![Micro Crystal Switzerland logo] **MICRO CRYSTAL SWITZERLAND**

RV-3029-C2
Real Time Clock Module with I²C-Bus

100% leadfree, RoHS - compliant

DIMENSIONS

Package:

5,0 ±0,2
1,0
0,4
3,2 ±0,2
0,35
0,6
max. 1,2

Recommended Solder Pad:

1,0 1,0 1,0 1,0
0,6
0,9
2,2
4,0
0,9
4,6

All dimensions in mm typical
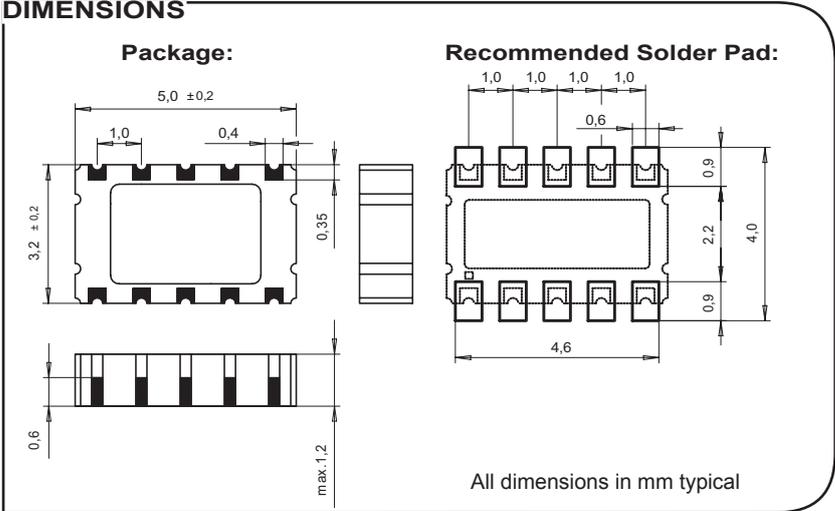
Extremely Accurate RTC Module with embedded Xtal.
I²C Interface
Temperature Compensation

Option A: Calibrated
Accuracy ± 6ppm / -40°C to +85°C
Accuracy ± 8ppm / -40°C to +125°C

Option B: Default
Accuracy ± 25ppm / -40°C to +85°C
Accuracy ± 30ppm / -40°C to +125°C

Option C: not compensated

Miniature Ceramic package
Very low power consumption 850nA
Operating Temp. -40°C to +125°C
Time keeping mode down to 1.3 V
Backup Battery switchover

DESCRIPTION:

The RV-3029-C2 is a Real-Time-Clock Module with embedded Crystal. This RTC has an I²C Bus (2-wire Serial-Interface) and offers temperature compensated time. The STC-Smart Temperature Compensation is calibrated in the factory and leads to a very high time-accuracy of ± 6ppm from -40°C to +85°C and ± 8ppm from -40°C to +125°C.
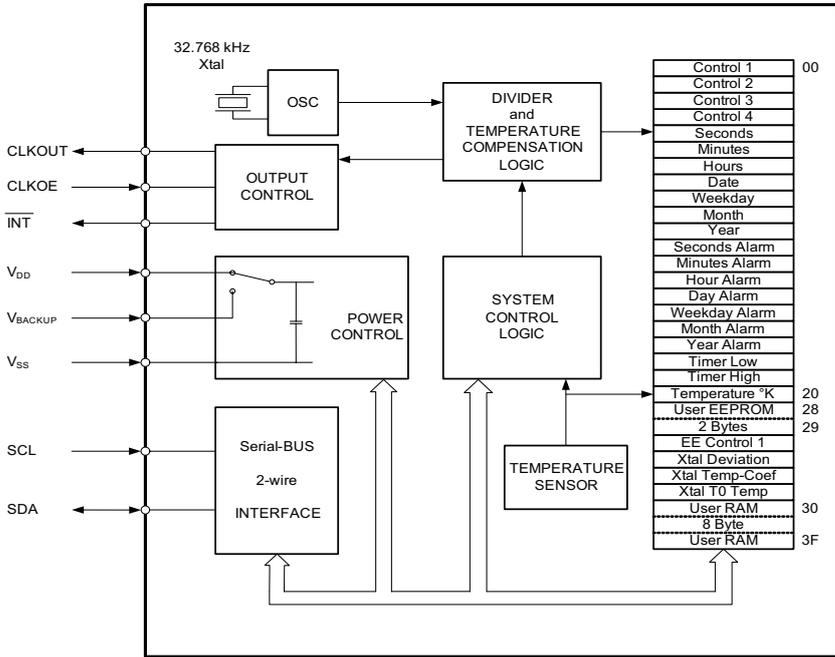
Beside standard RTC functions, it includes a Backup-Battery Input with internal switchover function, a programmable Trickle-charge circuitry, an integrated Temperature Sensor with digital-output and offers 8 Bytes RAM and 2 Bytes EEPROM for customer's application.

