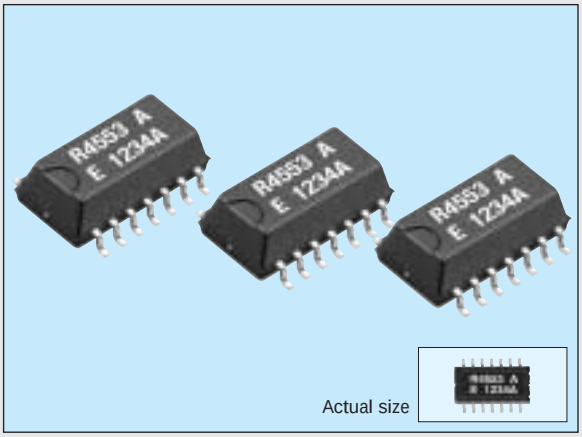
SERIAL-INTERFACE REAL TIME CLOCK MODULE WITH SRAM

# RTC-4553

Product number (please refer to page 2)

**Q4145535xxxxx00**

- Built-in crystal unit allows adjustment-free efficient operation.
- Automatic calendar function (year, month, day, day of the week, hour, minute, second).
- Automatic leap year correction.
- Builtin 30 x 4-bit S-RAM.
- Reference pulse output. (1024 Hz, 1/10 Hz)




The details are mentioned in the application manual.

http://www.epsondevice.com

## Specifications (characteristics)

### Absolute Max. rating

| Item | Symbol | Condition | Min. | Max. | Unit |
|---|---|---|---|---|---|
| Supply voltage | $V_{DD}$ | $V_{DD}$ to GND | -0.3 | +6.0 | V |
| Input voltage | $V_{IN}$ | SIN, SCK, WR, CS0, CS1 | | $V_{DD}$+0.3 | |
| Output voltage | $V_{OUT}$ | SOUT, TPOUT | | | |
| Storage temperature | $T_{STG}$ | Stored as bare product after unpacking | -55 | +125 | °C |

### Operating range

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Power voltage | $V_{DD}$ | — | 2.7 | 5.0 | 5.5 | V |
| Clock voltage | $V_{CLK}$ | — | 2.0 | — | 5.5 | V |
| Operating temperature | $T_{OPR}$ | No condensation | -30 | — | +70 | °C |

### Frequency characteristics

| Item | Symbol | Condition | | Range | Unit |
|---|---|---|---|---|---|
| Frequency tolerance | Δf/fo | Ta=+25 °C, $V_{DD}$=5 V | AA | 5±5 | x $10^{-6}$ |
| | | | A | 5±10 | |
| | | | B | 5±20 | |
| Oscillation start-up time | $t_{STA}$ | Ta=+25 °C, $V_{DD}$ = 3.0 V | | 3.0 Max. | s |
| Frequency temperature characteristics | $T_{op}$ | Ta=-10 °C to +70 °C, $V_{DD}$=5 V Reference at +25 °C | | +10 -120 | x $10^{-6}$ |
| Frequency voltage characteristics | f/V | Ta=Fix, $V_{DD}$=2 V to 5.5 V Reference at 5 V | | ±5 | |
| Aging | fa | Ta=+25 °C, $V_{DD}$=5 V, first year | | | x $10^{-6}$/year |

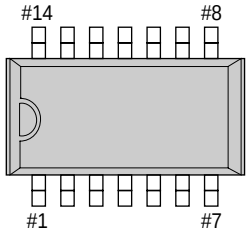
### DC characteristics

(GND=0 V, $V_{DD}$=5 V ± 10 %, Ta=-30 °C to +70 °C)

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Current consumption | $I_{DD1}$ | SCK=500 kHz | — | — | 100 | µA |
| | $I_{DD2}$ | SCK=O Hz | | 1.0 | 3.0 | |
| Output voltage | $V_{OH}$ | $I_{OH}$=-400 µA | $V_{DD}$-04 | — | | V |
| | $V_{OL}$ | $I_{OL}$=1.6 mA | — | | 0.4 | |
| Off leak current | $I_{OZH}$ | $V_{OUT}$=5.5 V | -2.0 | — | 2.0 | µA |
| | $I_{OZL}$ | $V_{OUT}$=0 V | | | | |
| Input voltage | $V_{IH}$ | — | 4/5 $V_{DD}$ | | — | V |
| | $V_{IL}$ | | — | | 1/5 $V_{DD}$ | |
| Input current | $I_{IH}$ | $V_{IN}$=5.5 V | -2.0 | | 2.0 | µA |
| | $I_{IL}$ | $V_{IN}$=0 V | | | | |

## Terminal connection

● **RTC-4553**



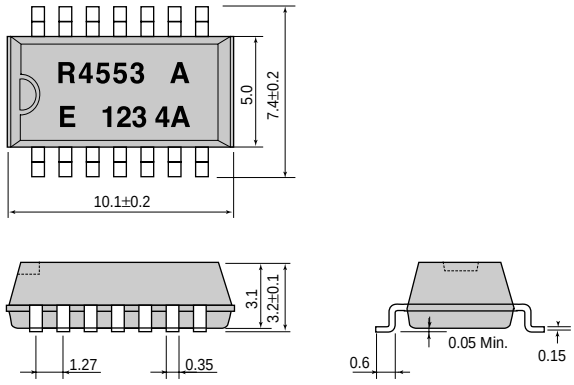

| No. | Pin terminal | No. | Pin terminal |
|---|---|---|---|
| 1 | GND | 14 | TPOUT |
| 2 | WR | 13 | SOUT |
| 3 | SIN | 12 | CS1 |
| 4 | SCK | 11 | CS0 |
| 5 | L1 | 10 | L5 |
| 6 | L2 | 9 | L4 |
| 7 | L3 | 8 | $V_{DD}$ |

L1 to L5 are test pin. Do not connect them to any terminals.

## External dimensions

(Unit: mm)

● **RTC-4553** (SOP 14-pin)




Metal may be exposed on the top or bottom of this product. This won't affect any quality, reliability or electrical spec.

## Block diagram