



actual size

# Real Time Clock Modul · JR8111

- RTC module with I<sup>2</sup>C interface, dimension 3.2 x 2.5 mm
- contains frequency adjusted 32.768kHz crystal
- wide operating temperature -40°C ~ +105°C
- very low current consumption in backup mode 100 nA typ.
- seam sealed ceramic/metal package



RoHS compliant



Pb free



REACH compliant



Conflict mineral free

## FEATURE LIST

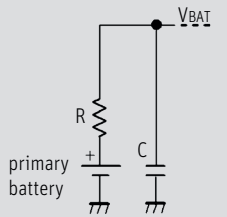
### TYPE

JR8111 RTC module with I<sup>2</sup>C I/F

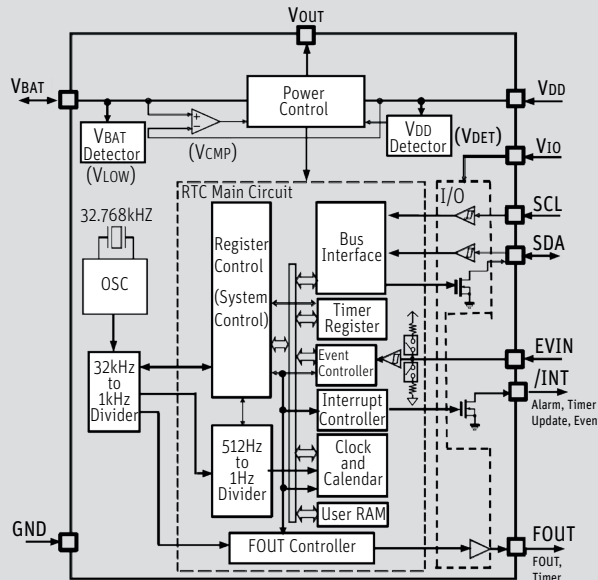
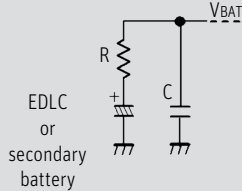
RTC module with built-in frequency adjusted 32.768 kHz crystal unit	interrupt output, configurable to every minute or every second
I <sup>2</sup> C-Bus interface with 400 kHz fast mode type	alarm interrupt returns date / day / hour / minute
low backup current 100 nA typ. at 3 V	auto repeat wakeup timer interruption
automatically switches to backup power supply by monitoring the V <sub>DD</sub> voltage	time stamp function triggered by event input pin or register driven command
self-monitoring interrupt on oscillation stop / V <sub>BAT</sub> low, V <sub>DD</sub> low	time stamp resolution is as fine as 1/1024 seconds
clock output selectable 1 Hz / 1024 Hz / 32768 Hz	up to 8 time stamps can be stored with a resolution as fine as 1/256 seconds
suitable for anti-tampering design, even active in battery backup mode	configurable event input pin with debouncing filter and trigger logic

## BLOCK DIAGRAM

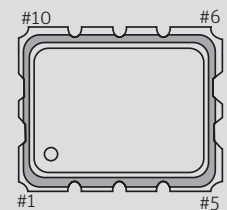
Battery backup connection example (1)



Battery backup connection example (2)



## TERMINAL CONNECTION



- # 1: V<sub>IO</sub>
- # 2: V<sub>OUT</sub>
- # 3: V<sub>BAT</sub>
- # 4: FOUT
- # 5: SCL
- # 6: EVIN
- # 7: SDA
- # 8: V<sub>IO</sub>
- # 9: GND
- # 10: /INT

## PIN DESCRIPTION

Signal Name	Pin	I / O	Function	Information
V <sub>DD</sub>	#1	-	power supply pin	V <sub>DD</sub> supply voltage, can be different from I/O voltage V <sub>IO</sub>
V <sub>OUT</sub>	#2	-	internal voltage output pin	connect a bypass capacitor of 1.0 μF
V <sub>BAT</sub>	#3	-	power supply pin for backup battery	to connect an EDLC / super capacitor, a secondary battery or a primary battery in the backup voltage range the module is supplied from this pin
FOUT	#4	O	frequency output pin (CMOS)	according to frequency selection: 32.768 kHz, 1024 Hz, 1 Hz
SCL	#5	I	serial clock input pin	I <sup>2</sup> C serial clock input
EVIN	#6	I	external event input pin	software controlled polarity and pull-up or pull-down selection
SDA	#7	I / O	serial data input and output pin	I <sup>2</sup> C serial data input / output
V <sub>IO</sub>	#8	-	interface power supply pin	feed the interface voltage pin to match the level of interface signals with the host voltage
GND	#9	-	ground pin	
/INT	#10	O	interrupt output	occurring at alarm, timer or external event pin inputs (N-channel open drain)

