

SEIKO EPSON CORPORATION
Sales & Marketing Division.
MD Sales & Marketing Department.
MICRODEVICES Operations Division.
MD Production Control & Procurement Dept.

Real Time Clock Module RA-4565SA EOL notice

Dear Valued Customer:

Thank you for choosing SEIKO EPSON CORP. Timing Products as your products of choice.

Regarding the IC built into the following crystal devices, we have received End of Life notice of IC from our IC supplier. Due to there are no alternative IC, we need to discontinue our products that is using applicable IC. The Last time buy, and the Last shipment schedule are following.

We appreciate if you will confirm the final number of orders for these products.

1. Products Affected, Recommend Alternatives

Product Name	P/N	Recommended Alternative
RA-4565SA	Q41A465xxxxxx xx	RA4000CE

2. Schedule

項目	日程
Submit required information	24 of April 2026 ^(*1)
Last time Buy	24 of April 2026
Last shipment	End of April 2027 ^(*2)

^(*1) Please provide lifetime required information for the RA-4565SA, due to a final purchase deadline for the IC.

^(*2) Please understand that it may be shipped after the final shipping date depending on the order status.

3. Conclusion / Request

We would greatly appreciate your approval of this EOL notice and issue your LTB of the affected products by above schedule.

In addition, please note that products on the end of life may not be able to submit survey items and data related to chemical substance in products in the future.

If you have any questions or require additional information about this ECN notice, please contact your local EPSON device sales office.

Sincerely yours,
SEIKO EPSON CORPORATION

RA-4565SA

Recommended Alternative

TDPC25-038E Rev.2

October 7, 2025

SEIKO EPSON CORPORATION

MICRODEVICES Operations Division.

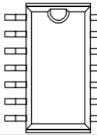
MD Production Control & Procurement Dept.

Schedule

	CY25	CY26	CY27
RA-4565SA	● October / EOL notice	● 24th of April / Submit required information ● 24th of April / Last time buy ● End of October / Last shipment	
Recommended Alternative RA4000CE	Currently in mass production		

Comparison of specifications

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		RA-4565SA	RA4000CE(Opt.D)
PKG size		SA(10.1x7.4x3.2mm)	CE(3.2x2.5x1.0mm)
Interface Type		4Wire-SPI	←
Operating temperature		-40~125℃	←
Clock supply voltage		1.5~5.5V	1.3~5.5V
Frequency stability		5±23ppm+Temperature characteristics (MAX 100ppm over)	~105℃:±8ppm(Including temperature characteristics) ~125℃:±50ppm(Including temperature characteristics)
Current consumption Vdd=5.0V	Typ.	1.0uA	0.35uA
	Max.	2.0uA	1.8uA
Overview	Timer function	244.14 μs ~ 255 min	976 μs ~ 32years
	Time stamp function	Day, day of the week, hour, minute	Day, day of the week, hour, minute,second
	FOUT	1, 32, 1024, 32768Hz	1, 1024, 32768Hz, OFF
	Motion detection	Voltage drop, Power on reset, Oscillation stop	Voltage drop, Power on reset, Oscillation stop, Temperature compensation stopped
Terminal connection		1. CLK 2. DI 3. DO 4. CE 5. /INT 6. N.C. 7. GND  14. VDD 13. CLKOUT 12. CLKOE 11. N.C. 10. N.C. 9. N.C. 8. N.C. 	DI VDD CE /INT N.C. 1 2 3 4 5  10 9 8 7 6 SOUT GND CLK DO EVIN2

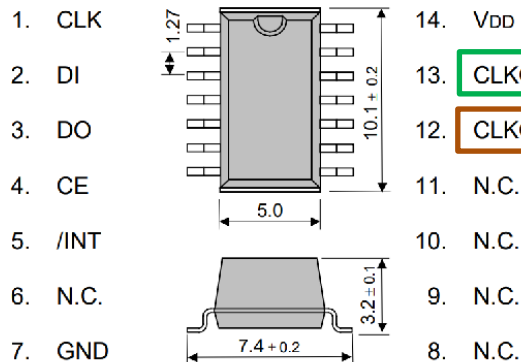


Package shape and Pin layout comparison

EPSON

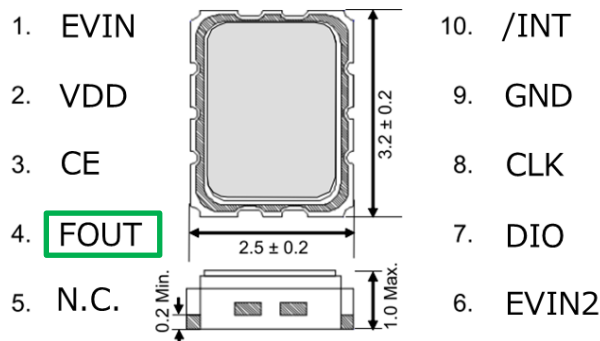
- 1.The RA-4565SA and RA4000CE differ in package size, pin layout, and functionality.
- 2.The RA4000CE A option has a pin with the same function as CLKOUT, but it lacks the CLKOE pin, and the communication protocol is different.
- 3.The RA4000CE D option does not include CLKOUT and CLKOE, but the communication protocol remains the same.

