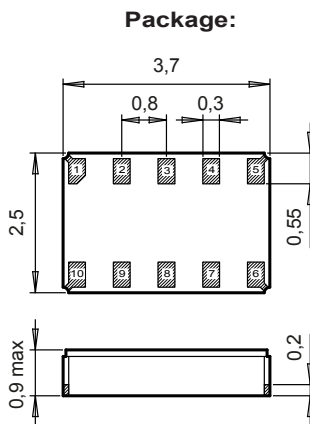


# RV-8523-C3

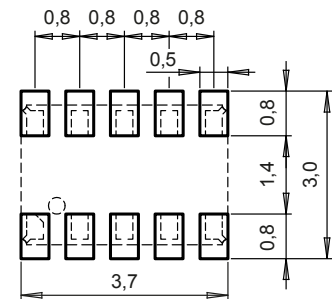
Real-Time Clock Module with I<sup>2</sup>C-Bus



## DIMENSIONS



## Recommended Solder Pad:



Metal lid is connected to V<sub>SS</sub> (pin #7)

All dimensions in mm typical

## APPLICATIONS

IoT  
Metering  
Industrial  
Automotive  
Health Care  
Wearables, Portables

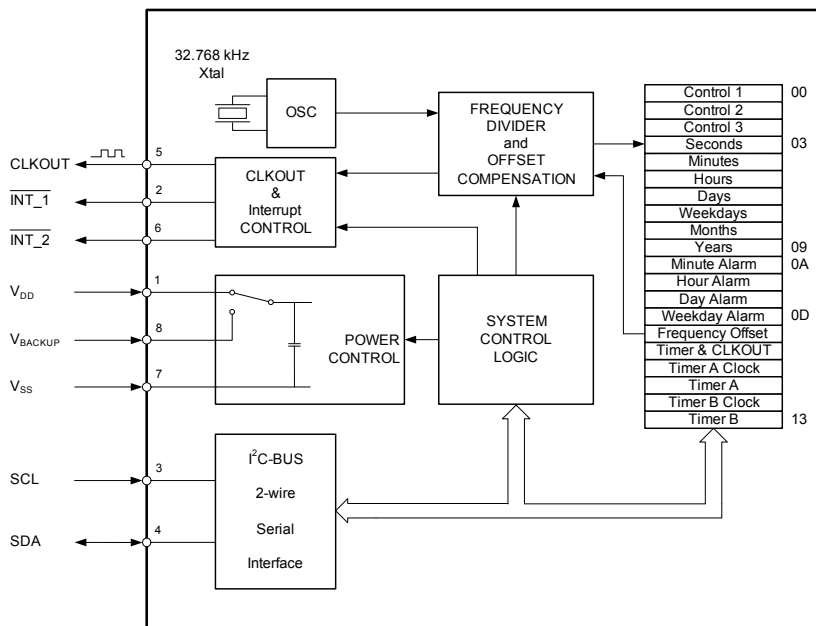
## DESCRIPTION

The RV-8523-C3 is a SMT Real-Time Clock Module that incorporates an integrated CMOS circuit together with an XTAL. It operates under vacuum in a hermetically sealed ceramic package with metal lid.

## FEATURES

- Low power consumption: 130 nA @ 3 V.
- Wide operating voltage range: 1.2 V to 5.5 V.
- Time accuracy:  $\pm 20$  ppm @ 25°C.
- Operating temperature range: -40 to +85°C.
- User programmable offset value.
- Automatic Backup Switchover function.
- Provides year, month, date, weekday, hours, minutes and seconds.
- Automatic leap year calculation: 2000 to 2099.
- Timer, Alarm and Watchdog functions.
- Clock output frequencies: 32.768 kHz to 1 Hz.
- I<sup>2</sup>C-bus interface: 1 MHz Fast-mode Plus (Fm+).
- 100% Pb-free, RoHS-compliant.
- Automotive qualification according to AEC-Q200 available.

