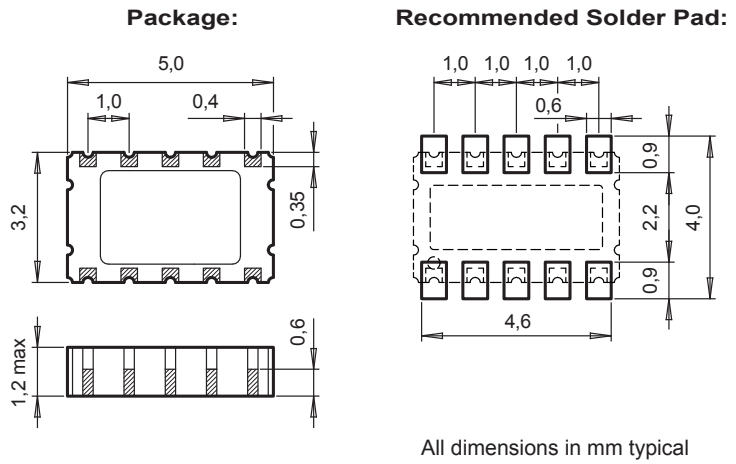


# RV-3049-C2

Real-Time Clock Module with SPI-Bus



## DIMENSIONS



## APPLICATIONS

IoT  
Metering  
Industrial  
Portables  
Automotive  
Health Care

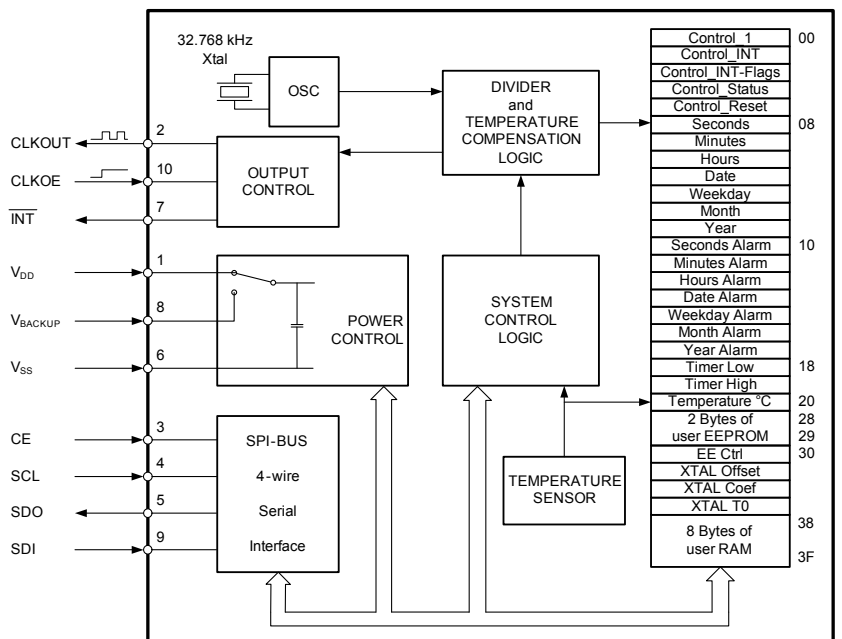
## DESCRIPTION

The RV-3049-C2 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 glass lid.

## FEATURES

Low power consumption: 800 nA @ 3 V.  
Wide operating voltage range: 1.3 V to 5.5 V.  
Time accuracy, temp. compensated: Option A: -40 to +85°C, ±6 ppm, Option B: -40 to +85°C, ±25 ppm.  
Extended operating temperature range: -40 to +125°C.  
Automatic Backup Switchover and Trickle Charger function.  
Provides year, month, weekday, date, hours, minutes and seconds.  
Timer and Alarm functions.  
Clock output frequencies: 32.768 kHz, 1024 Hz, 32 Hz, 1 Hz.  
2 bytes non-volatile user memory, 8 bytes user RAM.  
SPI-bus interface: 4-wire, 1 MHz.  
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.

## ENVIRONMENTAL CHARACTERISTICS

## TERMINATIONS AND PROCESSING

## FREQUENCY TEMPERATURE CHARACTERISTICS

## PIN CONNECTIONS TOP VIEW

## ORDERING INFORMATION

|  | Symbol       | Condition                                  | Min.     | Typ. | Max  | Unit |
|--|--------------|--|----------|------|------|------|
| Supply voltage                           | $V_{DD}$     | Time keeping                               | 1.3      |      | 5.5  | V    |
| Supply voltage                           | $V_{DD}$     | Thermom. active                            | 2.1      |      | 5.5  | V    |
| Current consumption<br>Time keeping mode | $I_{DDO}$    | SPI-bus inactive,<br>$V_{DD} = 3\text{ V}$ |          | 800  | 1000 | nA   |
| Time acc. Opt. A / B                     | $\Delta t/t$ | -40 to +85°C                               | ±6 / ±25 |      |      | ppm  |
| Aging first year max.                    | $\Delta F/F$ | @ 25°C                                     | ±3       |      |      | ppm  |

|                                | Conditions                          | Max. Dev. |
|--------------------------------|-------------------------------------|-----------|
| Storage temp. range            | -55 to +125°C                       |           |
| TA Operating temperature range | -40 to +85°C                        |           |
| TB Extended oper. temp. range  | -40 to +125°C                       |           |
| Shock resistance               | $\Delta F/F$ 5000 g, 0.3 ms, ½ sine | ±5 ppm    |
| Vibration resistance           | $\Delta F/F$ 20 g / 10–2000 Hz      | ±5 ppm    |

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



| Pin | Connection                                |
|-----|---|
| 1   | $V_{DD}$ Power Supply Voltage             |
| 2   | CLKOUT Clock Output                       |
| 3   | CE Chip Enable                            |
| 4   | SCL Serial Clock Input                    |
| 5   | SDO Serial Data Output                    |
| 6   | $V_{SS}$ Ground                           |
| 7   | $\overline{\text{INT}}$ Interrupt Output  |
| 8   | $V_{\text{BACKUP}}$ Backup Supply Voltage |
| 9   | SDI Serial Data Input                     |
| 10  | CLKOE Clock Output Enable                 |

| RV - 3049 - C2                      | Option A | TA | QC                               |
|-------------------------------------|----------|----|----------------------------------|
| RTC module                          |          |    | Qualification                    |
| Product type                        |          |    | QC = Commercial Grade (Standard) |
| Package size                        |          |    | QA = Automotive Grade AEC-Q200   |
| C2 = 5.0 x 3.2 x 1.2 mm             |          |    | Temperature range                |
| Time accuracy                       |          |    | TA = -40 to +85°C (Standard)     |
| Option A = ±6 ppm @ -40°C to +85°C  |          |    | TB = -40 to +125°C               |
| Option B = ±25 ppm @ -40°C to +85°C |          |    |                                  |

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-PG05 | 5'000 pcs (in 12 mm tape on 13" reel) |

All specifications subject to change without notice.



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