YAMAHA Electronics (Suzhou) Co.,LTD

RECIPIENT

SPECIFICATIONS

Product No: X1B000242000100

MODEL : RX8010SJ

SPEC. No. : Q14-118-1A

DATE: Aug. 5 2014

SEIKO EPSON CORPORATION

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SPECIFICATION

1. Application

1)This document is applicable to the real time clock module RX8010SJ that are delivered to YAMAHA Electronics (Suzhou) Co.,LTD from Seiko Epson Corp.

2)RoHS compliant
RX8010SJ contains lead in high melting type solder which is exempted in RoHS directive.

3)This Product supplied (and any technical information furnished, if any) by Seiko Epson Corporation shall not be used for the development and manufacture of weapon of mass destruction or for other military purposes. Making available such products and technology to any third party who may use such products or technologies for the said purposes are also prohibited.

4)This product listed here is designed as components or parts for electronics equipment in general consumer use.
We do not expect that any of these products would be incorporated or otherwise used as a component or part for the equipment, which requires an systems, and medical equipment, the functional purpose of which is to keep extra high reliability, such as satellite, rocket and other space life.

2. Product No. / Model

The product No. of this real time clock module is X1B000242000100.
The model is RX8010SJ

3. Packing

It is subject to the packing standard of Seiko Epson Corp.

4. Warranty

Defective parts which are originated by us are replaced free of charge in case defects are found within 12 Months after delivery.

5. Amendment and abolishment

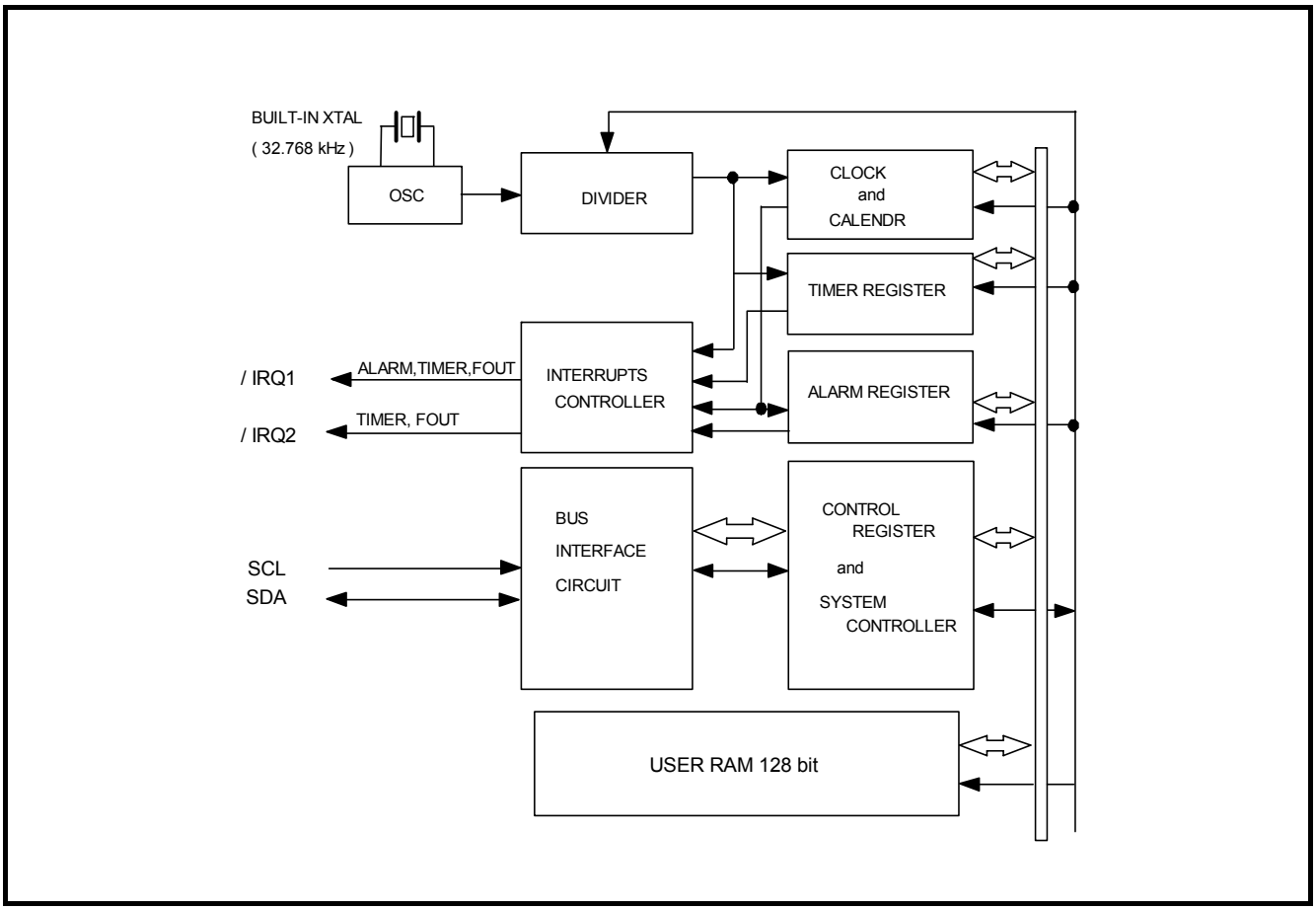
Amendment and/or abolishment of this specification are subject to the agreement of both parties.

6. Contents

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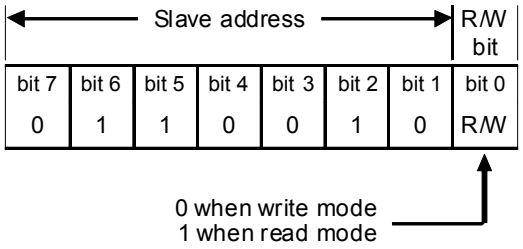
1. Block Diagram



2. Register table

2.1. Register

2.1.1. Slave address



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2.1.2. Register table

Address [h]	Function	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
10	SEC	○	40	20	10	8	4	2	1
11	MIN	○	40	20	10	8	4	2	1
12	HOUR	○	○	20	10	8	4	2	1
13	WEEK	○	6	5	4	3	2	1	0
14	DAY	○	○	20	10	8	4	2	1
15	MONTH	○	○	○	10	8	4	2	1
16	YEAR	80	40	20	10	8	4	2	1
17	Reserved	-	-	-	-	-	-	-	-
18	MIN Alarm	AE	40	20	10	8	4	2	1
19	HOUR Alarm	AE	•	20	10	8	4	2	1
1A	WEEK Alarm	AE	6	5	4	3	2	1	0
	DAY Alarm		•	20	10	8	4	2	1
1B	Timer Counter 0	128	64	32	16	8	4	2	1
1C	Timer Counter 1	32768	16384	8192	4096	2048	1024	512	256
1D	Extension Register	FSEL1	FSEL0	USEL	TE	WADA	TSEL2	TSEL1	TSEL0
1E	Flag Register	○	○	UF	TF	AF	○	VLF	○
1F	Control Register	***TEST***	STOP	UIE	TIE	AIE	TSTP	-	-

Address [h]	Function	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
20 | 2F	RAM	User Register 128 bit (16 word x 8 bit)							

Address [h]	Function	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
30	Reserved	-	-	-	-	-	-	-	-
31	Reserved	○	○	○	-	-	-	-	-
32	IRQ Control	○	-	-	-	○	TMPIN	FOPIN1	FOPIN0

Note During the initial power-on (from 0 V) and if the value of the VLF bit is "1" when the VLF bit is read, be sure to initialize all registers before using them.
When doing this, be careful to avoid setting incorrect data as the date or time, as timed operations cannot be guaranteed if incorrect date or time data has been set.

