

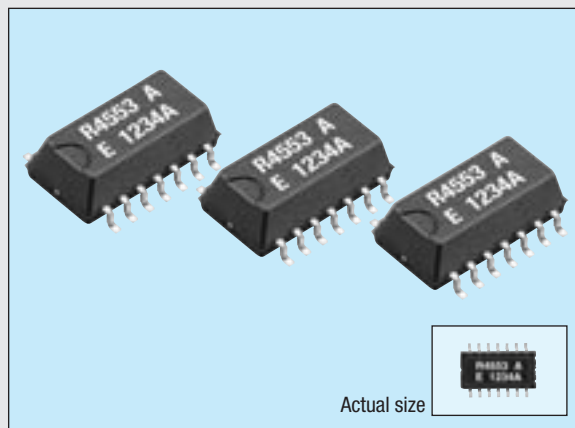
SERIAL-INTERFACE REAL TIME CLOCK MODULE WITH SRAM

# RTC-4553

Product number (please refer to page 5)

**Q4145535xxxx00**

- Built-in 32.768 kHz crystal oscillator with high accuracy.
- Dual Alarm and Timer IRQ function are Available.
- 32.768 kHz clock frequency output. (Nch open drain)
- Low backup current : 0.48  $\mu$ A / 3 V (Typ.)
- Wide operating voltage range : 1.7 V to 5.5 V
- Wide timekeeper voltage range : 1.15 V to 5.5 V
- CPU interrupt generation function (cycle time range : 1 month to 0.5 seconds, includes interrupt flags and interrupt syop function)
- Oscillation stop detection function (used to determine presence of internal data)
- Power supply voltage monitoring function (with selectable detection threshold)
- Available for lead (Pb) - free soldering.
- Available for lead (Pb) - free treminal.



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 <sub>DD</sub>	V <sub>DD</sub> to GND		+6.0	V
Input voltage	V <sub>IN</sub>	S <sub>IN</sub> , SCK, WR, CS <sub>0</sub> , CS <sub>1</sub>	-0.3	V <sub>DD</sub> +0.3	
Output voltage	V <sub>OUT</sub>	S <sub>OUT</sub> , T <sub>POUT</sub>			
Storage temperature	T <sub>STG</sub>	Stored as bare product after unpacking	-55	+125	°C

### Operating range

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power voltage	V <sub>DD</sub>	—	2.7	5.0	5.5	V
Clock voltage	V <sub>CLK</sub>	—	2.0	—	5.5	V
Operating temperature	V <sub>OPR</sub>	No condensation	-30	—	+70	°C

### Frequency characteristics

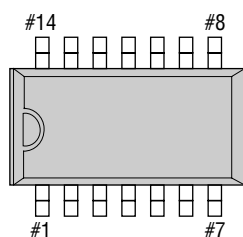
Item	Symbol	Condition	Range	Unit	
Frequency tolerance	$\Delta f/f$	Ta = +25 °C, V <sub>DD</sub> = 5 V	AA	5 ± 5	x 10 <sup>-6</sup>
			A	5 ± 10	
			B	5 ± 20	
Oscillation start up time	t <sub>STA</sub>	Ta = +25 °C, V <sub>DD</sub> = 3.0 V	3.0 Max.	s	
Frequency temperature characteristics	T <sub>OP</sub>	Ta = -10 °C to +70 °C, V <sub>DD</sub> = 5 V Reference at +25 °C	+10 -120	x 10 <sup>-6</sup>	
Frequency voltage characteristics	f/V	Ta = Fix, V <sub>DD</sub> = 2 V to 5.5 V Reference at 5 V	±5		
Aging	fa	Ta = +25 °C, V <sub>DD</sub> = 5 V, first year		x 10 <sup>-6</sup> / year	

### DC characteristics (GND = 0 V, V<sub>DD</sub> = 5 V ± 10 %, Ta = -30 °C to +70 °C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Current consumption	I <sub>DD1</sub>	SCK = 500 kHz	—	—	100	$\mu$ A
	I <sub>DD2</sub>	SCK = 0 Hz	—	1.0	3.0	
Output voltage	V <sub>OH</sub>	I <sub>OH</sub> = -400 $\mu$ A	V <sub>DD</sub> - 0.4	—	—	V
	V <sub>OL</sub>	I <sub>OL</sub> = 1.6 mA	—	—	0.4	
Off leak current	I <sub>OZH</sub>	V <sub>OUT</sub> = 5.5 V	-2.0	—	2.0	$\mu$ A
	I <sub>OZL</sub>	V <sub>OUT</sub> = 0 V	—	—	—	
Input voltage	V <sub>IH</sub>	—	4/5 V <sub>DD</sub>	—	—	V
	V <sub>IL</sub>	—	—	—	1/5 V <sub>DD</sub>	
Input current	I <sub>IH</sub>	V <sub>IN</sub> = 5.5 V	-2.0	—	2.0	$\mu$ A
	I <sub>IL</sub>	V <sub>IN</sub> = 0 V	—	—	—	

## Terminal connection

### RTC-4553



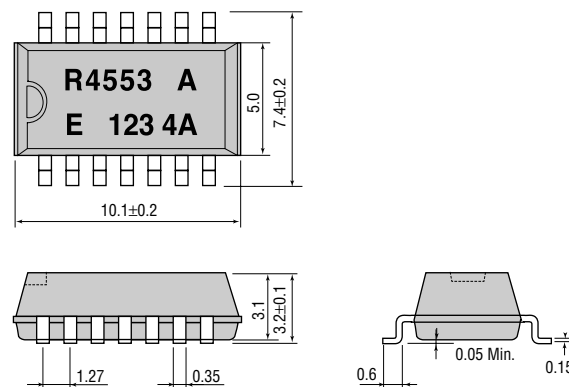
No.	Pin terminal	No.	Pin terminal
1	GND	14	T <sub>POUT</sub>
2	WR	13	S <sub>OUT</sub>
3	S <sub>IN</sub>	12	CS <sub>1</sub>
4	SCK	11	CS <sub>0</sub>
5	L1	10	L5
6	L2	9	L4
7	L3	8	V <sub>DD</sub>

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

