

SERIAL-INTERFACE REAL TIME CLOCK MODULE

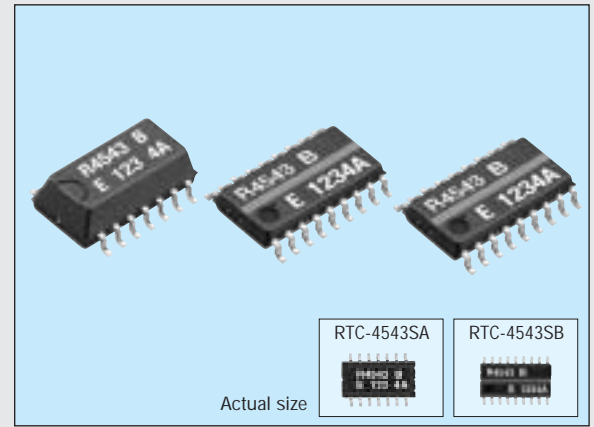
RTC-4543SA/SB

Product number (please refer to page 2)

Q4145435x000200

Q4145436x000200

- Built-in crystal unit allows adjustment-free efficient operation.
- Automatic leap year correction.
- Output selectable between 32.768 kHz/1 Hz.
- Supply voltage detection voltage: 1.7 V \pm 0.3 V.



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	7.0	V
Input voltage	V _{IN}	—		V _{DD} +0.3	
Output voltage	V _{OUT}	—			
Storage temperature	T _{STG}	Stored as bare product after unpacking	-55	+125	°C

Operating range

Item	Symbol	Condition	Min.	Max.	Unit
Power voltage	V _{DD}	—	2.5	5.5	V
Clock voltage	V _{CLK}	—	1.4		
Operating temperature	T _{OPR}	No condensation	-40	+85	°C

Frequency characteristics

Item	Symbol	Condition	Range	Unit
Frequency tolerance	$\Delta f/f_0$	T _a =+25 °C, V _{DD} =5 V	5 \pm 23*	x 10 ⁻⁶
Oscillation start-up time	t _{STA}	T _a =+25 °C, V _{DD} =2.5	3 Max.	s
Frequency temperature characteristics	T _{OP}	T _a =-10 to +70 °C Reference at +25 °C	+10/-120	x 10 ⁻⁶
Frequency voltage characteristics	f/V	T _a =+25 °C, V _{DD} =2.0 to 5.5 V	\pm 2.0	x 10 ⁻⁶ /V
Aging	f _a	First year T _a =+25 °C, V _{DD} =5 V	\pm 5.0	x 10 ⁻⁶ /year

* Please ask tighter tolerance.

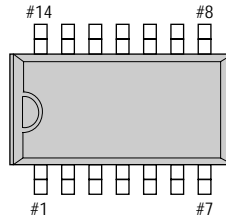
DC characteristics

(V_{DD}=5 V \pm 0.5 V, T_a=-40 °C to +85 °C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	
Current consumption	1 I _{DD1}	V _{DD} =5.0 V	—	1.5	3.0	μ A	
	2 I _{DD2}	V _{DD} =3.0 V		1.0	2.0		
	3 I _{DD3}	V _{DD} =2.0 V		0.5	1.0		
	4 I _{DD4}	V _{DD} =5.0 V		CE="L", F _{OE} ="H"	4.0		10.0
	5 I _{DD5}	V _{DD} =3.0 V		CE="L", F _{OE} ="L"	2.5		6.5
	6 I _{DD6}	V _{DD} =2.0 V		No load on the F _{OUT} pin	1.5		4.0
"H" input voltage	V _{IH}	WR, DATA, CE, CLK, F _{OE} , F _{SEL} pins	0.8V _{DD}	—	—	V	
"L" input voltage	V _{IL}	—	—	0.2V _{DD}	—	V	
Input off-leak current	I _{OFF}	WR, CE, CLK, F _{OE} , F _{SEL} pins	—	0.5	—	μ A	
"H" output voltage	V _{OH1}	V _{DD} =5.0 V	I _{OH} =-1.0 mA	4.5	—	V	
	V _{OH2}	V _{DD} =3.0 V	DATA, F _{OUT} pins	2.5	—		
"L" output voltage	V _{OL1}	V _{DD} =5.0 V	I _{OL} =1.0 mA	—	0.5	V	
	V _{OL2}	V _{DD} =3.0 V	DATA, F _{OUT} pins	—	0.8		
Output leak current	I _{OZH}	V _{OUT} =5.5 V	DATA, F _{OUT} pins	-1.0	1.0	μ A	
	I _{OZL}	V _{OUT} =0 V	—	—	—		
Supply detection voltage	V _{DT}	—	1.4	1.7	2.0	V	
Output load conditions	CL	—	—	—	30	pF	
	N	F _{OUT} pin	2LS-TTL				

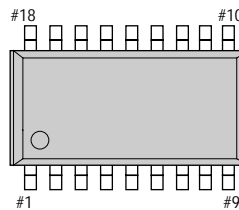
Terminal connection

RTC-4543SA



No.	Pin terminal	No.	Pin terminal
1	GND	14	F _{OUT}
2	N.C.	13	N.C.
3	CE	12	N.C.
4	FSEL	11	DATA
5	WR	10	CLK
6	FOE	9	V _{DD}
7	N.C.	8	N.C.

RTC-4543SB

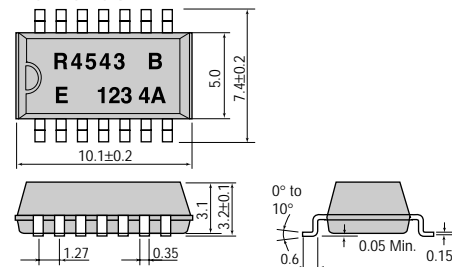


No.	Pin terminal	No.	Pin terminal
1	N.C.	18	N.C.
2	N.C.	17	N.C.
3	N.C.	16	N.C.
4	N.C.	15	N.C.
5	FOE	14	V _{DD}
6	WR	13	N.C.
7	FSEL	12	CLK
8	CE	11	DATA
9	GND	10	F _{OUT}

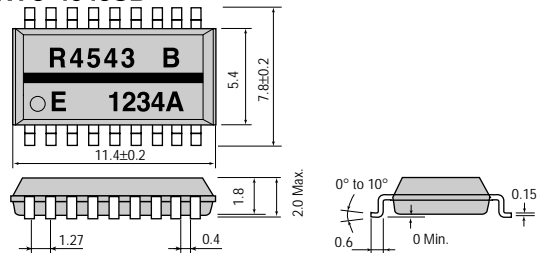
External dimensions

(Unit: mm)

RTC-4543SA (SOP 14-pin)



RTC-4543SB (SOP 18-pin)



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