∗1. During the initial power-on (from 0 V), the power-on reset function sets "1" to the VLF bit.
∗ Since the value of other registers is undefined at this time, be sure to reset all registers before using them.

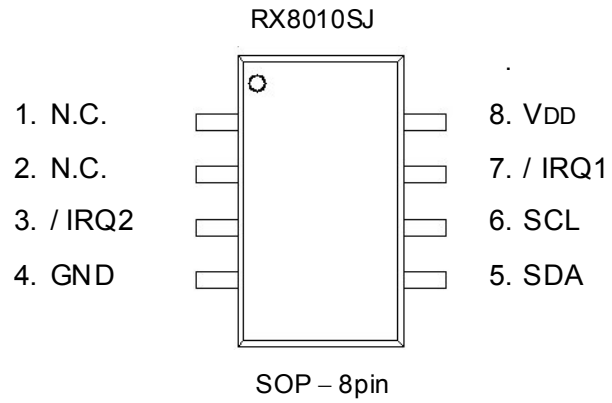
∗2. The ***TEST***, bit are Epson test bits.
∗ Be sure to write "0" by initializing before using the clock module. Afterward, be sure to set "0" when writing.
∗ The four ***TEST*** bits are undefined when read. Those bits should be masked after being read.

∗3. The ' ○ ' mark indicates a write-prohibited bit, which returns a "0" when read.
∗4. The ' • ' mark indicates a read/write-accessible RAM bit for any data.
∗5. The '-' mark is a Reserved bit. It is necessary to write in specified fixation value at the time of initialization.
∗6. User Register is a free register.

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3. Terminal description

3.1. Terminal connections



SOP – 8pin

3.2. Pin Functions

Signal name	I/O	Function
SCL	Input	This is a shift clock input pin for serial data transmission.
SDA	Input Output	This is the data input/output pin for serial data transfer.
/ IRQ1	Output	This pin outputs interrupt signals ("L" level) for alarm, timer, time update, and FOUT. This is an N-ch open-drain output.
/ IRQ2	Output	This pin outputs interrupt signals ("L" level) for timer and FOUT. This is a C-MOS output.
VDD	Supply	This is a power-supply pin.
GND	Supply	This pin is connected to a ground.

Note: Input pins are able to input up to 5.5 V regardless of VDD applied voltage.
Note: Open drain pins are able to Pull-up to 5.5 V regardless of VDD applied voltage.
Note: Connect a bypass capacitor rated at least 0.1µF between power supply pins and GND pin.

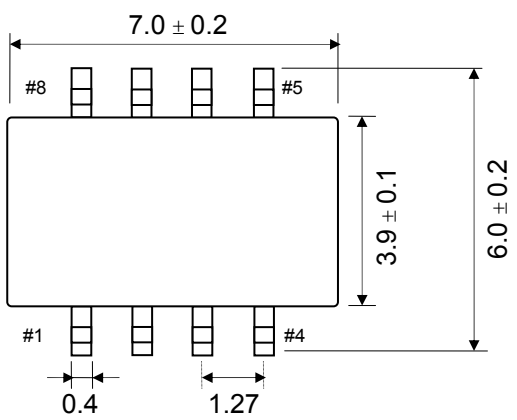
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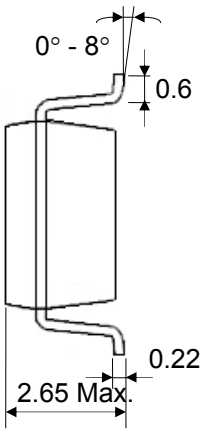
4. External Dimensions / Marking Layout

4.1. External Dimensions

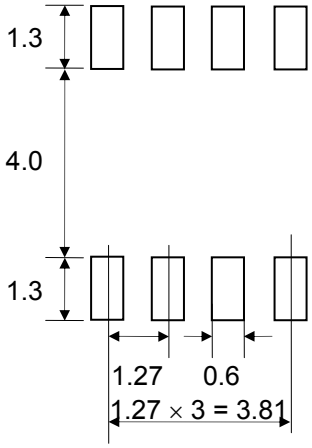
RX8010 SJ (SOP – 8 pin)

- External dimensions





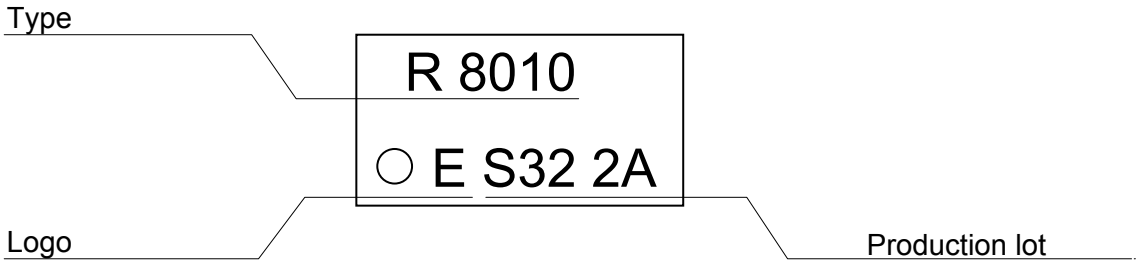
- Recommended soldering pattern



Unit : mm

4.2 Marking Layout

RX8010SJ (SOP – 8pin)



∗ Contents displayed indicate the general markings and display, but are not the standards for the fonts, sizes and positioning.

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5. Absolute Maximum Ratings

GND = 0 V

Item	Symbol	Condition	Rating	Unit
Supply voltage	V_{DD}	Between V_{DD} and GND	−0.3 ~ +6.5	V
Input voltage	V_{IN}	SCL,SDA	−0.3 ~ +6.5	V
Output voltage 1	V_{OUT1}	/IRQ2	−0.3 ~ V_{DD}+0.3	V
Output voltage 2	V_{OUT2}	SDA, /IRQ1	−0.3 ~ +6.5	V
Storage temperature	T_{STG}	When stored separately, without packaging	−55 to +125	°C

6. Recommended Operating Conditions

*Unless otherwise specified, GND = 0 V , Ta = −40 °C to +85 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating supply voltage	V_{ACC}	-	1.6	3.0	5.5	V
Clock supply voltage	V_{CLK}	-	1.1	3.0	5.5	V
Low voltage detection	V_{LOW}	-			1.1	V
Applied voltage when OFF	V_{PUP}	SDA, /IRQ1pin			5.5	V
Operating temperature	T_{OPR}	No condensation	−40	+25	+85	°C

∗Minimum value of Clock supply voltage V_{CLK} is the timekeeping continuation lower limit value that initialized RX8010 in operating supply voltage V_{ACC}.

