

**Built-in EVENT RECORDER FUNCTION  
SERIAL-INTERFACE REAL TIME CLOCK MODULE**

**RX-5412SF**

- Built in frequency adjusted 32.768 kHz crystal unit.
- Interface Type : 4-wire serial interface
- Operating voltage range : 2.5 V to 5.5 V
- Wide Timekeeper voltage range : 1.4 V to 5.5 V
- Low backup current : 0.5  $\mu$ A / 3 V ( Typ. )
- Built-in SRAM : Built-in 2048 bit ( 8 bit  $\times$  256 )
- The various functions include full calendar, alarm, timer, event record, watch dog timer, automatic power switching function.



Product Number (Please contact us)  
X1B000082xxxx00

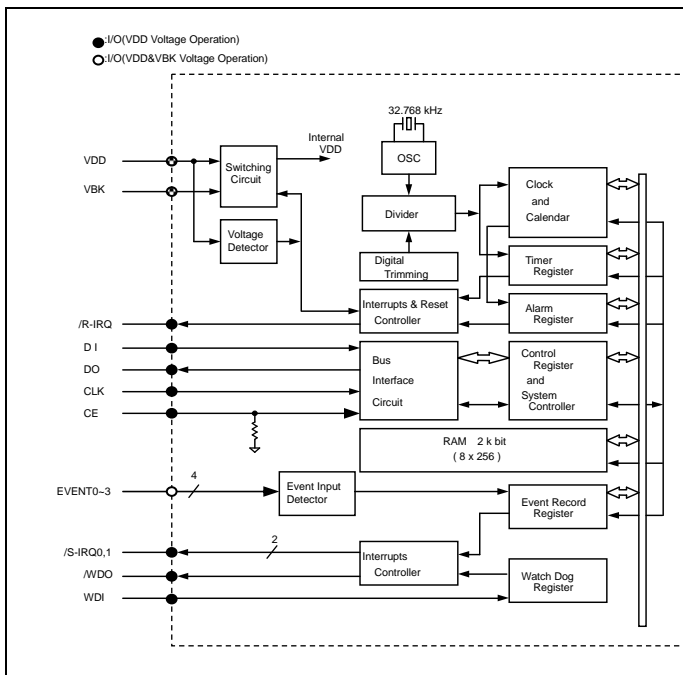


Actual size



**NEW**

**Block diagram**



**Overview**

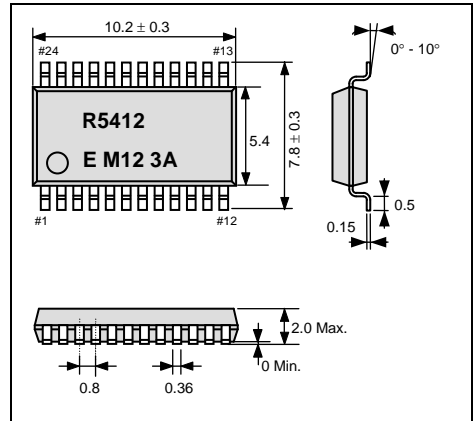
- **Event recorder function**
  - 4 input ports are available for event recorder request.
  - Event recorder data are recorded in inside memory according to user setting.
- **Power switching circuit**
  - When VDD voltage are down, real time clock module power source are switched to VBAT from VDD.
- **Built-in SRAM (256 bytes)**
  - Available built in SRAM for users memory and event recorder memory.
- **Watch dog timer function**
  - Watch dog time, it can set from 1.95 ms to 468.75 ms
- **Voltage drop detection**
  - When real time clock module return from backup mode, this function indicate The reliability of real time clock module data.
- **Periodic timer function**
  - In a timer period, it can set from 1/4096 seconds to 4095 minutes.
- **Alarm function**
  - Alarm by combination of day of week, day, hours, and minutes.

**Pin Function**

Signal name	Pin No.	I / O	Function	Signal name	Pin No.	I / O	Function
Vss	1	-	GND	(Vss)	24	-	
EVENT0	2	Input	Event input	(Vss)	23	-	
EVENT1	3	Input	Event input	(Vss)	22	-	
VBK	4	-	Backup power supply	(Vss)	21	-	
EVENT2	5	Input	Event input	(Vss)	20	-	
(Vss)	6	-		(Vss)	19	-	
EVENT3	7	Input	Event input	/S-IRQ1	18	Output	Event record interrupt output (open drain)
CE	8	Input	Chip enabled input	/S-IRQ0	17	Output	Event record interrupt output (open drain)
CLK	9	Input	Clock input pin for serial data transmission	WDI	16	Input	Watch dog input (open drain)
DO	10	Output	Data output pin for serial data transmission	/WDO	15	Output	Watch dog output (open drain)
DI	11	Input	Data input pin for serial data transmission	N.C.	14	-	-
/R-IRQ	12	Output	RTC function interrupt output (open drain)	V <sub>DD</sub>	13	-	Power supply

**External dimensions**

(Unit:mm)



**Specifications (characteristics)**

\*Refer to application manual for details.

**Electrical Characteristics**

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power voltage	V <sub>DD</sub>	-	2.5	3.0	5.5	V
Clock voltage	V <sub>CLK</sub>	-	1.4	3.0	5.5	V
Operating temperature	T <sub>OPR</sub>	-	-40	+25	+85	°C
Frequency tolerance	$\Delta f / f$	T <sub>a</sub> = +25 °C, V <sub>DD</sub> = 3.0 V		5 ± 23 *		$\times 10^{-6}$
Current Consumption	I <sub>DD1</sub>	Back up operation , CE = GND , /IRQ = OFF		0.5	1.0	$\mu$ A
	I <sub>DD2</sub>			0.5	1.0	

\*Equivalent to 1 minute of monthly deviation.