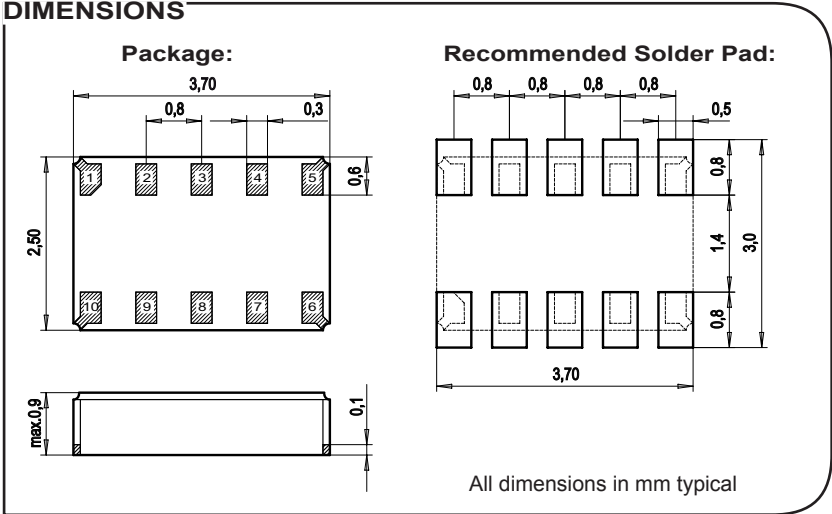
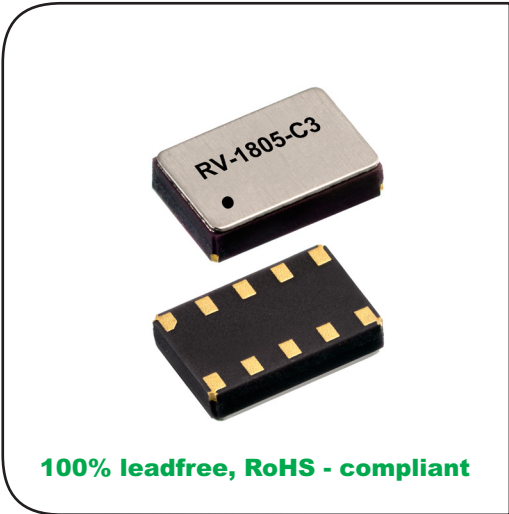


RV-1805-C3

Extreme Low Power RTC Module

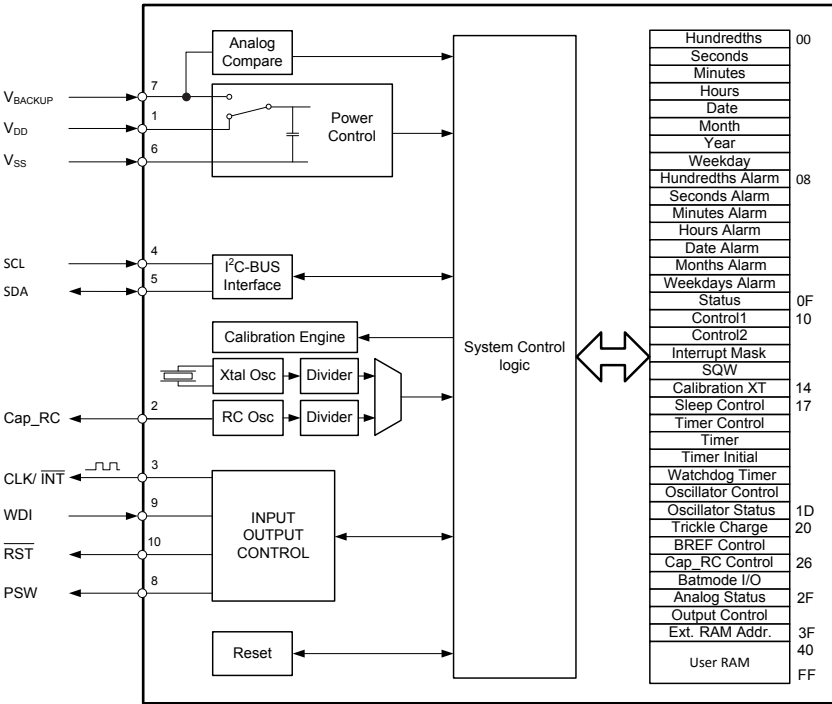


Extreme Low Current consumption
XTAL-Mode 60nA
RC-Mode 17nA
RC Autocalibrated Mode 22nA
Factory calibrated Time accuracy
typ. ±2.0ppm @ 25°C
Miniature SMT ceramic package
with integrated Quartz Crystal for
best Noise & EMI Immunity
Automatic Battery Switchover,
Trickle Charger, Power Management
& Power Switch Function
Programmable CLKOUT frequencies
I²C Bus Interface (fast mode 400kHz)
Time keeping mode down to 1.5 V
Programmable Alarm, Timer and INT
512 Bytes of User RAM

