



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



**For Automotive**  
**SERIAL INTERFACE REAL TIME CLOCK MODULE**



Product Number (Please contact us)  
**RA-4565SA : Q41A46552xxxx00**

**RA - 4565 SA**

- Built in frequency adjusted 32.768 kHz crystal.
- Interface Type : 4-wire serial interface
- Wide operating voltage range : 1.6 V to 5.5 V
- Wide Timekeeper voltage range : 1.5 V to 5.5 V  
T<sub>a</sub> = -40 °C to +125 °C
- Extended operating temperature range: -40 °C to +125 °C
- 32.768 kHz frequency output function : Open drain output with Control Pin
- 32.768 kHz Clock/calendar function, auto leap year correction function, alarm interrupt function, etc.
- Conforms to AEC-Q200

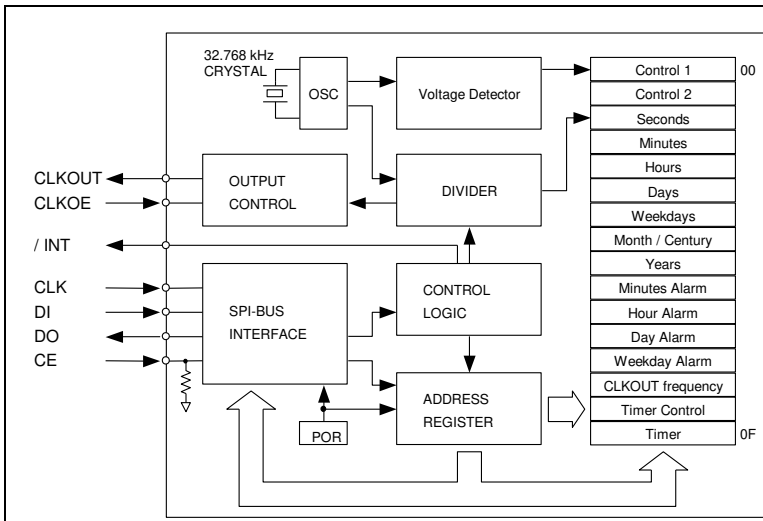


Actual size



**Block diagram**

**Overview**

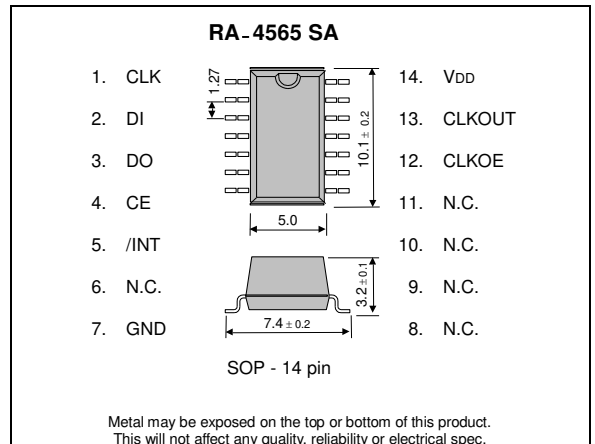


- **Wide operating temperature range**
  - -40 °C to +125 °C
- **Clacking-status detection function**
  - It can judge the validity of data after backup operation return by a status of VL-bit.
- **32.768 kHz frequency output function**
  - CLKOUT pin output (Open Drain output)
  - Output frequency can be selected as 32.768 kHz, 1024 Hz, 32 Hz, or 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 day of week, day, hour, or minute.

**Pin Function**

**Terminal connection / External dimensions** (Unit:mm)

Terminal	Directions	Functions
CE	Input	Chip enabled input.
CLK	Input	Serial clock input.
DI	Input	Data input.
DO	Output	Data output.
CLKOUT	Output	The CLKOUT pin is a clock output ( open drain output ) pin with control output. ( Output frequency can be selected as 32.768 kHz, 1024 Hz, 32 Hz, or 1 Hz. )
CLKOE	Input	The CLKOE pin is an input pin used to control the output mode of the CLKOUT output pin. During the initial power-on (when power is applied from 0 V), if the CLKOE input pin is at high level (= H), the power-on reset function selects 32.768 kHz as the frequency.
/INT	Output	Interrupts output by Alarm and Timer events. ( Open drain output )
VDD	-	VDD
GND	-	GND



**Specifications (characteristics)**

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

■ Recommended Operating Conditions

Item	Symbol	Conditions	Min.	Typ.	Max.	unit
Operating voltage	VDD	-	1.6	3.0	5.5	V
Timekeeper voltage	VCLK	-	1.5	3.0	5.5	V
Operating temperature	TOPR	-	-40	+25	+125	°C

■ Frequency characteristics

Item	Symbol	Conditions	Rating	unit
Frequency stability	$\Delta f / f$	T <sub>a</sub> = +25 °C VDD = 3.0 V	5 ± 23 <sup>*1</sup>	× 10 <sup>-6</sup>
Oscillation start up time	tSTA	T <sub>a</sub> = +25 °C VDD = 1.6 V	1.5 Max.	s
		T <sub>a</sub> = -40 °C to +125 °C VDD = 3.0 V	3.0 Max.	s

\*1) Equivalent to 1 minutes of monthly deviation.

■ Current consumption under backup mode.

Item	Symbol	Conditions	Min.	Typ.	Max.	unit
Standby current.	IBK	fsCL = 0 Hz CLKOE = "L"	+125 °C	1.0	2.0	μA
		VDD = 5 V				
		fsCL = 0 Hz CLKOE = "L"	+125 °C	0.8	1.6	
		VDD = 3 V				