

4-wire serial interface high-stability RTC module

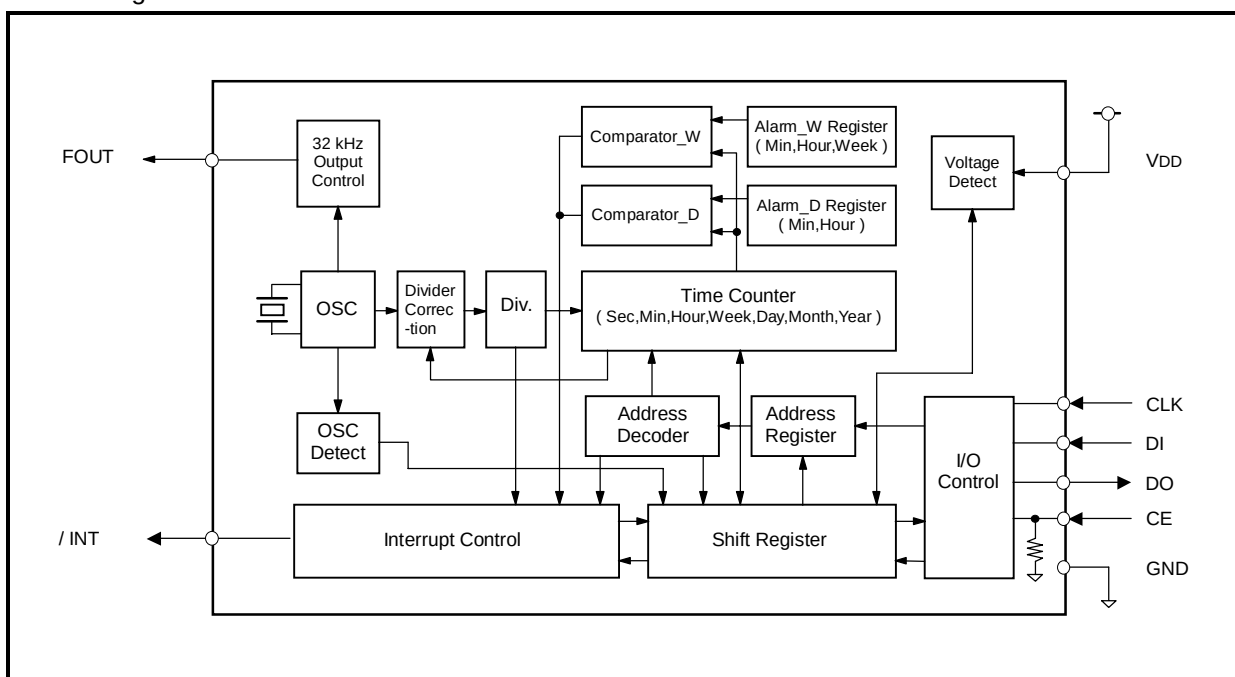
RX-4045 SA

Preliminary

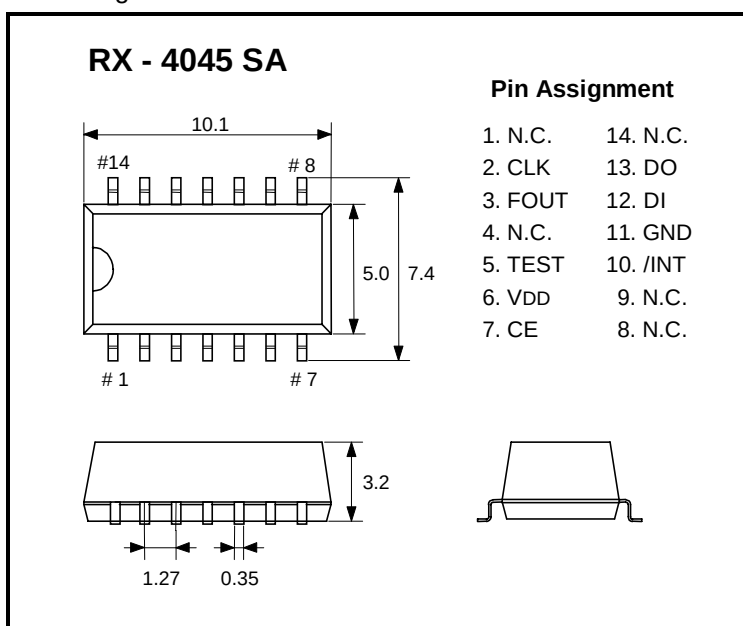
Product number: Q4140455xxxxx00

- Built in frequency adjusted 32.768 kHz crystal unit.
- Serial interface which can be controlled by 4 or 3 signal lines.
- Dual Alarm and Timer IRQ function are Available.
- 32.768 kHz clock frequency output. (FOUT)
- Low backup current : 0.48 μ 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
- Available as small package.(SOP-14pin)

■ Block Diagram



■ Pin Assignment



■ Pin Descriptions

Terminal	Pin No.	Descriptions
CLK	2	Serial clock input
FOUT	3	32.768 kHz output (Nch open drain)
TEST	5	TEST terminal
VDD	6	VDD
CE	7	Chip enable
/INT	10	Interrupt output (Nch open drain)
GND	11	GND
DI	12	Data input
DO	13	Data output

■ Specifications

1. Operating range

Item	Symbol	Condition	Min.	Max.	Unit
Supply voltage	V _{DD}		1.70	5.5	V
Data holding voltage	V _{CLK}		1.15	5.5	V
Operating temperature range	TOPR		-40	+85	°C

2. Frequency characteristics

Item	Symbol	Condition	Max.	Unit
Frequency tolerance	f / f ₀	Ta=+25 °C , V _{DD} =3.0 V	5 ± 5	X 10 ⁻⁶
Frequency temperature characteristics		Ta=-10 ~ +70 °C , V _{DD} =3.0 V	+10 / -120	X 10 ⁻⁶