7. Frequency Characteristics

*Unless otherwise specified, GND = 0 V , Ta = −40 °C to +85 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Output frequency	fo			32.768 (Typ.)		kHz
Frequency/voltage characteristics	Δ f / f	Ta = +25 °C V_{DD} = 3.0 V		B : 5 ± 23 (∗1)		× 10^{-6}
Frequency/voltage characteristics	f / V	Ta = +25 °C V_{DD} = 1.2 V ~ 5.5 V	−2		+2	× 10^{-6} / V
Frequency/temperature characteristics	Top	Ta = −20 °C ~ +70 °C V_{DD} = 3.0 V ; +25 °C reference	−120		+10	× 10^{-6}
Oscillation start time	tSTA	Ta = 0 °C ~ +50 °C V_{DD} = 1.6 V ~ 5.5 V			1.0	s
		Ta = −40 °C ~ +85 °C V_{DD} = 1.6 V ~ 5.5 V			3.0	s
Aging	fa	Ta = +25 °C , V_{DD} = 3.0 V ; first year	−5		+5	× 10^{-6} / year

∗1) The monthly error is equal to one minute. (excluding offset)

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8. Electrical Characteristics

8.1. DC characteristics

*Unless otherwise specified, GND = 0 V , Ta = –40 °C to +85 °C

8.1.1. DC characteristics (1)

*Unless otherwise specified, GND = 0 V , V_{DD} = 1.6 V ~ 5.5 V , Ta = –40°C ~ +85°C

Item	Symbol	Condition		Min.	Typ.	Max.	Unit
Current consumption (1)	I_{DD1}	Input pins are "L" f_{CLK} = 0 Hz, /IRQ1,2 = OFF	V_{DD} = 5 V			350	nA
Current consumption (2)	I_{DD2}		V_{DD} = 3 V			320	nA
Current consumption (3)	I_{DD3}	f_{CLK} = 0 Hz, /IRQ2 = OFF, /IRQ1 : 32.768 kHz ON	V_{DD} = 5 V		0.60	1.10	μA
Current consumption (4)	I_{DD4}		V_{DD} = 3 V		0.52	0.90	
Current consumption (5)	I_{DD5}	f_{CLK} = 0 Hz, /IRQ1 = OFF, /IRQ2 : 1024 Hz ON , C_L = 15 pF	V_{DD} = 5 V		0.45	1.10	μA
Current consumption (6)	I_{DD6}		V_{DD} = 3 V		0.40	0.90	
High-level input voltage	V_{IH}	SCL,SDA pin		0.8 × V_{DD}		5.5	
Low-level input voltage	V_{IL}	SCL, SDA pin		GND – 0.3		0.2 × V_{DD}	V
High-level output voltage	V_{OH1}	/IRQ2 pin	V_{DD}=5 V, I_{OH}=–1 mA	4.5		5.0	V
	V_{OH2}		V_{DD} =3 V, I_{OH}=–0.5 mA	2.7		3.0	
Low-level output voltage	V_{OL1}	/IRQ2 pin	V_{DD} =5 V, I_{OL}=1 mA	GND		GND +0.5	V
	V_{OL2}		V_{DD} =3 V, I_{OL}=0.5 mA	GND		GND +0.3	
	V_{OL4}	/IRQ1 pin	V_{DD} =5 V, I_{OL}=1 mA	GND		GND +0.25	V
	V_{OL5}		V_{DD} =3 V, I_{OL}=1 mA	GND		GND +0.4	
Input leakage current	I_{LK}	Input pin, V_{IN} = V_{DD} or GND		–0.1		0.1	μA
Onput leakage current	I_{OZ}	Input pin, V_{OUT} = V_{DD} or GND		–0.1		0.1	μA

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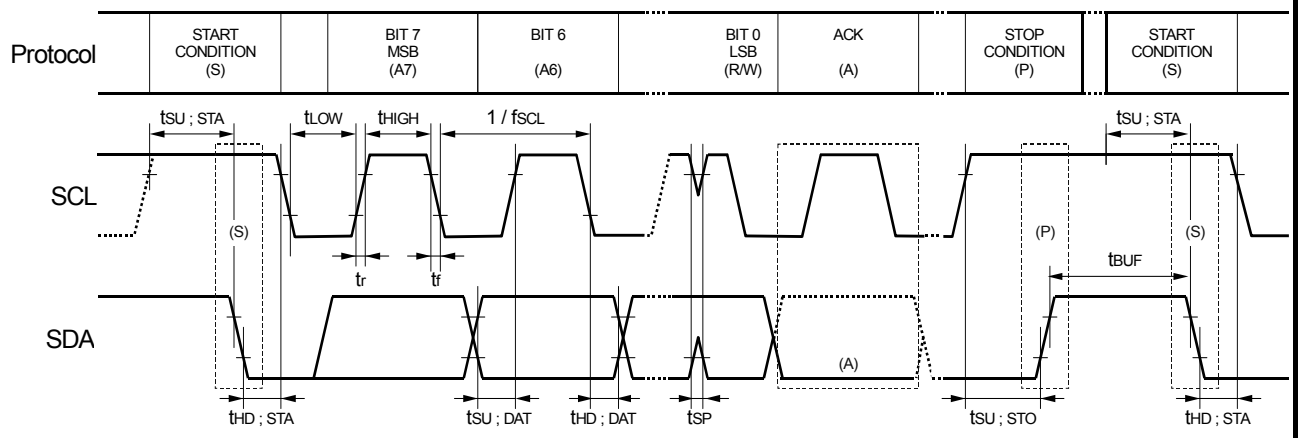
8.2. AC characteristics

8.2.1. AC characteristics(1)

*Unless otherwise specified, GND = 0 V , V_{DD}= 1.6 V ~ 5.5 V , Ta = –40 °C ~ +85 °C

Item	Symbol	Standard-Mode (f_{SCL}=100 kHz)		Fast-Mode (f_{SCL}=400 kHz)		Unit
		Min.	Max.	Min.	Max.	
SCL clock frequency	f_{SCL}		100		400	kHz
Start condition setup time	$t_{SU;STA}$	4.7		0.6		μs
Start condition hold time	$t_{HD;STA}$	4.0		0.6		μs
Data setup time	$t_{SU;DAT}$	250		100		ns
Data hold time	$t_{HD;DAT}$	0		0		ns
Stop condition setup time	$t_{SU;STO}$	4.0		0.6		μs
Bus idle time between start condition and stop condition	t_{BUF}	4.7		1.3		μs
Time when SCL = "L"	t_{LOW}	4.7		1.3		μs
Time when SCL = "H"	t_{HIGH}	4.0		0.6		μs
Rise time for SCL and SDA	t_r		1.0		0.3	μs
Fall time for SCL and SDA	t_f		0.3		0.3	μs
Allowable spike time on bus	t_{SP}		50		50	ns

- Timing chart



Caution:When accessing this device, all communication from transmitting the start condition to transmitting the stop condition after access should be completed within 0.95 seconds.
If such communication requires 0.95 seconds or longer, the I^2C bus interface is reset by the internal bus timeout function.

8.2.2. AC characteristics (2)

*Unless otherwise specified, GND = 0 V , V_{DD}= 1.6 V ~ 5.5 V , Ta = –40 °C ~ +85 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
FOUT symmetry (/IRQ2)	SYM	50% V_{IO} Level	40	50	60	%

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9. Reading/Writing Data via the I²C Bus Interface

9.1. Overview of I²C-BUS

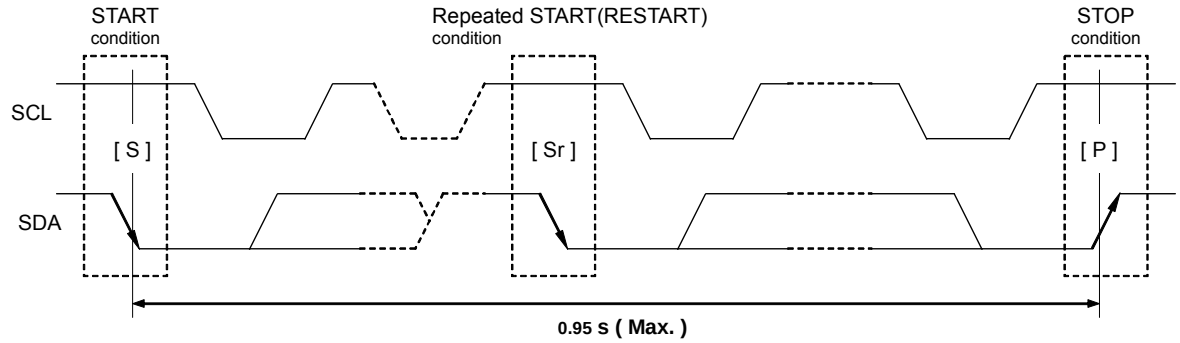
The I²C bus supports bi-directional communications via two signal lines: the SDA (data) line and SCL (clock) line. A combination of these two signals is used to transmit and receive communication start/stop signals, data transfer signals, acknowledge signals, and so on.

