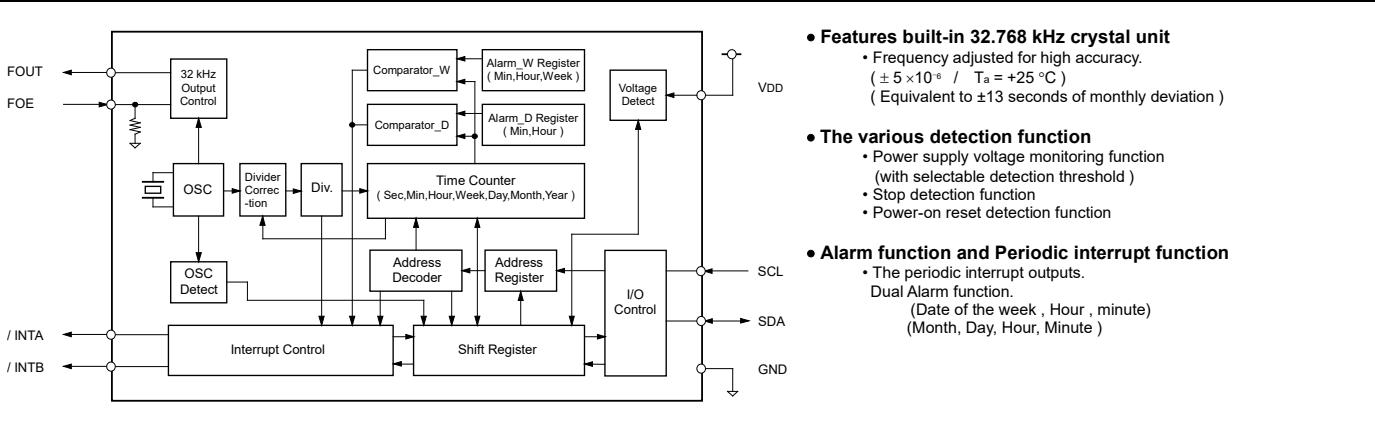


Product Number  
**RX-8025SA AA : Q41802552000100**  
**RX-8025SA AC : Q41802551000200**



## Block diagram

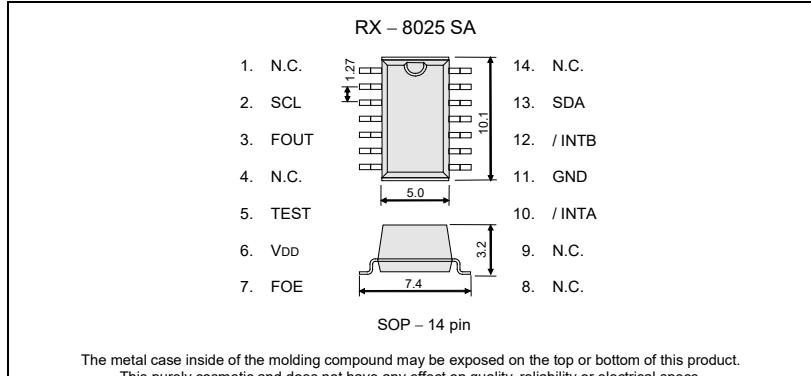
## Overview



## 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			
FOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS)			
		FOE input	CLEN1 bit	CLEN2 bit	FOUT output
		L	X	X	OFF (LOW)
			0	0	32.768 kHz
		H	0	1	32.768 kHz
			1	0	32.768 kHz
			1	1	OFF(LOW)
/INTA	Output	Interrupt output A pin (N-ch open drain)			
/INTB	Output	Interrupt output B pin (N-ch open drain)			
TEST	—	* Used by the manufacturer for testing. (Do not connect externally.)			
VDD	—	Connected to a positive power supply.			
GND	—	Connected to a ground.			



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	V <sub>DD</sub>	—	1.7	3.0	5.5	V
Clock voltage	V <sub>CLK</sub>	—	1.15	3.0	5.5	V
Operating temperature	TOPR	—	-40	+25	+85	°C

### ■ Frequency characteristics

Item	Symbol	Conditions	Range	Unit
Frequency tolerance	$\Delta f / f$	T <sub>a</sub> = +25 °C V <sub>DD</sub> = 3.0 V	AA: 5 ± 5 * <sup>1)</sup> AC: 0 ± 5 * <sup>2)</sup>	$\times 10^{-6}$
Oscillation start-up time	t <sub>STA</sub>	T <sub>a</sub> = +25 °C V <sub>DD</sub> = 2.0 V	1 Max.	s
Frequency voltage characteristics	f / V	T <sub>a</sub> = +25 °C V <sub>DD</sub> = 2.0 V to 5.5 V	± 1 Max.	$\times 10^{-6}$

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

### ■ Current consumption characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Consumption	I <sub>BK</sub>	f <sub>SCL</sub> = 0Hz FOE = GND FOUT ; output OFF(LOW)	V <sub>DD</sub> = 5 V	-	0.60	1.80
			V <sub>DD</sub> = 3 V	-	0.48	1.20
I <sub>32k</sub>		f <sub>SCL</sub> = 0Hz V <sub>DD</sub> , FOE = 5.5 V FOUT ; output ON ( Output=OPEN; CL = 0 pF )	V <sub>DD</sub> = 5.5 V	-	3.0	6.5
						μA

### ■ Power supply detection voltage

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
High-voltage mode	V <sub>DETH</sub>	V <sub>DD</sub> pin	1.90	2.10	2.30	V
Low-voltage mode	V <sub>DETL</sub>	V <sub>DD</sub> 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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