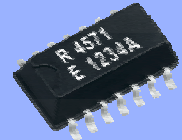
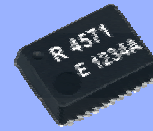
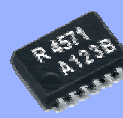


LOW BACKUP VOLTAGE SERIAL-INTERFACE REAL TIME CLOCK MODULE

RX-4571 LC/NB/SA

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : 3-wire serial interface
- Operating voltage range : 1.6 V to 5.5 V
- Wide Timekeeper voltage range : 1.0 V to 5.5 V / $T_a = +25^\circ\text{C}$
- Low backup current : 0.32 μA (Typ.) / 3 V
- 32.768 kHz frequency output function : C-MOS output With Control Pin
- Real-time clock function
Clock/calendar function, auto leap year correction function,
alarm interrupt function, etc.



Actual size

RX-4571LC



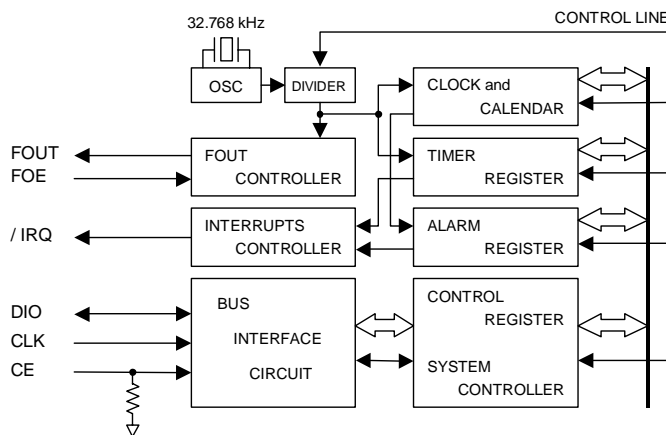
RX-4571NB



RX-4571SA



Block diagram



Overview

- **32.768 kHz frequency output function**
 - FOUT pin output (C-MOS output), $C_L = 30\text{ pF}$
- **Timer function**
 - Timer function which can be set up between 1/4096 second and 4095 minutes.
- **Alarm function**
 - Alarm function can be set to any combination of day, day of week, hour, or minute.

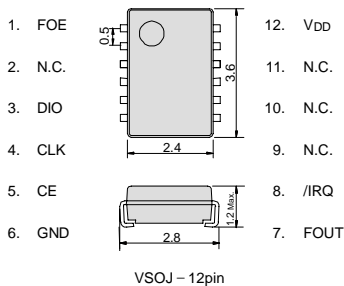
Pin Function

Signal Name	Input / Output	Function
CE	Input	The chip enabled input pin 0. (It has a built-in pull-down resistance)
CLK	Input	The shift clock input pin for serial data transfer.
DIO	Bi-directional	The data input / output pin for serial data transfer.
FOUT	Output	32.768 kHz clock output pin with the output control function. (C-MOS)
FOE	Input	FOE pin control the condition of FOUT with FSEL1-bit, FSEL0-bit, etc.
/IRQ	Output	Interrupt output (N-ch open drain)
VDD	—	Connected to a positive power supply.
GND	—	Connected to a ground.

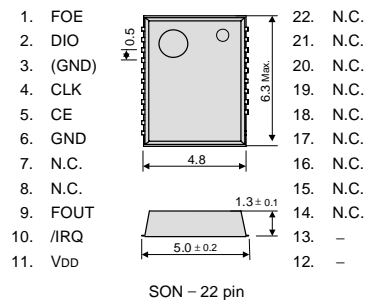
Terminal connection / External dimensions

(Unit:mm)

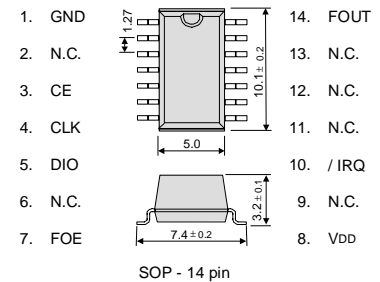
RX-4571 LC



RX-4571 NB



RX-4571 SA



Metal may be exposed on the top or bottom of this product. This will not affect any quality, reliability or electrical spec.

