

Simple Function

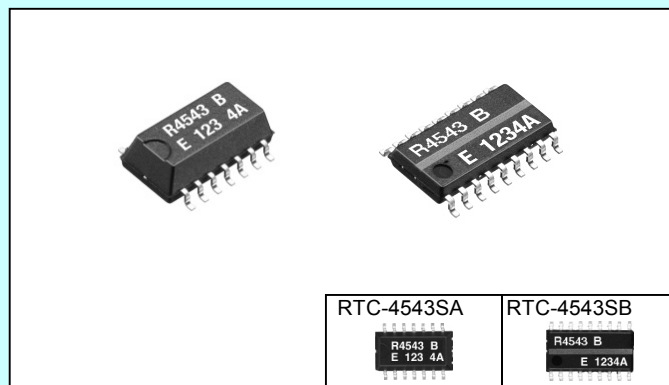
SERIAL-INTERFACE REAL TIME CLOCK MODULE

RTC - 4543 SA/SB

Product Number (please contact us)

- RTC - 4543 SA : Q41454351000200
- RTC - 4543 SB : Q41454361000200

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface type : Serial-interface
- Operating voltage range : 2.5 V to 5.5 V
- Wide Timekeeper voltage range : 1.4 V to 5.5 V
- 32.768kHz frequency output function : C-MOS output With Control Pin
- The various functions include full calendar, timer, and low voltage detection.
- Complies with EU RoHS directive

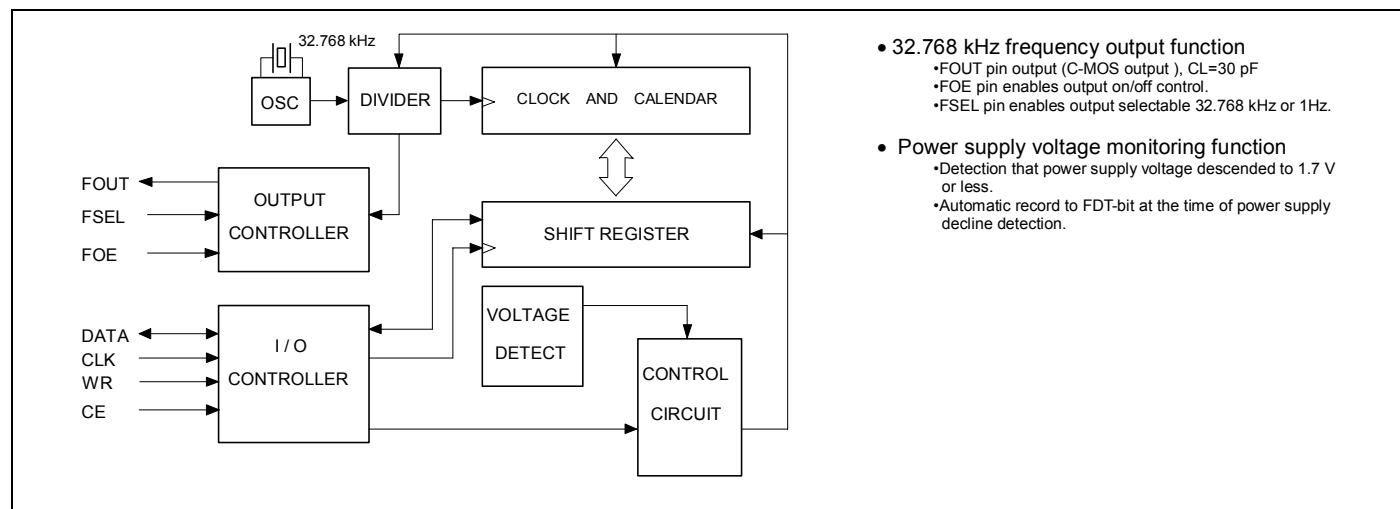


Actual size

* Refer to application manual for details.

<http://www.epsondevice.com>

Block diagram



Overview

- 32.768 kHz frequency output function
 - FOUT pin output (C-MOS output), CL=30 pF
 - FOE pin enables output on/off control.
 - FSEL pin enables output selectable 32.768 kHz or 1Hz.
- Power supply voltage monitoring function
 - Detection that power supply voltage descended to 1.7 V or less.
 - Automatic record to FDT-bit at the time of power supply decline detection.