Aging	fa	Ta=+25 °C, V _{DD} =3.0 V, First year	± 5	X 10 ⁻⁶

3. DC characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Current consumption Backup mode	I _{DD}	Output=Open, V _{DD} =3 V		0.48	1.2	μA
V _{DD} detect voltage (High)	V _{DETH}	Ta = +25 °C	1.90	2.10	2.30	V
V _{DD} detect voltage (Low)	V _{DETL}	Ta = +25 °C	1.15	1.30	1.45	V

■ Register table

Address	Item	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
00	SEC.	-	S40	S20	S10	S8	S4	S2	S1
01	MIN.	-	M40	M20	M10	M8	M4	M2	M1
02	HOUR	-	-	H20 P/A	H10	H8	H4	H2	H1
03	WEEK	-	-	-	-	-	W4	W2	W1
04	DAY	-	-	D20	D10	D8	D4	D2	D1
05	MONTH	20/19	-	-	MO10	MO8	MO4	MO2	MO1
06	YEAR	Y80	Y40	Y20	Y10	Y8	Y4	Y2	Y1
07	Digital offset	0	F6	F5	F4	F3	F2	F1	F0
08	Alarm_W (MIN.)	-	WM40	WM20	WM10	WM8	WM4	WM2	WM1
09	Alarm_W (HOUR)	-	-	WH20 WP/A	WH10	WH8	WH4	WH2	WH1
0A	Alarm_W (WEEK)	-	WW6	WW5	WW4	WW3	WW2	WW1	WW0
0B	Alarm_D (MIN.)	-	DM40	DM20	DM10	DM8	DM4	DM2	DM1
0C	Alarm_D (HOUR)	-	-	DH20 DP/A	DH10	DH8	DH4	DH2	DH1
0D		-	-	-	-	-	-	-	-
0E	Control register1	WALE	DALE	24/12	/CLEN2	TEST	CT2	CT1	CT0
0F	Control register 2	VDSL	VDET	/XST	PON	/CLEN1	CTFG	WAFG	DAFG

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