Specifications (characteristics)

* Refer to application manual for details.

Recommended Operating Conditions

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power voltage	VDD	—	1.6	3.0	5.5	V
Clock voltage	VCLK	$T_a = +25^\circ\text{C}$	1.0	3.0	5.5	V
		$T_a = -40\text{ to }+85^\circ\text{C}$	1.1	3.0	5.5	V
Operating temperature	TOPR	—	-40	+25	+85	$^\circ\text{C}$

Frequency characteristics

Item	Symbol	Condition	Rating	Unit
Frequency tolerance	$\Delta f/f$	$T_a = +25^\circ\text{C}$ $V_{DD} = 3.0\text{ V}$	$5 \pm 23^*$	$\times 10^{-6}$
Oscillation start-up time	t_{STA}	$T_a = +25^\circ\text{C}$ $V_{DD} = 1.6\text{ V}$	1 Max.	s

* Please ask for tighter tolerance. (Equivalent to 1 minute of monthly deviation)

Current Consumption

 $T_a = -40^\circ\text{C}$ to $+85^\circ\text{C}$

Symbol	Condition	VDD	Min.	Typ.	Max.	Unit
IBK	CE = GND /IRQ = OFF	$V_{DD} = 5\text{ V}$		0.40	1.00	μA
	FOUT; output OFF (Hi-z)	$V_{DD} = 3\text{ V}$		0.32	0.95	
I32k	CE = GND /IRQ = OFF	$V_{DD} = 5\text{ V}$		8.0	14.0	μA
	FOUT; 32.768 kHz output ON $C_L = 30\text{ pF}$	$V_{DD} = 3\text{ V}$		5.0	8.5	

“3D STRATEGY” EPSON TOYOCOM

In order to meet customer needs in a rapidly advancing digital, broadband and ubiquitous society, we are committed to offering products that are one step ahead of the market and a rank above the rest in quality. To achieve our goals, we follow a “3D (three device) strategy” designed to drive both horizontal and vertical growth. We will to grow our three device categories of “Timing Devices”, “Sensing Devices” and “Optical Devices”, and expand vertical growth through a combination of products from these categories.

Quartz devices have become crucial in the network environment where products are increasingly intended for broadband, ubiquitous applications and where various types of terminals can transfer information almost immediately via LAN and WAN on a global scale. Epson Toyocom Corporation addresses every single aspect within a network environment. The new corporation offers “Digital Convergence” solutions to problems arising with products for consumer use, such as, core network systems and automotive systems.

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Epson Toyocom, all environmental initiatives operate under the Plan-Do-Check-Action(PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard. All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification. In the future, new group companies will be expected to acquire the certification around the third year of operations.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

WORKING FOR HIGH QUALITY

Epson Toyocom quickly began working to acquire company-wide ISO 9000 series certification, and has acquired ISO 9001 or ISO 9002 certification for all targeted products manufactured in Japanese and overseas plants.

Epson Toyocom has acquired QS-9000 certification, which is of a higher level. Also, TS 16949 certification, which is also of a higher level, has been acquired.

QS-9000 is an enhanced standard for quality assurance systems formulated by leading U.S.automobile manufacturers based on the international ISO 9000 series.

ISO/TS 16949 is a global standard based on QS-9000, a severe standard corresponding to the requirements from the automobile industry.

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 - / Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment
 - / traffic control equipment / and others requiring equivalent reliability.
- In this new crystal master for Epson Toyocom, product codes and markings will remain as previously identified prior to the merger. Due to the on-going strategy of gradual unification of part numbers, please review product codes and markings, as they will change during the course of the coming months. We apologize for the inconvenience, but we will eventually have a unified part numbering system for Epson Toyocom that will be user friendly.