RA-4565SA



* 4wire-SPI

RA4000CE(Opt.A)



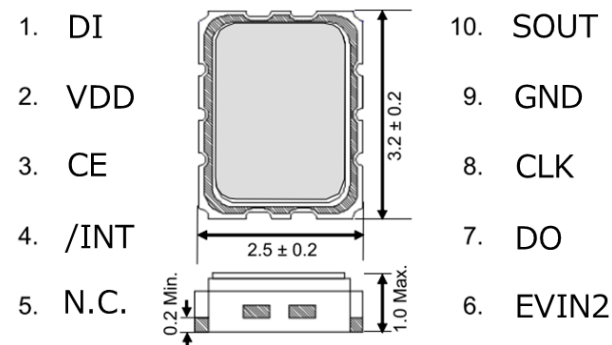
* 3wire-SPI

DIO: Serial data input/output pin (3wire)

FOUT: Same functionality as CLKOUT

EVIN2: External event input pin

RA4000CE(Opt.D)



* 4wire-SPI

SOUT: Status output terminal

EVIN2: External event input pin

Electrical characteristic comparison

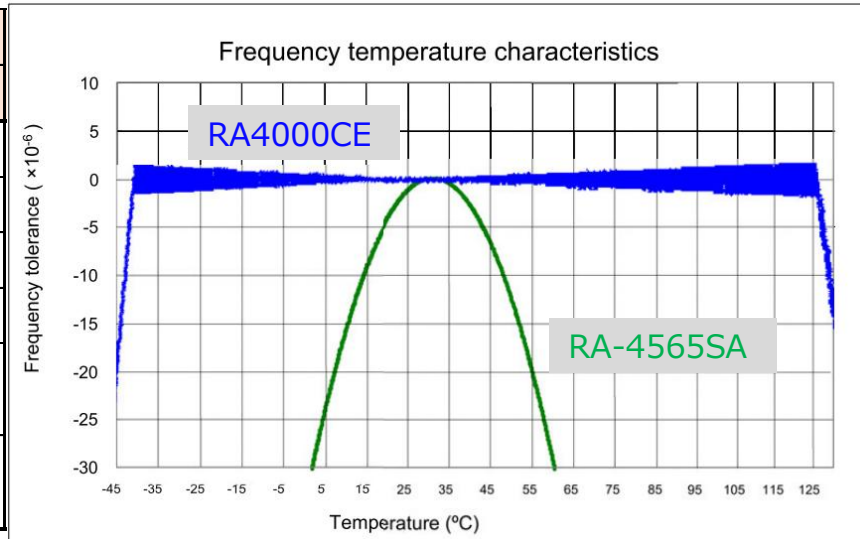
EPSON

- 1.RA4000CE features lower operating voltage and lower power consumption.
- 2.RA4000CE compensates for fluctuations in oscillation frequency caused by temperature changes.

Electrical characteristic

項目	RA-4565SA			RA4000CE		
	Min	Typ	Max	Min	Typ	Max
Operating voltage[V]	1.6	3.0	5.5	1.6	3.0	5.5
Temp.compensated Voltage[V]	—	—	—	1.6	3.0	5.5
Clock supply soltage[V]	1.5	3.0	5.5	1.3	3.0	5.5
Current consumption[μ A]	—	1.0	2.0	—	0.35	1.8
Frequency stability[ppm] -40~105°C	-18	5	28	-8.0	0.0	8.0
Frequency stability[ppm] 105~125°C	+*1	+*1	+*1	-50	5	50

Frequency-temperature characteristics



*1Temperature characteristics

Register table comparison

- 1.Replacement requires software modifications to the host MCU, due to differences in the register table layout and contents.
- 2.When using the additional features of the RA4000CE, multiple register page (bank) settings are required.