Both the SCL and SDA signals are held at high level whenever communications are not being performed.
The starting and stopping of communications is controlled at the rising edge or falling edge of SDA while SCL is at high level.

9.2. Data transfers

Data transfers are performed in 8-bit (1 byte) units once the START condition has occurred. There is no limit on the amount (bytes) of data that are transferred between the START condition and STOP condition.
(However, the transfer time must be no longer than 0.95 seconds.)

9.3. Starting and stopping I²C bus communications



1) START condition, repeated START condition, and STOP condition

(1) START condition
- The SDA level changes from high to low while SCL is at high level.

(2) STOP condition
- This condition regulates how communications on the I²C -BUS are terminated. The SDA level changes from low to high while SCL is at high level.

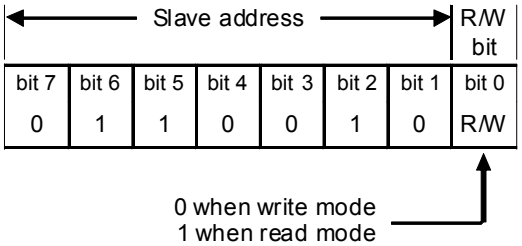
(3) Repeated START condition (RESTART condition)

- In some cases, the START condition occurs between a previous START condition and the next STOP condition, in which case the second START condition is distinguished as a RESTART condition. Since the required status is the same as for the START condition, the SDA level changes from high to low while SCL is at high level.

9.4. Slave address

The I²C-BUS devices do not have any chip select or chip enable pins. All I²C-BUS devices are memorized with a fixed unique number in it. The chip selection on the I²C-BUS is executed, when the interface starts, the master device send the required slave address to all devices on the I²C-BUS. The receiving device only reacts for interfacing, when the required slave address is agreed with its own slave address.

During in actual data transmission, the transmitted data contains the slave address and the data with R/W (read/write) bit.



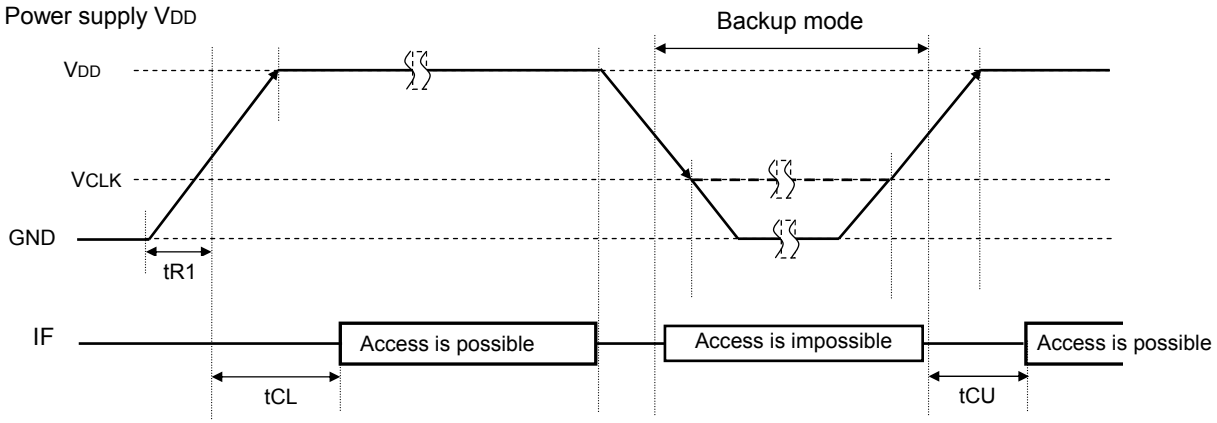
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10. Matters that demand special attention on use

10.1. Instructions in the power on

10.1.1. Characteristic for the fluctuation of the power supply

∗tR1 is restrictions to validate power-on reset. When cannot keep this standard, power-on reset does not work normally. It is necessary to initial setting by the software command.
Repeated ON/OFF of the power supply in short term, the power-on reset becomes unstable.
After power-OFF, keep a state of VDD=GND more than 60 seconds to validate power-on reset.
When it is impossible, please perform initial setting by the software command.



Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply rise time	tR1	GND – VDD	1	-	100	μs / V
access wait time (Initial power on)	tCL	-	40	-	-	ms
access wait time (Normal power on)	tCU	-	40	-	-	ms

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11. Application notes

1) Notes on handling

This module uses a C-MOS IC to realize low power consumption. Carefully note the following cautions when handling.

(1) Static electricity

While this module has built-in circuitry designed to protect it against electrostatic discharge, the chip could still be damaged by a large discharge of static electricity. Containers used for packing and transport should be constructed of conductive materials. In addition, only soldering irons, measurement circuits, and other such devices which do not leak high voltage should be used with this module, which should also be grounded when such devices are being used.

(2) Noise

If a signal with excessive external noise is applied to the power supply or input pins, the device may malfunction or "latch up." In order to ensure stable operation, connect a filter capacitor (preferably ceramic) of greater that 0.1 μF as close as possible to the power supply pins (between VDD and GNDs). Also, avoid placing any device that generates high level of electronic noise near this module.

* Do not connect signal lines to the shaded area in the figure shown in Fig. 1 and, if possible, embed this area in a GND land.

(3) Voltage levels of input pins

When the input pins are at the mid-level, this will cause increased current consumption and a reduced noise margin, and can impair the functioning of the device. Therefore, try as much as possible to apply the voltage level close to VDD or GND.

2) Notes on packaging

(1) Soldering heat resistance.

If the temperature within the package exceeds +260 °C, the characteristics of the crystal oscillator will be degraded and it may be damaged. The reflow conditions within our reflow profile is recommended. Therefore, always check the mounting temperature and time before mounting this device. Also, check again if the mounting conditions are later changed.

* See Fig. 2 profile for our evaluation of Soldering heat resistance for reference.

(2) Mounting equipment

While this module can be used with general-purpose mounting equipment, the internal crystal oscillator may be damaged in some circumstances, depending on the equipment and conditions. Therefore, be sure to check this. In addition, if the mounting conditions are later changed, the same check should be performed again.

(3) Ultrasonic cleaning

Depending on the usage conditions, there is a possibility that the crystal oscillator will be damaged by resonance during ultrasonic cleaning. Since the conditions under which ultrasonic cleaning is carried out (the type of cleaner, power level, time, state of the inside of the cleaning vessel, etc.) vary widely, this device is not warranted against damage during ultrasonic cleaning.