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## ORDER INFORMATION

<b>JR</b>	type	dimension	interface	frequency tolerance code	temp. range
Jauch RTC module	8111	32 = 3225	I2C	UA = ± 11.5 ppm UB = ± 23 ppm	-40 °C ~ +105 °C

**Example: JR8111-32-I2C-UA-T(-40/+105)-LF** (Suffix LF = RoHS compliant / Pb free)

## OPERATING CONDITIONS

Type	JR8111
operating supply voltage $V_{DD}$	typ. 3.0V / 1.6V - 5.5V
clock supply voltage $V_{CLK}$	typ. 3.0V / 1.1V - 5.5V
current consumption	see table 1
falling edge detection of $V_{DD}$	1.4 V typ / 1.2 V min. 1.6 V max.
temperature	operating: -40°C - +105°C storage: -55°C - +105°C
frequency tolerance at +25°C and 3.0 V	± 11 ppm (UA) / ±23 ppm (UB)
start-up time	0.3 s typ. / 1 s max. (if $V_{DD} > 2.75V$ )

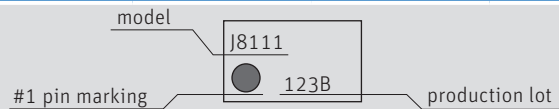
## TABLE 1: CURRENT CONSUMPTION

Symbol	Conditions	Temperature Range	Typ	Max.	Unit
$I_{DD}$	$V_{DD} = V_{IO} = 3.0 V$ , input Pins = "L", FOUT = OFF and /INT = OFF, CHGEN = 0b ; INIEN = 0b	-40°C ~ +85°C	100	450	nA
		-40°C ~ +105°C	100	1000	
$I_{32K}$	$V_{DD} = V_{IO} = 3.0 V$ , input Pins = "L", FOUT = 32.768 kHz, /INT = OFF, FOUT pin CL = 15 pF, CHGEN = 0b ; INIEN = 1b	-40°C ~ +85°C	2.0	3.0	uA
		-40°C ~ +105°C	2.0	3.5	

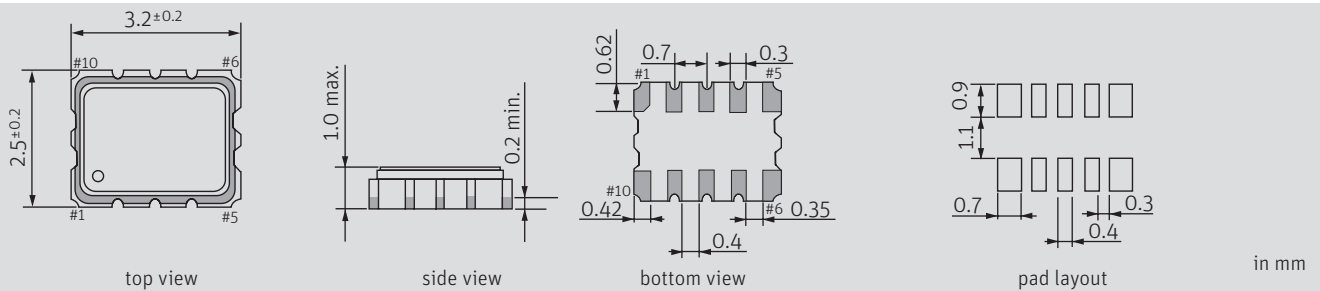
## PACKAGING NOTE

standard packing unit is 2000 pieces per reel  
250 pieces per reel optional

## MARKING INFORMATION



## DIMENSION



## TAPING SPECIFICATION