Pin Function

Terminal connection / External dimensions

(Unit:mm)

Signal Name	Input / Output	Function
CE	Input	The chip enabled input pin. At the HIGH level, access becomes possible.
CLK	Input	The shift clock input pin for serial data transfer.
WR	Input	DATA pin input / output switching pin.
DATA	Bi-directional	The data input / output pin for serial data transfer.
FOUT	Output	32.768 kHz or 1Hz clock output pin (C-MOS output). High impedance at output off.
FOE	Input	The input pin for the FOUT output control.
FSEL	Input	Select the frequency that is output from the FOUT pin.
VDD	—	Connected to a positive power supply.
GND	—	Connected to a ground.

RTC - 4543 SA

SOP - 14 pin

RTC - 4543 SB

SOP - 18 pin

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

Specifications (characteristics)

Recommended Operating Conditions

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power voltage	VDD	—	2.5	5.0	5.5	V
Clock voltage	VCLK	—	1.4	5.0	5.5	V
Operating temperature	TOPR	—	-40	+25	+85	°C

Frequency characteristics

Item	Symbol	Condition	Rating	Unit
Frequency tolerance	$\Delta f/f$	Ta = +25 °C VDD = 5.0 V	5 ± 23*	× 10 ⁻⁶
Oscillation start-up time	t _{STA}	Ta = +25 °C VDD = 2.5 V	3 Max.	s

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

DC characteristics Ta = -40 °C to +85 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Current Consumption	IBK	CE = GND FOE = GND	VDD = 5 V	1.5	3.0	μA
		FOUT ;output OFF (Hi-z)	VDD = 3 V	1.0	2.0	
			VDD = 2 V	0.5	1.0	

Supply Voltage Detection Characteristic Ta = -40 °C to +85 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply detection voltage	VDT	VDD pin	1.4	1.7	2.0	V

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EPSON offers effective savings to its customers through a wide range of electronic devices, such as semiconductors, liquid crystal display (LCD) modules, and crystal devices. These savings are achieved through a sophisticated melding of three different efficiency technologies.

Power saving technology provides low power consumption at low voltages.

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Our concept of Energy Saving technology conserves resources

by blending the essence of these three efficiency technologies. The essence of these technologies is represented in each of the products that we provide to our customers.

In the industrial sector, leading priorities include measures to counter greenhouse effect by reducing CO₂, measures to preserve the global environment, and the development of energy-efficient products. Environmental problems are of global concern, and although the contribution of energy-saving products by our customers through the utilization of our electronic devices, EPSON is committed to the conservation of energy, both for the sake of people and of the planet on which we live.

WORKING WITH ENVIRONMENTAL ISSUES

In 1988, Seiko Epson led in working to abolish CFCs, and perfect abolition of those ozone layer-destroying substances was achieved in 1992. In 1998, the 10th year of start of the CFC-free activity, Seiko Epson set this year as the "Second Environmental Benchmark Year" And established a new corporate General Environment Policy. Seiko Epson is tackling with environmental issues comprehensively.

At the end of Fiscal 1988, Seiko Epson succeeded in abolishing chloric solvents doubted to be harmful to human body. In fiscal 1999, Seiko Epson started the activity with a goal of abolishing lead solder. Pointed out possibility of environmental pollutant.



Co-existence Mark

The environmental mark symbolizing Epson's basic stance of "Co-existence With Nature". The design incorporates a fish, flower, and water, representing mutually supportive co-existence.

PROMOTION OF ENVIRONMENT MANAGEMENT SYSTEM CONFORMING INTERNATIONAL STANDARD

At Epson, 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.

In May 2001, 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.



ISO14000 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

Seiko-Epson quickly began working to acquire company-wide ISO9000 series certification, and has acquired ISO9001 or ISO 9002 certification with all targeted products manufactured in Japanese and overseas plants.

The Quartz Device Operations Division (Ina Japan, EPM and SZE) have acquired QS-9000 certification, which are of higher Level.



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

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