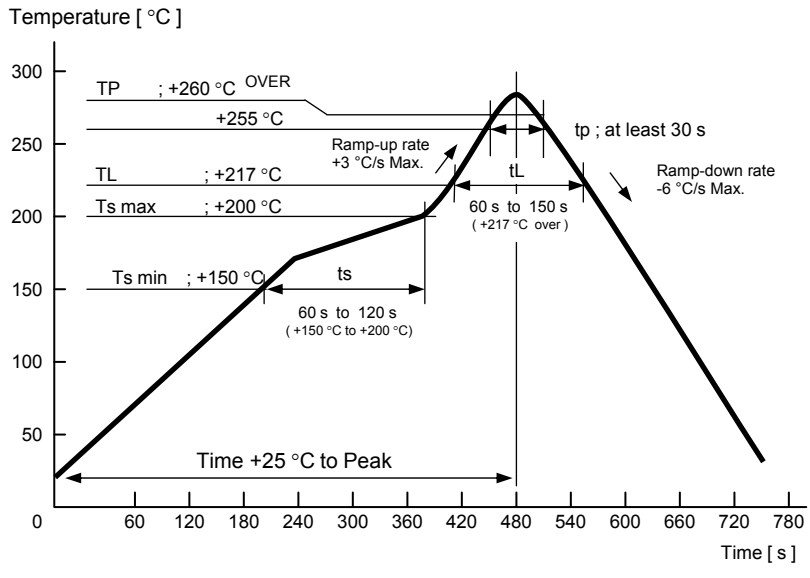
(4) Mounting orientation

This device can be damaged if it is mounted in the wrong orientation. Always confirm the orientation of the device before mounting.

(5) Leakage between pins

Leakage between pins may occur if the power is turned on while the device has condensation or dirt on it. Make sure the device is dry and clean before supplying power to it.

Fig. 1 : Reference profile for our evaluation of Soldering heat resistance.



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TAPING SPECIFICATION

1. APPLICATION

This standard will apply to SOP 8 pin package.

Spec：SJ package

2. CONTENTS

Item No.	Item	Page
[1]	Taping specification	1 to 2
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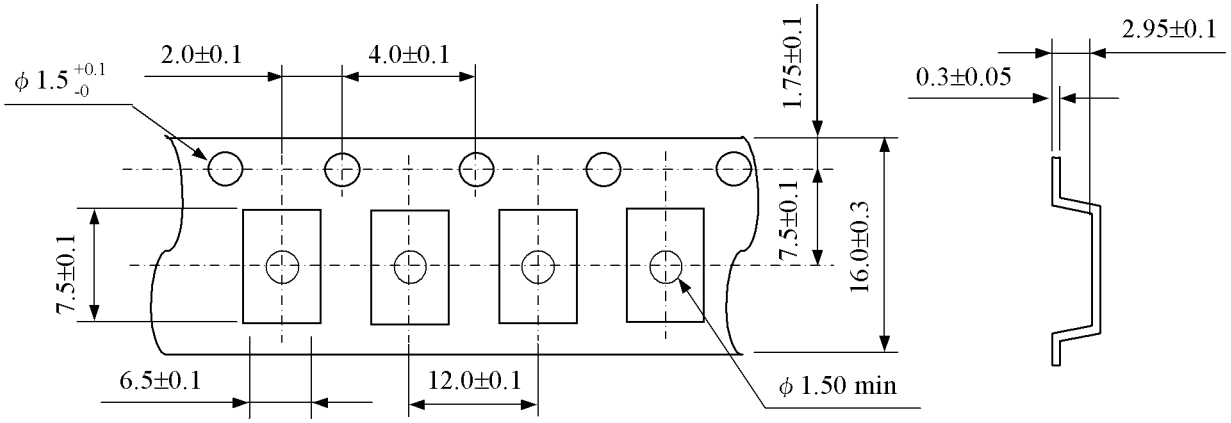
[1] Taping specification