RA-4565SA

Address [h]	Function	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
00	Control 1	TEST	x	STOP	x	TEST	x	x	x
01	Control 2	x	x	x	TI / TP	AF	TF	AIE	TIE
02	Seconds	VL	40	20	10	8	4	2	1
03	Minutes	x	40	20	10	8	4	2	1
04	Hours	x	x	20	10	8	4	2	1
05	Days	x	x	20	10	8	4	2	1
06	Weekdays	x	x	x	x	x	4	2	1
07	Months / Century	x	x	x	10	8	4	2	1
08	Years	80	40	20	10	8	4	2	1
09	Minute Alarm	AE	40	20	10	8	4	2	1
0A	Hour Alarm	AE	x	20	10	8	4	2	1
0B	Day Alarm	AE	x	20	10	8	4	2	1
0C	Weekday Alarm	AE	x	x	x	x	4	2	1
0D	CLKOUT frequency	x	x	x	x	x	x	FD1	FD0
0E	Timer control	TE	x	x	x	x	x	TD1	TD0
0F	Timer	128	64	32	16	8	4	2	1

Calendar information

Alarm settings

Timer setting

RA4000CE

Address	Register name (function)	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0x00	SEC (Second Data) BCD mode	–	–	SEC_H[2:0]	–	–	–	SEC_L[3:0]	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x01	MIN (Minute Data) BCD mode	–	–	MIN_H[2:0]	–	–	–	MIN_L[3:0]	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x02	HOUR (Hour Data) BCD mode	–	–	HOUR_H[1:0]	–	–	–	HOUR_L[3:0]	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x03	WEEKDAY (Day-of-Week Data) BCD mode	–	–	–	–	WEEK[6:0]	–	–	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x04	DAY (Day Data) BCD mode	–	–	DAY_H[1:0]	–	–	–	DAY_L[3:0]	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x05	MONTH (Month Data) BCD mode	–	–	–	MONTH_H	–	–	MONTH_L[3:0]	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x06	YEAR (Year Data) BCD mode	–	–	YEAR_H[3:0]	–	–	–	YEAR_L[3:0]	–
	Not used BIN mode	–	–	–	–	–	–	–	–
0x07	ALM_MIN (Minute Alarm) XMAE	–	–	MALM_H[2:0]	–	–	–	MALM_L[3:0]	–
	Not used (GP) BIN mode	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)
0x08	ALM_HOUR (Hour Alarm) XHAE	–	–	HALM_H[1:0]	–	–	–	HALM_L[3:0]	–
	Not used (GP) BIN mode	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)
0x09	ALM_WEEKDAY (Day-of-Week Alarm / Day Alarm) XWAE	–	–	DALM_H[1:0]	–	–	–	DALM_L[3:0]	–
	Not used (GP) BIN mode	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)	(GP)
0x0A	WTCNT_L (Wakeup Timer Counter Low)	–	–	–	–	WTCNT[7:0]	–	–	–
0x0B	WTCNT_M (Wakeup Timer Counter Middle)	–	–	–	–	WTCNT[15:8]	–	–	–
0x0C	WTCNT_H (Wakeup Timer Counter High)	–	–	–	–	WTCNT[23:16]	–	–	–
0x0D	TCTL (Timer Control)	FSEL[1:0]	–	USEL0	TE	WADA	–	TSEL[1:0]	–
0x0E	INTF (Status Flag)	PORF	OSCSTPF	UF	TF	AF	EVF	VLF	VTMLPF
0x0F	TSTP_INTE (Timer Stop and Interrupt Enable)	CSEL[1:0]	–	UIE	TIE	AIE	EIE	–	STOP

* RA4000CE has register pages (banks) numbered 0 to 7.

Function comparison table

Function classification	Function item	RA-4565SA	RA4000CE	
			A option	D option
Time management	Calender	○		○
	Msecond clock	—		○
	Timer	○		○
	Alarm	○		○
	Time stamp	—		○
Time correction	Leap year adjustment	○		○
	Leap second adjustment	—		○
	Temperature compensation(TCXO)	—		○
	Msecond offset adjustment	—		○
	Time advancement/Time behind correction(Logical timing control)	—		○
Control signal input/output	Clock output	○	○	—
	Clock output stop control	○		—
	Interrupt output	○		○
	External event input	—		○
Alarm	Self monitoring	○		○
	Register Notification	○		○
	Terminal Notification	—	—	○
Other	Communication format	3Wire-SPI	4Wire-SPI	3Wire-SPI

12:13:55:01

RA4000CE can manage time with mill second



2025/10/02 18:25:23:41

Allows recording of timestamps for troubleshooting and maintenance history.



The status of internal flags can be communicated via terminal output.

EPSON