

Specifications

Drawing No.	USY1N-H1-14105-00 1 / 6
Issued Date.	Apr,15,2014

Messrs: Digi-Key

Note: In case of specification change, KYOCERA Part Number also will be changed.

Product Name	Tuning Fork Crystal
Product Model	ST2012SB
Frequency	32.768 kHz
Customer Part Number	-
Customer Specification Number	-
KYOCERA Part Number	ST2012SB32768Z0HPWB4
Remarks	Pb-Free, RoHS Compliant, MSL 1

Customer Acceptance

Accept Signature	Approved Date	
	Department	
	Person in charge	

Seller

KYOCERA Crystal Device Corporation
(Crystal products Sales Division)
6 Takeda Tobadono-cho, Fushimi-ku, Kyoto
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Manufacturer

Crystal Units Division
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999-3701 Japan
TEL. No. 0237-43-5611
FAX. No. 0237-43-5615

Design Department	Quality Assurance	Approved by	Checked by	Issued by
KYOCERA Crystal Device Corporation Crystal Unit Application Engineering Section Crystal Units Division	F.Mukae	T.Soda	A.Muraoka	Y.Nozaki

Revision History

Rev.No.	Description of revise	Date	Approved by	Checked by	Issued by
0	First Edition	Apr,15,2014	T.Soda	A.Muraoka	Y.Nozaki

1. APPLICATION

This specification sheet is applied to tuning fork crystal "ST2012SB".

2. PART NUMBER

ST2012SB32768Z0HPWB4

3. RATINGS

Items	SYMB.	Rating	Unit
Operating Temperature	Topr	-40~+85	deg. C
Storage Temperature range	Tstg	-40~+85	deg. C