Subject to EIA-481& IEC 60286

(1) Tape dimensions

Material of the carrier tape : PS

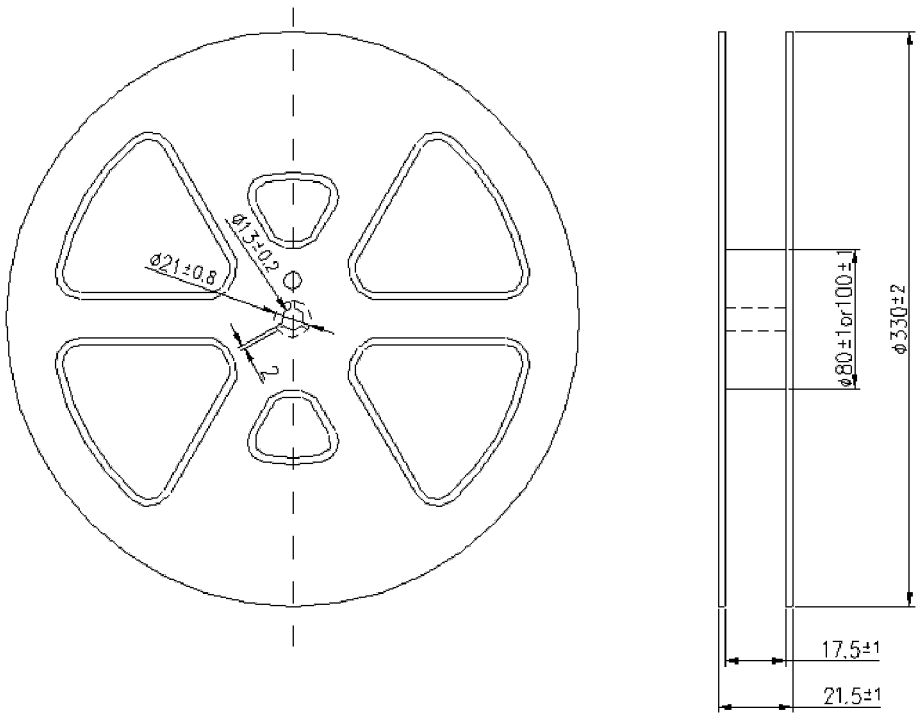
Material of the top tape : PET+PE



Unit:mm

(2) Reel dimensions

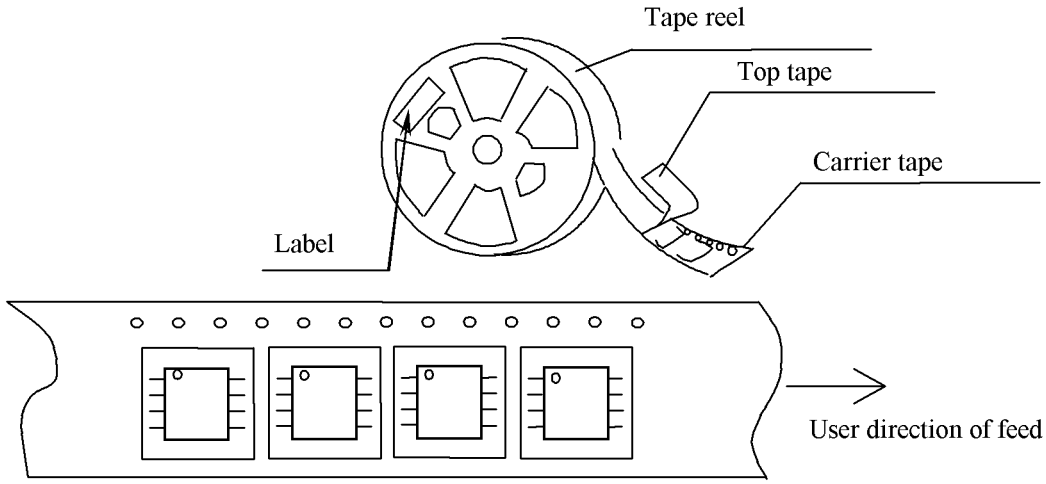
Material of the Reel : PS



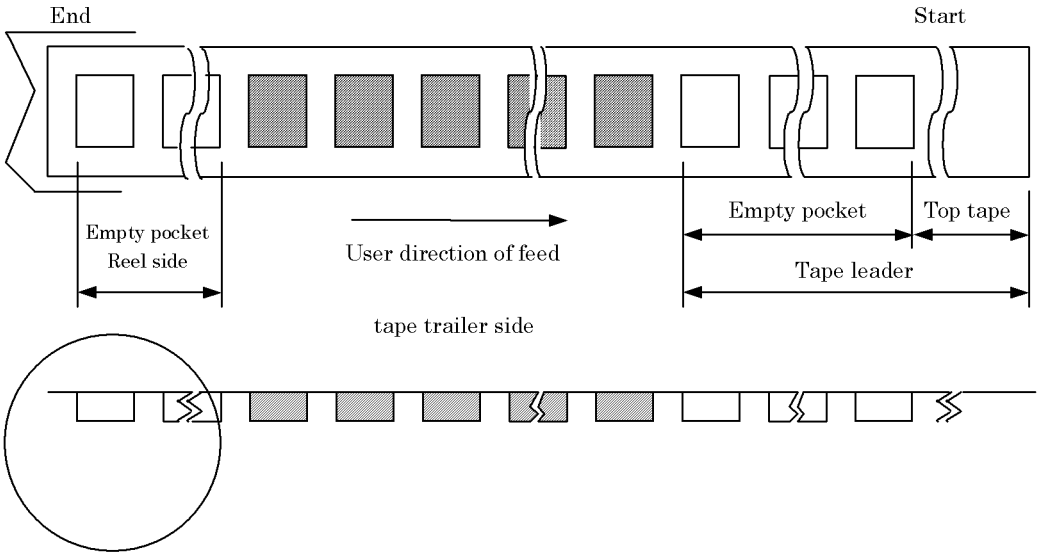
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(3) Packing

(a)Tape & reel



(b)Start & end point



Item		Empty space
Tape leader	Top tape	Min. 1 000 mm
	Carrier tape	Min. 120 mm
Tape trailer	Top tape	Min. 0 mm
	Carrier tape	Min. 120 mm

(4) Peel force of the cover tape

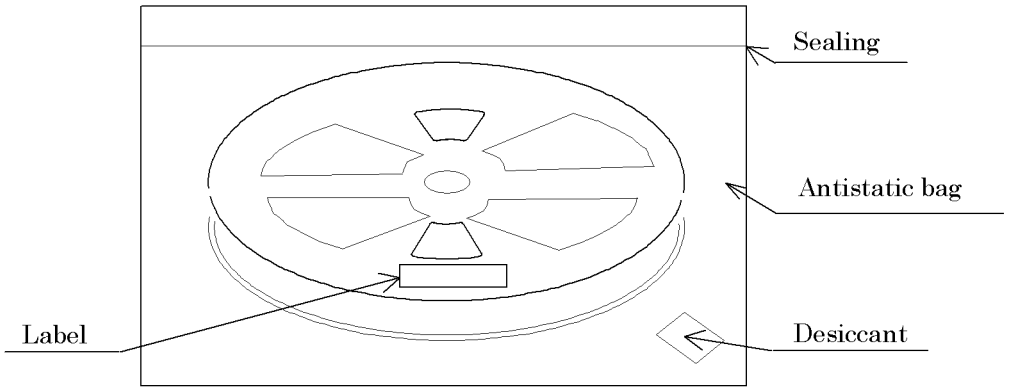
(a) angle : cover tape during peel off and the direction of unreeling shall be 165° to 180°.

(b) peel speed : 300 mm/min

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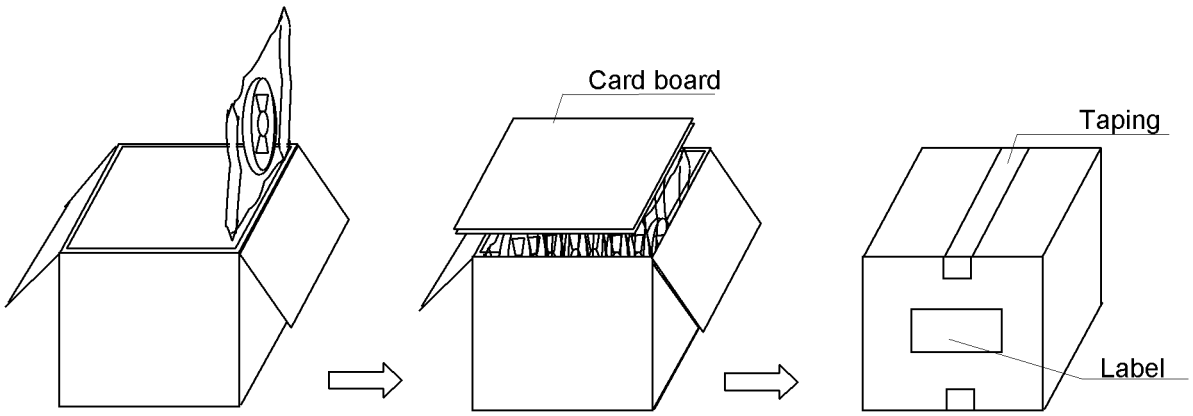
[2] Shipping Carton

a) Packing to antistatic bag



b) Packing to shipping carton

If there are room in the outer box, material is put in a shock absorbing together.



[3] Marking

(1) Reel marking

- Reel marking shall consist of :
  1) Parts name
  2) Quantity
  3) Manufacturing Date or symbol
  4) Manufacturer's Date or symbol
  5) Others (if necessary)

(2) Shipping carton marking

- Shipping carton marking shall consist of :
  1) Parts name
  2) Quantity

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[4] Quantity

- 1 000 pcs./reel

[5] Storage environment

(1) Before open the packing, we recommend to keep less than +30 °C and 85 %RH of Humidity, and to use it less than 6 months after delivery.

(2) We recommend to open Package in immediately before use. After open Package, We recommend to keeps less than 6 month. No need dry air before soldering work if it is less than temperature +30 °C, 85 humidity %RH.

(3) Not to storage with some erosive chemicals.

(4) Nothing is allowed to put on the reel or carton to prevent mechanical damage.

[6] Handling

To handle with care to prevent the damage of tape, reel and products.

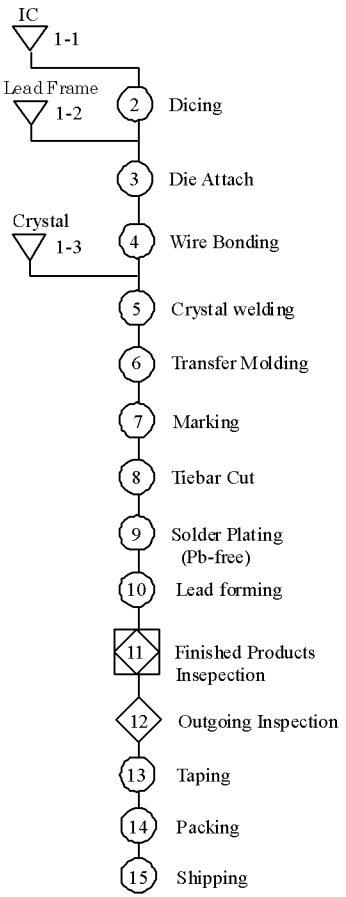
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— PROCESS QUALITY CONTROL —