## BLOCK DIAGRAM



## ELECTRICAL CHARACTERISTICS AT 25°C

More detailed information can be found in the Application Manual.

|                                          | Symbol       | Condition                                               | Min.                            | Typ. | Max | Unit |
|------------------------------------------|--------------|---------------------------------------------------------|---------------------------------|------|-----|------|
| Supply voltage                           | $V_{DD}$     | I <sup>2</sup> C-bus active                             | 1.6                             |      | 5.5 | V    |
| Supply voltage                           | $V_{DD}$     | Time keeping                                            | 1.2                             |      | 5.5 | V    |
| Current consumption<br>Time keeping mode | $I_{DDO}$    | I <sup>2</sup> C-bus inactive,<br>$V_{DD} = 3\text{ V}$ |                                 | 130  | 180 | nA   |
| CLKOUT frequency                         | $F_{CLKOUT}$ | Programmable                                            | 32768 to 1                      |      |     | Hz   |
| Freq. tol. typ./max.                     | $\Delta F/F$ | @ 25°C                                                  | $\pm 10 / \pm 20$ <sup>1)</sup> |      |     | ppm  |
| Aging first year max.                    | $\Delta F/F$ | @ 25°C                                                  | $\pm 3$                         |      |     | ppm  |

1) Tighter frequency tolerances on request.

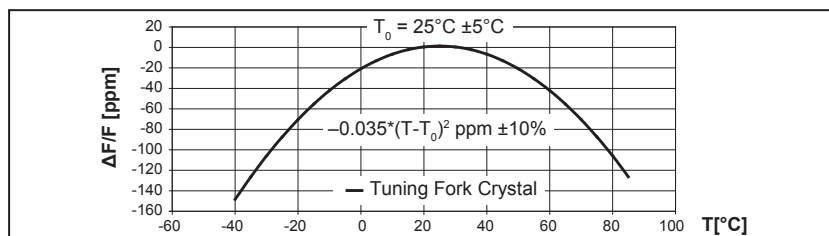
## ENVIRONMENTAL CHARACTERISTICS

|                                |              | Conditions               | Max. Dev.   |
|--------------------------------|--------------|--------------------------|-------------|
| Storage temp. range            |              | -55 to +125°C            |             |
| TA Operating temperature range |              | -40 to +85°C             |             |
| Shock resistance               | $\Delta F/F$ | 5000 g, 0.3 ms, 1/2 sine | $\pm 5$ ppm |
| Vibration resistance           | $\Delta F/F$ | 20 g / 10–2000 Hz        | $\pm 5$ ppm |

## TERMINATIONS AND PROCESSING

| Package | Termination     | Processing                                |
|---------|-----------------|-------------------------------------------|
| SON-10  | Au flashed pads | IPC/JEDEC J-STD-020C<br>260°C / 20 - 40 s |

## FREQUENCY TEMPERATURE CHARACTERISTICS



## PIN CONNECTIONS TOP VIEW

|  |  |            |                                        |
|--|--|------------|----------------------------------------|
|  |  | <b>Pin</b> | <b>Connection</b>                      |
|  |  | 1          | $V_{DD}$ Power Supply Voltage          |
|  |  | 2          | $\overline{INT\_1}$ Interrupt_1 Output |
|  |  | 3          | SCL Serial Clock Input                 |
|  |  | 4          | SDA Serial Data                        |
|  |  | 5          | CLKOUT Clock Output                    |
|  |  | 6          | $\overline{INT\_2}$ Interrupt_2 Output |
|  |  | 7          | $V_{SS}$ Ground                        |
|  |  | 8          | $V_{BACKUP}$ Backup Supply Voltage     |
|  |  | 9          | NC Not connected                       |
|  |  | 10         | NC Not connected                       |

## ORDERING INFORMATION

|                                                                             |                                         |
|-----------------------------------------------------------------------------|-----------------------------------------|
| <b>RV - 8523 - C3 TA QC</b>                                                 |                                         |
| <b>RTC module</b>                                                           | <b>Qualification</b>                    |
| <b>Product type</b>                                                         | <b>QC</b> = Commercial Grade (Standard) |
|                                                                             | <b>QA</b> = Automotive Grade AEC-Q200   |
| <b>Package size</b>                                                         | <b>Temperature range</b>                |
| <b>C3</b> = 3.7 x 2.5 x 0.9 mm                                              | <b>TA</b> = -40 to +85°C (Standard)     |
| A unique part number will be generated for each product specification, i.e: |                                         |
| 20xxxx-MG01                                                                 | 1'000 pcs (in 12 mm tape on 7" reel)    |
| 20xxxx-MG03                                                                 | 3'000 pcs (in 12 mm tape on 7" reel)    |

All specifications subject to change without notice.



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