DESCRIPTION:

This RTC IC has been specially designed for ultimate low current consumption of typically 60 nA @ V_{DD} 3.0V for 32.768 kHz XTAL mode. Additionally, there is an RC-Mode consuming only 17nA and an auto-calibrated RC-mode consuming 22nA which permits to operate this RTC module several hours at Backup Supply Voltage using low-cost MLCC. The very small SMT ceramic-package combines the 32.768 kHz crystal unit with the CMOS-based oscillator and real-time-clock IC. The calendar function track year, month, date, and day-of-the-week. The factory calibrated clock achieves a time accuracy of typ. ±2.0 ppm @ 25°C and tracks hundredths of second, second, minute and hour in AM/PM or 24-hour format. Additional features include Alarm, Timer and Interrupt functions, Watchdog Timer, Power Management with Power-Switch, Trickle Charger and Automatic Switchover to backup supply voltage. For pick-and-place equipment, the parts are available in 12 mm tape: 7" (178 mm) reel with 1'000 or 3'000 parts

BLOCK DIAGRAM:



ELECTRICAL CHARACTERISTICS AT 25°C:

	Symbol	Condition	Min.	Typ.	Max	Unit
Supply voltage	V _{DD}	Time keeping	1.5		3.6	V
Supply voltage	V _{DD}	Startup Voltage	1.6		3.6	V
Current consumption Time Keeping Mode	I _{DD}	32 kHz XTAL V _{DD} 3 V		60	80	nA
		RC-Mode V _{DD} 3 V		17	25	nA
		RC-AUTOCAL V _{DD} 3 V		22	32	nA
Current consumption I ² C f _{SCL} = 400 kHz	I _{COM}	pull-up 2.2k V _{DD} 3.0 V		6		μA
		pull-up 2.2k V _{DD} 1.7 V		1.5		μA
Time accuracy	Δt/t	@ 25°C		±2.0		ppm
CLKOUT frequency		Programmable	32768...to...1/60			Hz
Frequency tolerance	ΔF/F	32768Hz @25°C	±100			ppm
Aging first year max.	ΔF/F	@ 25°C	± 3			ppm
Frequency vs. temp.	ΔF/F _O	20 ≤ T ₀ ≤ 30	-0.035 ppm/°C (T - T ₀) ² ±10%			ppm

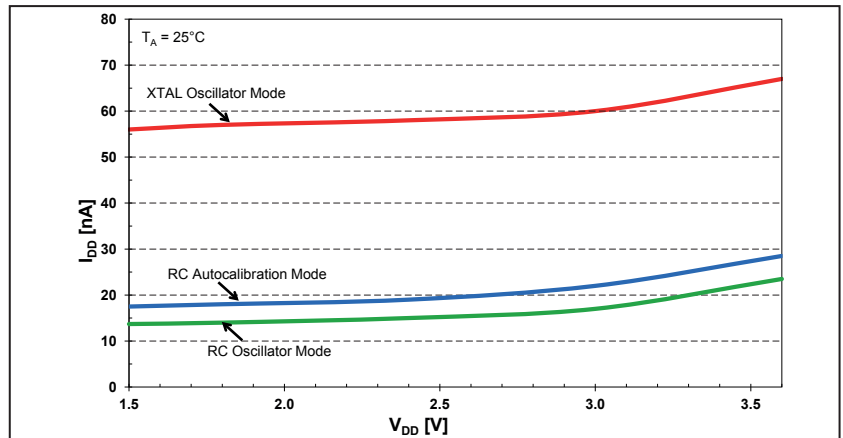
ENVIRONMENTAL CHARACTERISTICS:

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

TERMINATIONS AND PROCESSING:

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

CURRENT CONSUMPTION vs. POWER SUPPLY VOLTAGE:



PIN CONNECTIONS TOP VIEW:

Pin	Connection
1	V _{DD} Power Supply Voltage
2	Cap_RC Capacitor RC-Oscillator
3	CLK/INT Clock Output / Interrupt
4	SCL Serial Clock Input
5	SDA Serial Data
6	V _{SS} Ground
7	V _{BACKUP} Backup Supply Voltage
8	PSW Power Switch Output
9	WDI Watchdog Input
10	RST Reset Output

All specifications subject to change without notice.



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