No. SOJ8-RT-PbF-AEJ

SOJ-8Pin
Real Time Clock

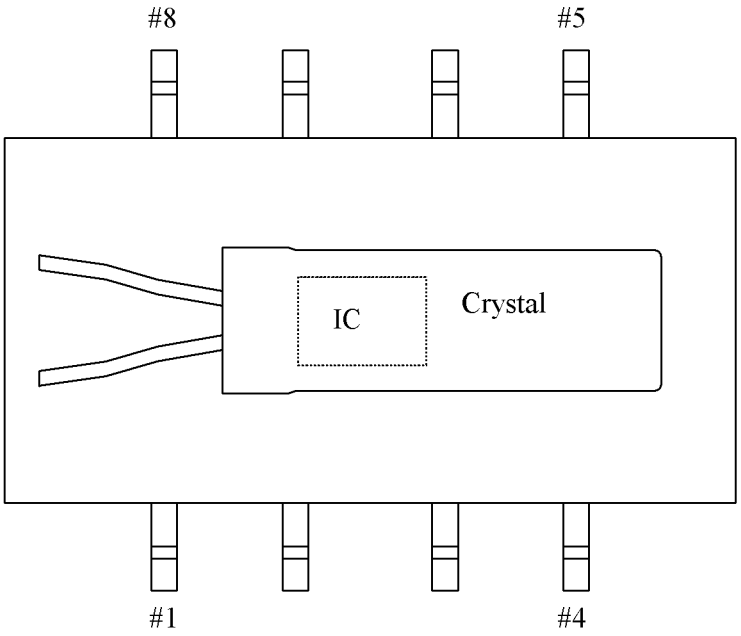
Aug.8.2013

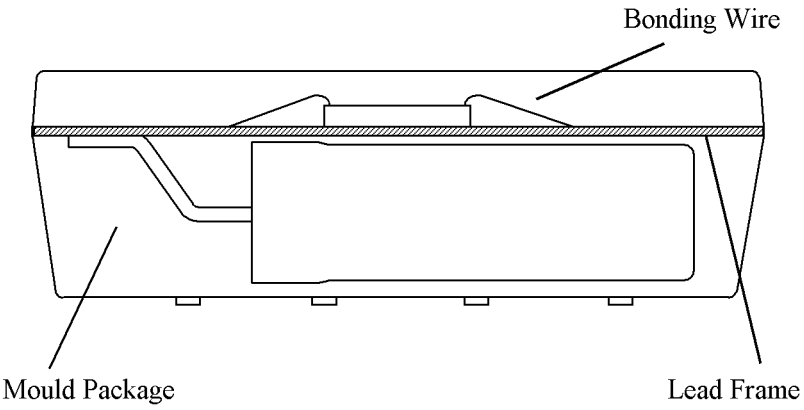


No.	Section In charge	Standards & Specification	Inspection & Control Item	Inspection Instruments	Inspection Methods	Record
1-1	Subcontractor company(ISO tech)	Incoming inspection standard	Model, Quantity	Visual inspection	100% Inspection	Data sheet
2	Subcontractor company(ISO tech)	Purchasing specification	Appearance	Microscope	Sampling	Data sheet
1-2	Subcontractor company(ISO tech)	Incoming inspection standard	Model, Quantity, Appearance	Visual inspection	100% Inspection	Data sheet
3	Subcontractor company(ISO tech)	Purchasing specification	Appearance Die-share strength Curing-temperature, time	Microscope Gauge Thermometer, Timer	Sampling	Data sheet
4	Subcontractor company(ISO tech)	Purchasing specification	Wire-pull strength Bonding strength Appearance Temperature, Force, U.S.Power	Pull-tester Ball-share tester Microscope Thermometer, Gauge, Parameter	Sampling	Data sheet
1-3	Subcontractor company(ISO tech)	Incoming inspection standard	Model, Quantity	Visual inspection	100% Inspection	Data sheet
5	Subcontractor company(ISO tech)	Purchasing specification	Welding power、Force Appearance	Power meter, Gauge Visual inspection	Sampling	Data sheet
6	Subcontractor company(ISO tech)	Purchasing specification	Shape of bonded wire Mould Die-temperature Curing-Temperature, Time Appearance	X-ray radiographic equipment Surface-thermometer Thermometer, Timer Visual Inspection	Sampling	Data sheet
7	Subcontractor company(ISO tech)	Purchasing specification	Appearance	Microscope	Sampling	Data sheet
8	Subcontractor company(ISO tech)	Purchasing specification	Appearance	Microscope	Sampling	Data sheet
9	Subcontractor company(ISO tech)	Purchasing specification	Liquid temperature, density Plating time Plating thickness Appearance	Thermometer, Liquid analysis Timer Fluorescent X-ray Microscope, Visual inspection	Sampling 100% Inspection	Data sheet
10	Subcontractor company(ISO tech)	Purchasing specification	Press die set life Appearance, Dimension	Computer control Microscope	Sampling	Data sheet
11	Subcontractor company(ISO tech)	Purchasing specification	Electrical characteristics Appearance	Measuring equipment Microscope	100% Inspection	Data sheet
12	Subcontractor company(ISO tech)	Inspection standard	Electrical characteristics Appearance	Measuring equipment Microscope	Sampling	Data sheet
13	Subcontractor company(ISO tech)	Purchasing specification	Appearance Tape peeling force	Recognizer Peeling force test machine	100% Inspection Sampling	Data sheet
14	Subcontractor company(ISO tech)	Purchasing specification	Type, Quantity	Visual inspection	100% Inspection	Data sheet
15	Production control section	Manufacturing instruction sheet Daily shipping list	Customers, Type, Quantity	Vsiual inspection	100% Inspection	Shipment list

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Structure diagram RX8010SJ





LIST
Name of part
Lead Frame
Transfer Moulding Compound
Lead Frame Surface Treatment (Outer Lead)
IC
IC Conductive Adhesive
Bonding Wire
Crystal Mount

RELIABILITY TEST DATA

Product Name : RX8010SJ

The Company evaluation condition

We evaluate environmental and mechanical characteristics by the following test condition . **No. F-R-1303-001EHA**

No.	ITEM	TEST CONDITIONS	VALUE *1		TEST Qty [n]	FAIL Qty [n]
			Δ f / f *2 [1 × 10^{-6}]	Electrical characteristics		
1	High temperature storage	+125 °C × 1 000 h	*3 ± 50	Satisfy specification after test	22	0
2	Low temperature storage	-55 °C × 1 000 h	*3 ± 10		22	0
3	High temperature bias	+85 °C × 5.5 V × 1 000 h	*3 ± 20		22	0
4	Low temperature bias	-40 °C × 5.5 V × 1 000 h	*3 ± 10		22	0
5	Temperature humidity bias	+85 °C × 85 %RH × 5.5 V × 1 000 h	*3 ± 20		22	0
6	Temperature cycle	-40 °C ⇔ +85 °C 30 min at each temp. 100 cycles	*3 ± 10		22	0
7	Resistance to soldering heat	For convention reflow soldering furnace (3 times) Follow JEDEC J-STD-020D.1	± 8		22	0
8	Drop	Free drop from 750 mm height on a hard wooden board for 3 times (Board is thickness more than 30 mm)	± 5		22	0
9	Vibration	10 Hz to 55 Hz amplitude 0.75 mm 55 Hz to 500 Hz acceleration 98 m/s^2 10 Hz → 500 Hz → 10 Hz 15 min/cycle 6 h (2 h × 3 directions)	± 5		22	0
10	Solderability	Dip termination into solder bath at +235 °C ± 5 °C for 5 s (Using Rosin Flux)	Termination must be 95 % covered with fresh solder		11	0

Notes

*1 Each test done independently.

*2 Measuring 2 h to 24 h later leaving in room temperature after each test.

*3 Pre-conditions (Dry +125℃x24h→ high temp & humidity +85℃x85%RHx168h→Reflow 3times) should be performed before each tests. Pre conditionings Initial value shall be after 24 h at room temperature.

