

ARTC300B-HAS-PF



RTC module, SPI-Bus, 3.7 x 2.5 x 0.9mm

Features:

- Extremely Accurate temperature compensated RTC Module
- Automotive qualified AEC-Q200 compliant option
- ± 8 ppm max (± 0.70 s/day) over -40°C to $+125^{\circ}\text{C}$



Description:

This RTC is an ultra miniature Real-Time-Clock Module with embedded Crystal. This RTC has a SPI Bus (4-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 ± 6 ppm from -40°C to $+85^{\circ}\text{C}$

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.

Electrical characteristics at 25°C

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test condition |
|-----------------------|----------------|--|----------|------------|-------|---------------------------------|
| Supply voltage | V_{DD} | 1.3 | | 5.5 | V | Time keeping |
| Supply voltage | V_{DD} | 1.8 | | 5.5 | V | Temp. Comp. |
| Current consumption | I_{DDO} | | 800 | 1000 | nA | $V_{DD} = 3V$ |
| CLKOUT frequency | | 32.768/1024/32/1 | | | Hz | Programmable |
| Frequency tolerance | $\Delta F/F$ | | ± 10 | ± 20 | ppm | @ 25°C |
| Aging first year max. | $\Delta F/F$ | ± 3 | | | ppm | @ 25°C |
| Frequency vs. temp. | $\Delta F/F_0$ | $-0.035 \text{ ppm}/^{\circ}\text{C}^2 (T-T_0)^2 \pm 10\%$ | | | ppm | $20 \leq T_0 \leq 30$ |
| Time accuracy | $\Delta t/t$ | | | ± 0.26 | s/day | @ 25°C |
| | | | | ± 0.70 | s/day | -40 to $+125^{\circ}\text{C}$ |

Environmental characteristics

| | | | | | |
|-----------------------|-----------------|--|--|--------------------|-----------------------------------|
| Storage temp. Range | -55 to $+125$ | | | $^{\circ}\text{C}$ | |
| Operating temp. Range | -40 to $+85$ | | | $^{\circ}\text{C}$ | |
| Shock resistance | Max ± 5.0 | | | ppm | 5000 g, 0.3ms, $\frac{1}{2}$ sine |
| Vibration resistance | Max ± 5.0 | | | ppm | 20 g/10-2000Hz |

Other information

| | | | | | |
|---------------------------|---|--|--|--|--|
| Package-type | SON 10-pin | | | | |
| Termination | For SMD mounting Au plated pads | | | | |
| Processing | Reflow soldering 260°C / 20 s max | | | | |
| Packaging (Tape and Reel) | 1kpcs/reel, 3kpcs/reel | | | | |

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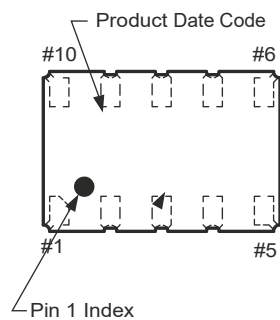
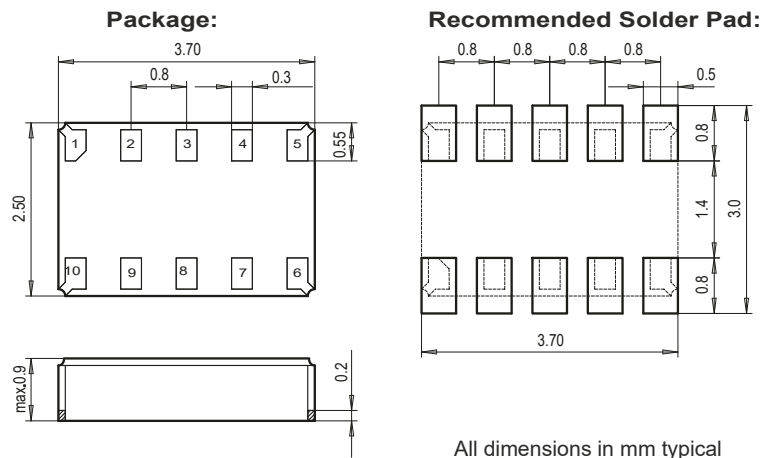
Specifications subject to change without notification

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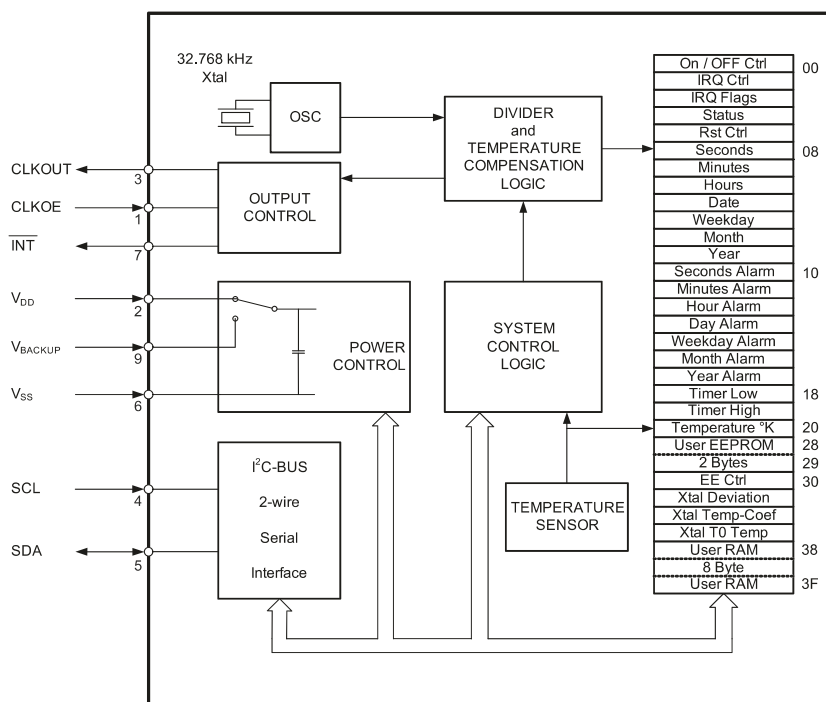


Mechanical dimensions and Pin functions



| Pin | Connection |
|-----|---|
| 1 | CLKOE CLK Output Enable |
| 2 | V _{DD} Supply Voltage |
| 3 | CLKOUT Clock Output |
| 4 | SCL Serial Clock Input |
| 5 | SDO Serial Data output |
| 6 | V _{SS} Ground |
| 7 | INT Interrupt Output |
| 8 | CE Chip enable |
| 9 | V _{BACKUP} Backup Supply Voltage |
| 10 | SDI Serial data input |

Block diagram



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Drawing control: (Internal use only)
Commodity code: 9110 9000
Issue number : N1
Date : 01/06/2018
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