The calendar function tracks year and leap -year flags. The clock tracks second, minute and hour in 24-hour format. Programmable alarm setting and universal timer functions increase flexibility.

For pick-and-place equipment, the parts are available in 12 mm tape:
   7" (178 mm) reel with 1'000 parts
   10" (254 mm) reel with 2'500 parts
   13" (330 mm) reel with 5'000 parts

BLOCKDIAGRAM:

Preliminary

32.768 kHz Xtal

OSC

DIVIDER and TEMPERATURE COMPENSATION LOGIC

CLKOUT
CLKOE
$\overline{INT}$
V_{DD}
V_{BACKUP}
V_{SS}
SCL
SDA

OUTPUT CONTROL

POWER CONTROL

SYSTEM CONTROL LOGIC

Serial-BUS 2-wire INTERFACE

TEMPERATURE SENSOR

Register	Addr
Control 1	00
Control 2	
Control 3	
Control 4	
Seconds	
Minutes	
Hours	
Date	
Weekday	
Month	
Year	
Seconds Alarm	
Minutes Alarm	
Hour Alarm	
Day Alarm	
Weekday Alarm	
Month Alarm	
Year Alarm	
Timer Low	
Timer High	
Temperature °K	20
User EEPROM	28
2 Bytes	29
EE Control 1	
Xtal Deviation	
Xtal Temp-Coef	
Xtal T0 Temp	
User RAM	30
8 Byte	
User RAM	3F

ELECTRICAL CHARACTERISTICS AT 25°C:

	Symbol	Condition	Min.	Typ.	Max	Unit
Supply voltage	V_{DD}	Time keeping	1.3		5.5	V
Supply voltage	V_{DD}	Temp. comp.	1.8		5.5	V
Current consumption	I_{DDO}	V_{DD} = 3V		850	1000	nA
CLKOUT frequency		Progr.		32.768/1024/32/1		Hz
Frequency Tolerance	$\Delta F/F$	@ 25°C		±10	±20	ppm
Aging first year max.	$\Delta F/F$	@ 25°C			± 3	ppm
Time accuracy Opt. A	$\Delta F/F$	-40 to +85°C			± 6	ppm
Time accuracy Opt. B	$\Delta F/F$	-40 to +85°C			± 25	ppm
Freq.vs.Temp. Opt. C	$\Delta F/F_{OPR}$	$20 \leq T_0 \leq 30$	$-0.035\ ^{ppm}/_{°C^2}\ (T - T_0)^2\ \pm10\%$			ppm

ENVIRONMENTAL CHARACTERISTICS:

		Conditions	Max. Dev.
Storage temp. range		–55 to +125°C	
Industrial operating temp. range		–40 to +85°C	
Extended operating temp. range		–55 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, TERMINATIONS AND PROCESSING:

Package-Type	Termination	Processing
SON 10-pin	For SMD mounting Au flashed pads	Reflow soldering 260°C/20 s max.

FREQUENCY TEMPERATURE CHARACTERISTICS:
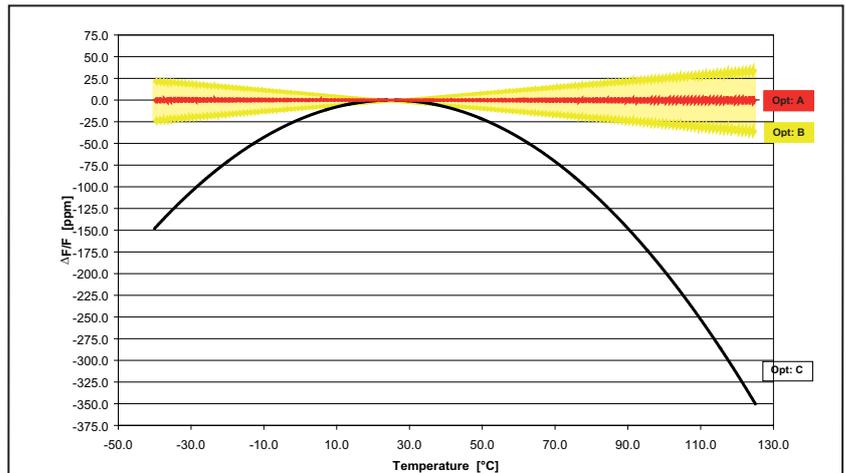
PIN CONNECTIONS TOP VIEW:

Pin	Connection	
1	V_{DD}	Power Supply Voltage
2	CLKOUT	Frequency Output
3	N.C.	not connected
4	SCL	Serial Clock Input
5	SDA	Serial Data
6	V_{SS}	Ground
7	$\overline{INT}$	Interrupt Output
8	V_{BACKUP}	Backup Supply Voltage
9	N.C.	not connected
10	CLKOE	CLK Output Enable

All specifications subject to change without notice.   03.07