Qualification Data

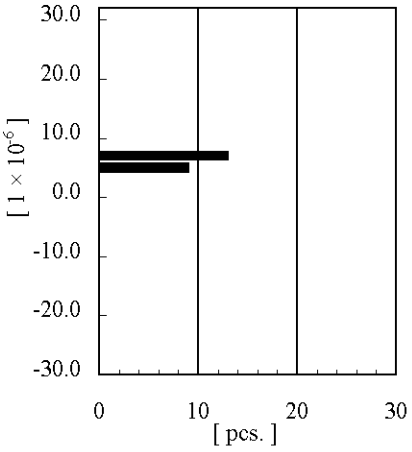
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Tel:150-1290-5940
Email:sales@manduic.com

Product Name : RX8010SJ

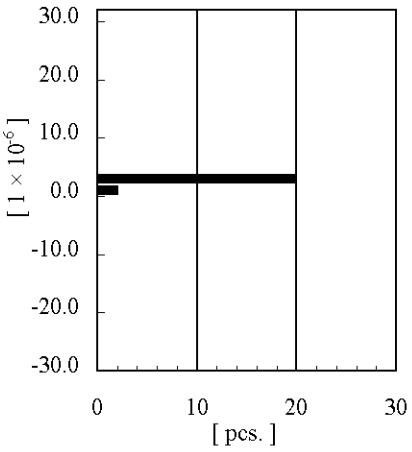
Frequency Shift Rate Δ f / f

No. F-R-1303-002EHA

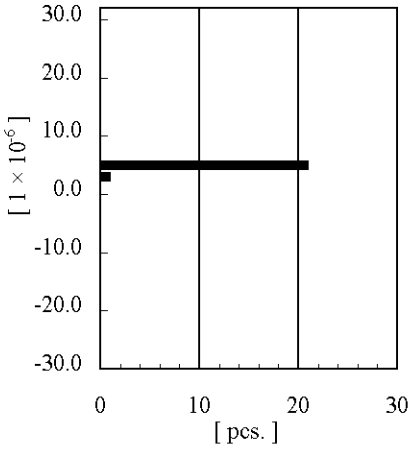
1. High temp. storage
+125 °C × 1 000 h



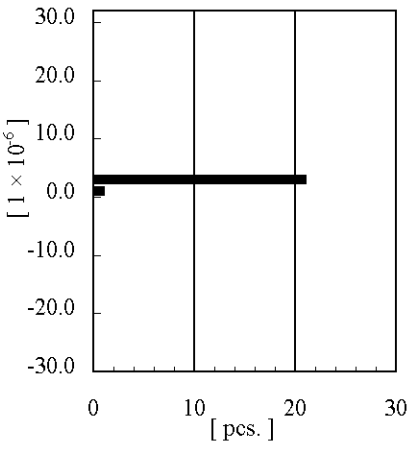
2. Low temp. storage
-55 °C × 1 000 h



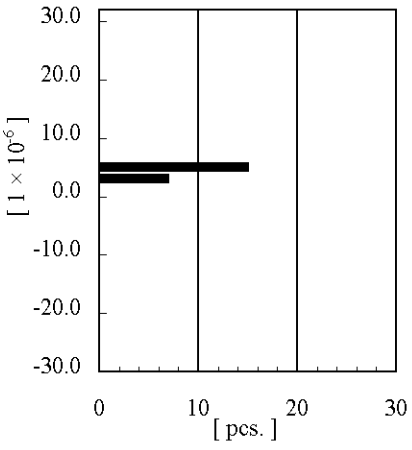
3. High temp. bias
+85 °C × 5.5 V × 1 000 h



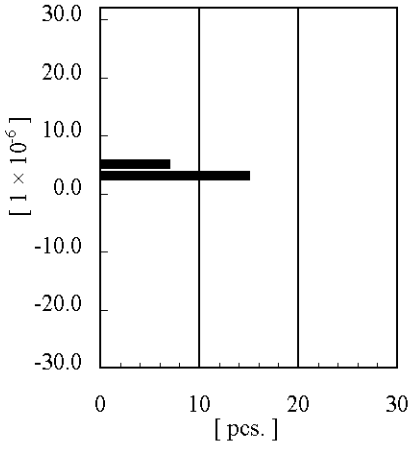
4. Low temp. bias
-40 °C × 5.5 V × 1 000 h



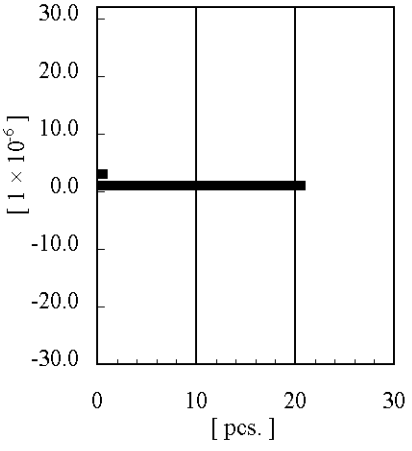
5. Temp. humidity bias
+85 °C × 85 %RH × 5.5 V
× 1 000 h



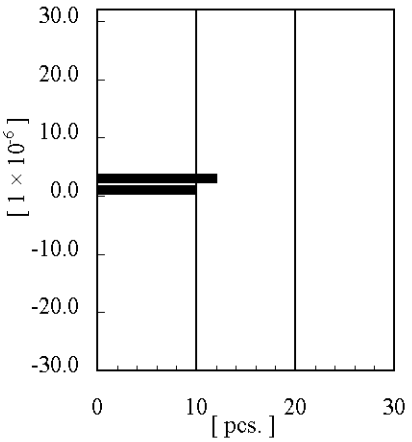
6. Temp. cycle
-40 °C ⇔ +85 °C
100 cycles 30 min each step



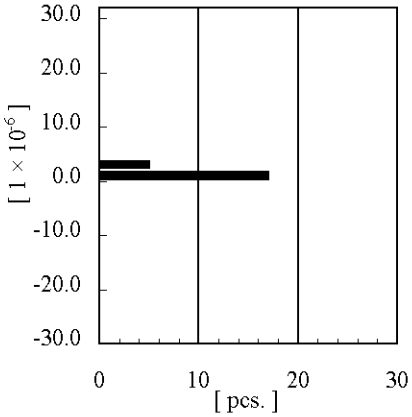
7.Resistance to soldering heat
For convention reflow
soldering furnace (3 times)



8. Drop
750 mm x 3Times



9. Vibration
10 Hz to 55 Hz amplitude 0.75 mm
55 Hz to 500 Hz 98 m/s^2
15 min / cycle 6 h (2 h × 3 directions)



Qualification Data

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Reel marking lable

Example of label

REAL TIME CLOCK MODULE		
P/N 12345678901234567890	P/O 12345678901234567890	
RX8010SJ B		LF/HF
LOT NO. Q123456789-001	Q'TY	1,000 pcs
WEEK CODE: S322A	X1B000242000100 09	2014.08.05
SEIKO EPSON CORP	MADE IN: MALAYSIA	

①		
②	③	
④		
⑤	⑥	
⑦	⑧	
⑨	⑩	

	Item	Contents
①	PRODUCT NAME	Crystal unit – QUARTZ CRYSTAL Crystal oscillator – CRYSTAL OSCILLATOR Real time clock module – REAL TIME CLOCK MODULE
②	P/N	Customer Part Number
③	P/O	Purchase Order Nubmer
④	TYPE、FREQENCY、SPEC	Seko Epson Products Name, Frequency, Spec F(Lead free)/HF(Halide free)
⑤	LOT NO.	Sipping Lot Number
⑥	QUANTITY	Quantity
⑦	WEEK CODE	Week Code Oldest/Newest
⑧	HIM CODE 、PACK 、Ship Date	Seiko Epson Parts Number, Packing Code, Ship Date
⑨	Shpper Name	
⑩	Coutry of Origin	