

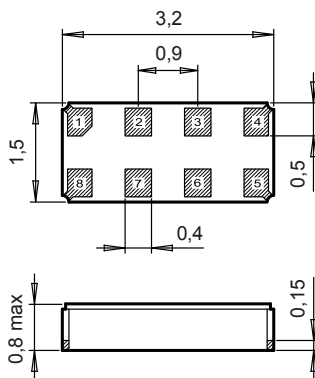
# RV-3028-C7

## Extreme Low Power RTC Module

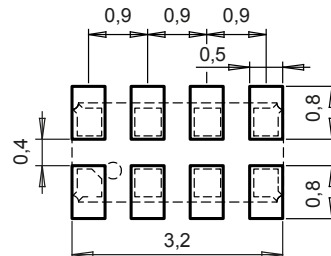


### DIMENSIONS

#### Package:



#### Recommended Solder Pad:



Metal lid is connected to  $V_{SS}$  (pin #5)

All dimensions in mm typical

### APPLICATIONS

IoT  
Metering  
Industrial  
Automotive  
Health Care  
Wearables, Portables

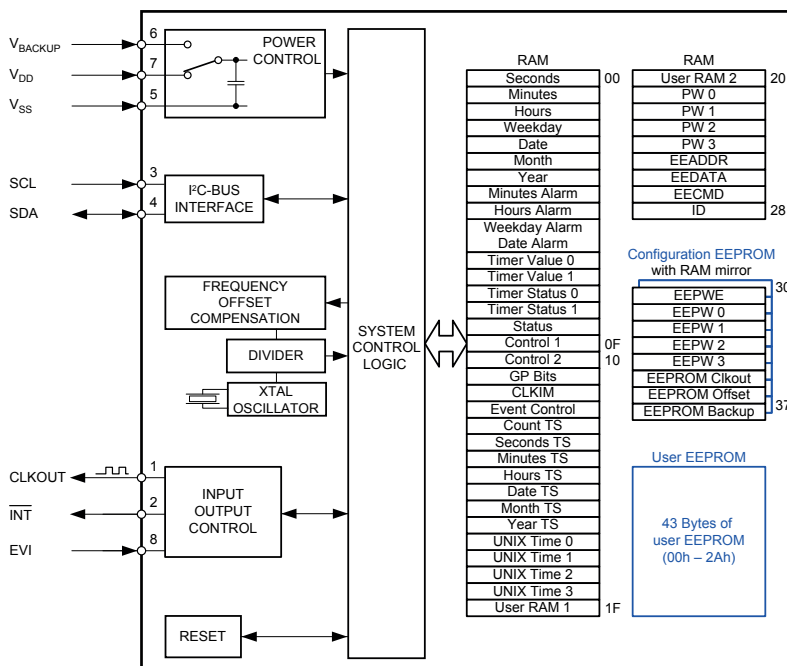
### DESCRIPTION

The RV-3028-C7 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

Extreme low power consumption: 45 nA @ 3 V.  
Wide operating voltage range: 1.1 V to 5.5 V.  
Time accuracy: Factory calibrated to  $\pm 1$  ppm @ 25°C  
User progr. password for write protection of time and configuration.  
Non-volatile configuration settings with user programmable offset value.  
Automatic Backup Switchover and Trickle Charger function.  
Provides year, month, date, weekday, hours, minutes, seconds, UNIX.  
Timer, Alarm and External event input with Time Stamp function.  
Clock output: 32.768 kHz, 8192 Hz, 1024 Hz, 64 Hz, 32 Hz, 1 Hz.  
43 bytes non-volatile user memory, 2 bytes user RAM.  
I<sup>2</sup>C-bus interface: 400 kHz.  
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                           | $V_{DD}$     | Time keeping                                            | 1.1            |      | 5.5 | V    |
| Supply voltage                           | $V_{DD}$     | I <sup>2</sup> C-bus active                             | 1.2            |      | 5.5 | V    |
| Current consumption<br>Time keeping mode | $I_{DDO}$    | I <sup>2</sup> C-bus inactive,<br>$V_{DD} = 3\text{ V}$ |                | 45   | 60  | nA   |
| CLKOUT frequency                         | $F_{CLKOUT}$ | Programmable                                            | 32768...to...1 |      |     | Hz   |
| Time accuracy                            | $\Delta t/t$ | @ 25°C                                                  | ±1             |      |     | ppm  |
| Aging first year max.                    | $\Delta F/F$ | @ 25°C                                                  | ±3             |      |     | ppm  |

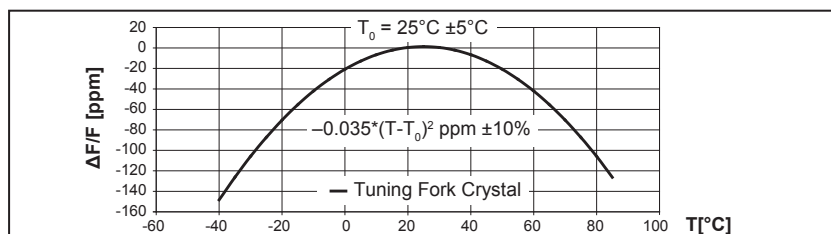
## ENVIRONMENTAL CHARACTERISTICS

|                                |              | 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, ½ sine | ±5 ppm    |
| Vibration resistance           | $\Delta F/F$ | 20 g / 10–2000 Hz      | ±5 ppm    |

## TERMINATIONS AND PROCESSING

| Package | Termination     | Processing                                |
|---------|-----------------|-------------------------------------------|
| SON-8   | Au flashed pads | IPC/JEDEC J-STD-020C<br>260°C / 20 - 40 s |

## FREQUENCY TEMPERATURE CHARACTERISTICS



## PIN CONNECTIONS TOP VIEW

| Pin | Connection                               |
|-----|------------------------------------------|
| 1   | CLKOUT Clock Output                      |
| 2   | $\overline{\text{INT}}$ Interrupt Output |
| 3   | SCL Serial Clock Input                   |
| 4   | SDA Serial Data                          |
| 5   | $V_{SS}$ Ground                          |
| 6   | $V_{BACKUP}$ Backup Supply Voltage       |
| 7   | $V_{DD}$ Power Supply Voltage            |
| 8   | EVI Event Input                          |

## ORDERING INFORMATION

|                                                                             |                                         |
|-----------------------------------------------------------------------------|-----------------------------------------|
| <b>RV - 3028 - C7 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>C7</b> = 3.2 x 1.5 x 0.8 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.



A COMPANY OF THE **SWATCH GROUP**

Micro Crystal AG  
Muehlestrasse 14  
CH-2540 Grenchen  
Switzerland

Phone +41 32 655 82 82  
Fax +41 32 655 82 83  
sales@microcrystal.com  
www.microcrystal.com