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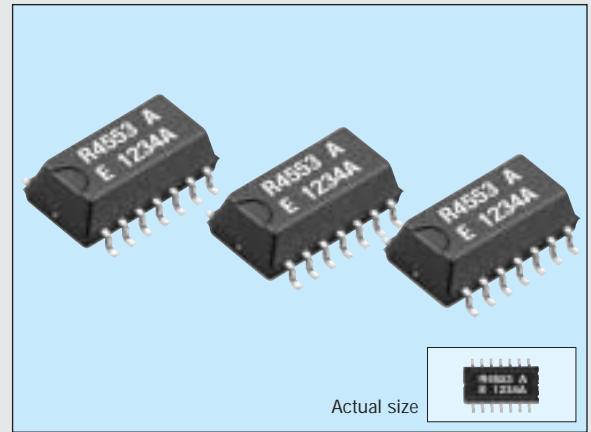
SERIAL-INTERFACE REAL TIME CLOCK MODULE WITH SRAM

# 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.
- Built-in 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 <sub>DD</sub>	V <sub>DD</sub> to GND		+6.0	V
Input voltage	V <sub>IN</sub>	S <sub>IN</sub> , S <sub>CK</sub> , 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> , TP <sub>OUT</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	T <sub>OPR</sub>	No condensation	-30	—	+70	°C

### Frequency characteristics

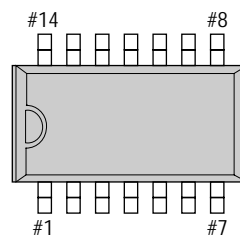
Item	Symbol	Condition	Range	Unit	
Frequency tolerance	Δf/f <sub>0</sub>	T <sub>a</sub> =+25 °C, V <sub>DD</sub> =5 V	AA	5±5	x 10 <sup>-6</sup>
			A	5±10	
			B	5±20	
Oscillation start-up time	t <sub>STA</sub>	T <sub>a</sub> =+25 °C, V <sub>DD</sub> = 3.0 V	3.0 Max.	s	
Frequency temperature characteristics	T <sub>OP</sub>	T <sub>a</sub> =-10 °C to +70 °C, V <sub>DD</sub> =5 V Reference at +25 °C	+10	x 10 <sup>-6</sup>	
			-120		
Frequency voltage characteristics	f/V	T <sub>a</sub> =Fix, V <sub>DD</sub> =2 V to 5.5 V Reference at 5 V	±5	x 10 <sup>-6</sup>	
Aging	f <sub>a</sub>	T <sub>a</sub> =+25 °C, V <sub>DD</sub> =5 V, first year		x 10 <sup>-4</sup> /year	

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

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Current consumption	I <sub>DD1</sub>	S <sub>CK</sub> =500 kHz	—	—	100	μA
	I <sub>DD2</sub>	S <sub>CK</sub> =0 Hz	—	1.0	3.0	
Output voltage	V <sub>OH</sub>	I <sub>OH</sub> =-400 μA	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	μA
	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	μA
	I <sub>IL</sub>	V <sub>IN</sub> =0 V	—	—	—	

## Terminal connection

### RTC-4553



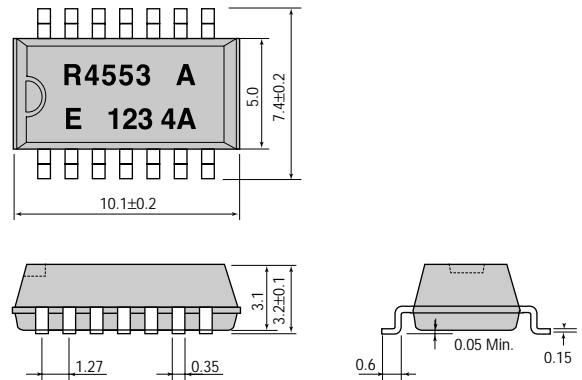
No.	Pin terminal	No.	Pin terminal
1	GND	14	TP <sub>OUT</sub>
2	WR	13	S <sub>OUT</sub>
3	S <sub>IN</sub>	12	CS <sub>1</sub>
4	S <sub>CK</sub>	11	CS <sub>0</sub>
5	L1	10	L5
6	L2	9	L4
7	L3	8	V <sub>DD</sub>

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

