REAL TIME CLOCK MODULE (SPI-Bus)
Simple Function

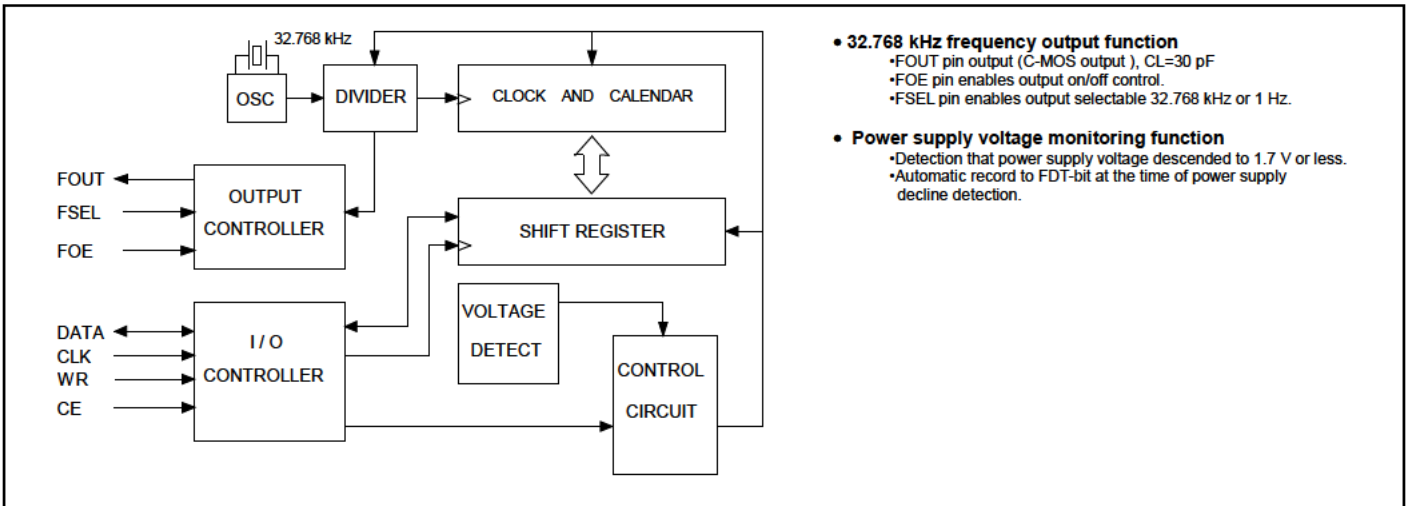RoHS Compliant

Product Number
RTC-4543SA : Q41454352000200

RTC-4543SA

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface type : 3-wire serial interface
- Operating voltage range : 2.5 V to 5.5 V
- Wide Timekeeper voltage range: 1.4 V to 5.5 V
- 32.768 kHz frequency output function: C-MOS output With Control Pin
- The various functions include full calendar, timer, and low voltage detection.
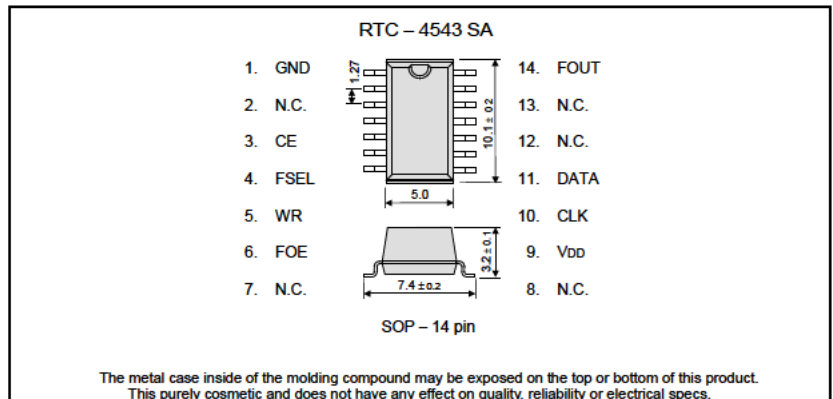
Block diagram

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 1 Hz.

- **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

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.
V_{DD}	—	Connected to a positive power supply.
GND	—	Connected to a ground.

Terminal connection / External dimensions   (Unit:mm)

RTC – 4543 SA

1.	GND	14.	FOUT
2.	N.C.	13.	N.C.
3.	CE	12.	N.C.
4.	FSEL	11.	DATA
5.	WR	10.	CLK
6.	FOE	9.	V_{DD}
7.	N.C.	8.	N.C.

SOP – 14 pin

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_{DD}	—	2.5	5.0	5.5	V
Clock voltage	V_{CLK}	—	1.4	5.0	5.5	V
Operating temperature	T_{OPR}	—	-40	+25	+85	°C

■ Frequency characteristics

Item	Symbol	Conditions	Rating	Unit
Frequency tolerance	$\Delta f/f$	T_a = +25 °C V_{DD} = 5.0 V	B: 5 ± 23 *	$\times 10^{-6}$
Oscillation start-up time	t_{STA}	T_a = +25 °C V_{DD} = 2.5 V	3 Max.	s

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

■ Current consumption characteristics

Ta = -40 °C to +85 °C

tem	Symbol	Conditions		Min.	Typ.	Max.	Unit
Current Consumption	I_{BK}	CE = GND FOE = GND FOUT ;output OFF (Hi-z)	V_{DD} = 5 V	-	1.5	3.0	µA
			V_{DD} = 3 V	-	1.0	2.0	
			V_{DD} = 2 V	-	0.5	1.0	

■ Supply Voltage Detection Characteristic

Ta = -40 °C to +85 °C

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power supply detection voltage	V_{DT}	V_{DD} pin	1.4	1.7	2.0	V

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