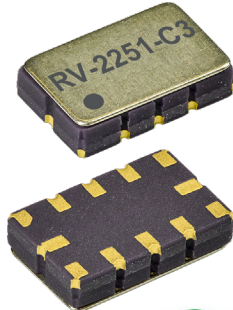
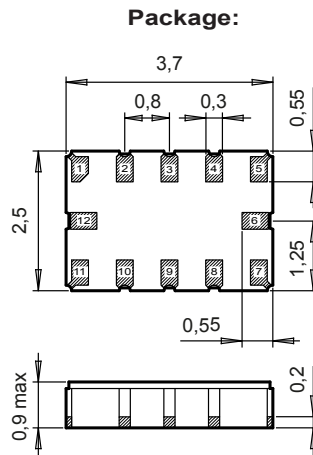


RV-2251-C3

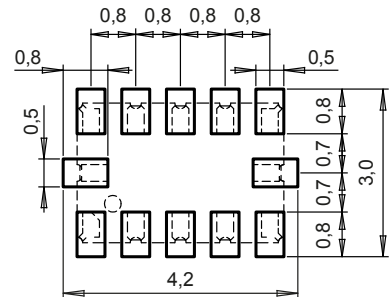
Real-Time Clock Module with I²C-Bus



DIMENSIONS



Recommended Solder Pad:



Metal lid is connected to V_{SS} (pin #7)

All dimensions in mm typical

APPLICATIONS

IoT
Metering
Industrial
Automotive
Health Care
Wearables, Portables

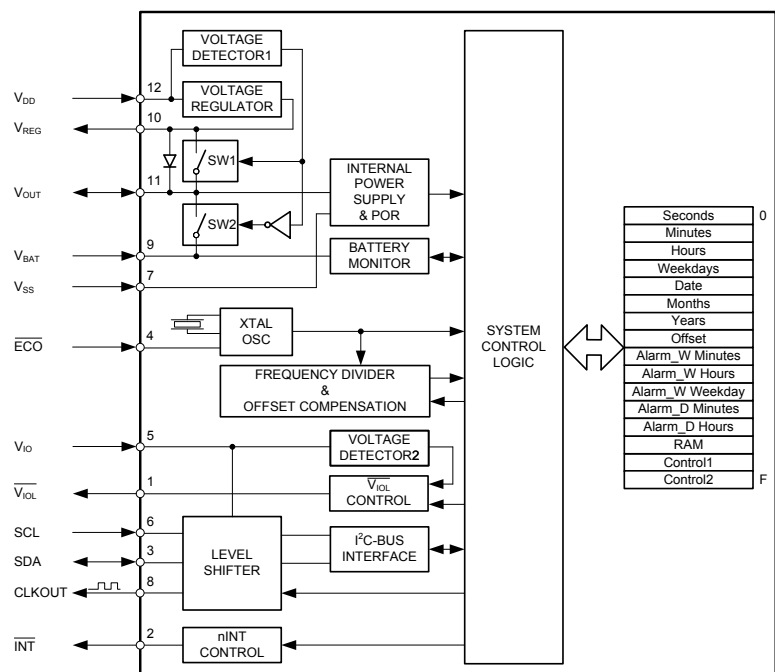
DESCRIPTION

The RV-2251-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: 210 nA @ 3 V.
- Wide operating voltage range: 0.9 V to 5.5 V.
- Time accuracy: ±20 ppm @ 25°C.
- 3.0 V Regulated Output for ML rechargeable batteries (V_{REG}).
- Level shifter for peripherals (V_{IO}).
- User programmable offset value.
- Automatic Backup switchover function and V_{BAT} monitoring.
- Provides year, month, date, weekday, hours, minutes and seconds.
- Time Update and Alarm functions.
- Clock output frequency: 32.768 kHz.
- I²C-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
Peripheral voltage	V_{IO}	I ² C-bus active	1.8		5.5	V
Supply voltage	V_{OUT}	Time keeping	0.9		5.5	V
Current consumption Time keeping mode	I_{RTCO}	I ² C-bus inactive, V_{BAT} 3 V, ECO on		210	320	nA
CLKOUT frequency	F_{CLKOUT}			32768		Hz
Frequency tolerance	$\Delta F/F$	@ 25°C		± 20 ¹⁾		ppm
Aging first year max.	$\Delta F/F$	@ 25°C		± 3		ppm

1) Tighter frequency tolerances on request.

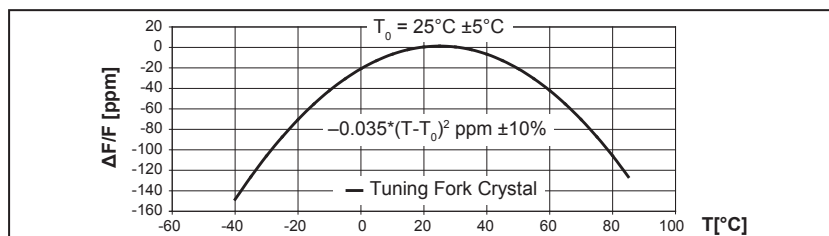
ENVIRONMENTAL CHARACTERISTICS

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

TERMINATIONS AND PROCESSING

Package	Termination	Processing
SON-12	Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

FREQUENCY TEMPERATURE CHARACTERISTICS



PIN CONNECTIONS TOP VIEW

Pin	Connection
1	$\overline{V_{IOL}}$ V_{IO} Monitoring Output
2	$\overline{INT}$ Interrupt Output
3	$\overline{SDA}$ Serial Data
4	$\overline{ECO}$ Oscillator Mode Select
5	V_{IO} Peripheral Supply
6	SCL Serial Clock Input
7	V_{SS} Ground
8	CLKOUT 32.768 kHz Clock Output
9	V_{BAT} Backup Power Supply
10	V_{REG} Voltage Regulator Output
11	V_{OUT} Internal Supply
12	V_{DD} Main Power Supply

ORDERING INFORMATION

RV - 2251 - C3 TA QC	
RTC module	Qualification
Product type	QC = Commercial Grade (Standard)
	QA = Automotive Grade AEC-Q200
Package size	Temperature range
C3 = 3.7 x 2.5 x 0.9 mm	TA = -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