4. CHARACTERISTICS

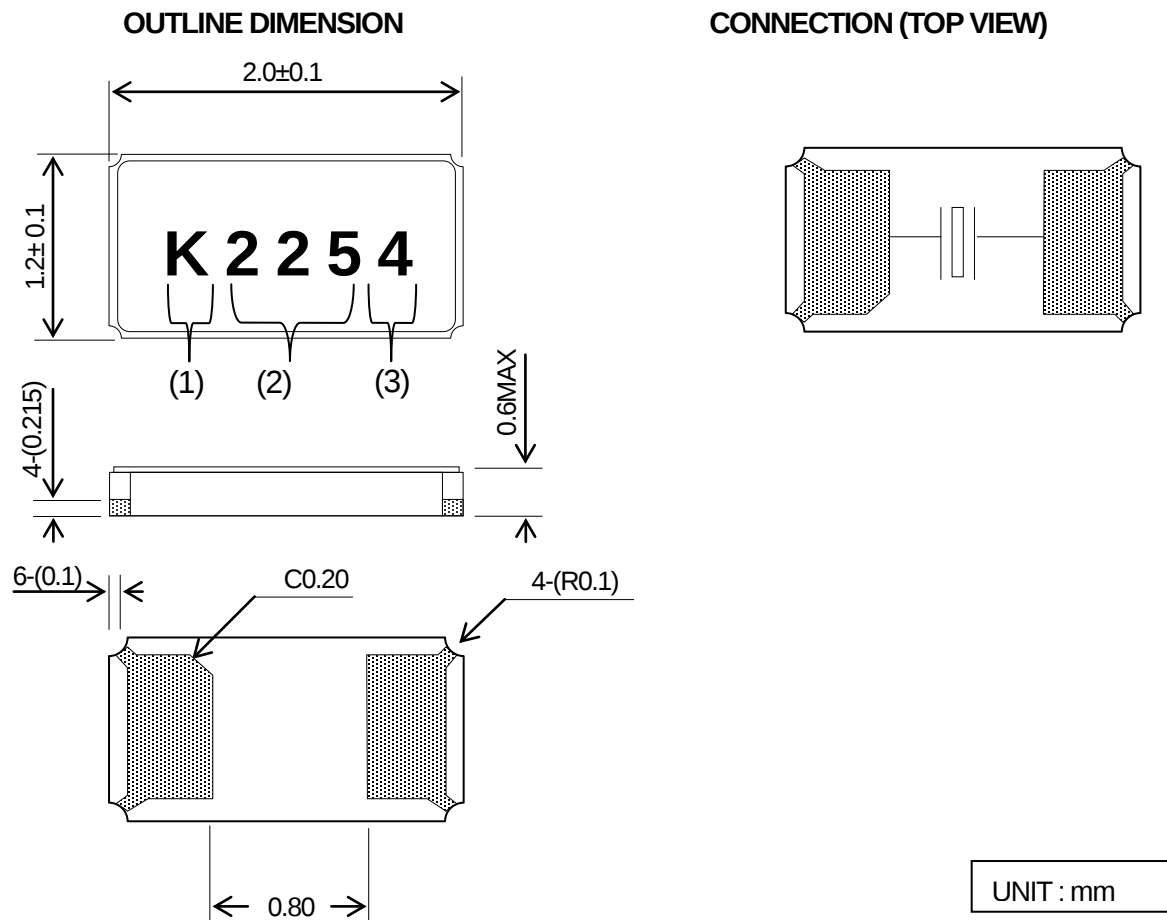
4-1 ELECTRICAL CHARACTERISTICS

Item	Symbol	Electrical Specification				
		Condition	Min	Typ.	Max	Unit
Nominal Frequency	fo	Ta = 25 deg. C		32.768		kHz
Frequency Tolerance	df/fo	Ta = 25 deg.C	-20		20	ppm
Load Capacitance	CL			4.0		pF
Equivalent series resistance	R1				75	kΩ
Q-Value	Q		9000			
Motional capacitance	C1		4.8		6.8	fF
Shunt capacitance	Co		0.9		1.7	pF
Turning point	Tp		20		30	deg. C
Secondary temperature Coefficient	K		-4.0			10 ⁻⁸ /°C ²
Aging	df/F	Ta = 25 deg. C	-3		3	ppm/year
Drive level	DL			0.1	0.5	μW
Insulation resistance (between electrodes)	IR		500			MΩ

4-2 MOISTURE SENSITIVITY LEVEL

Level 1

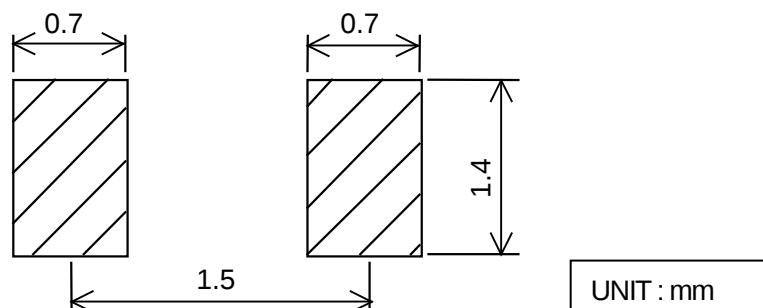
5. APPEARANCES, PHYSICAL DIMENSION



MARKING

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Identification 2. Date Code (3 Digits) 3. Load Capacitance | <p>K</p> <p>Last 1 digit of year and week Code.</p> <p>(Example) 4.0pF → 4</p> <p>*The font of marking above is for reference purpose.</p> |
|---|--|

6. RECOMMENDED LAND PATTERN



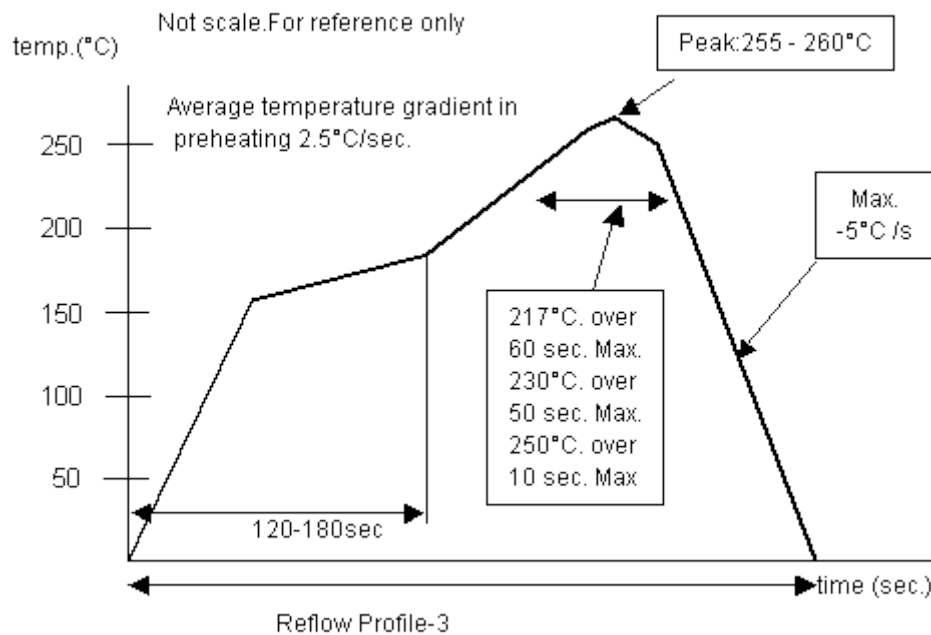
7. RELIABILITY

Frequency Stability, and ESR Stability, After stressing.

TEST ITEM		Frequency Stability (ppm)	ESR Stability	Remarks
7.1	High temp. use/storage	± 10	$\pm 5 \text{ k}\Omega$ Max or $\pm 30\%$	Ta=25 deg. C
7.2	Low temp. use/storage	± 10		
7.3	Shock	± 20		
7.4	Vibration	± 10		
7.5	Soldering Heat Resistance reflow	± 10		
7.6	High temp. With humidity	± 10		
7.7	Temperature cycle	± 10		

8. REFLOW PROFILE

Pb-free reflow requirements for soldering heat resistance



9. Cautions for use

(1) Soldering in mounting

In case of Solder paste and conductive glue contact product lid or product side face exception for product terminal it's possible to influence product characteristics.

Please be careful above contents.

(2) Automatic mounting machine use

Please use after affirmation that select the mounting machine model with a shock small if possible in the case of use of an automatic mounting machine, and it does not have breakage. There is a risk of a crystal oscillating child's breakage occurring and not functioning normally by too much shock etc.

(3) Conformity of a circuit

In case of use of an oscillation circuit, please insert in a crystal oscillating child in series resistance 3 times as many as the standard value of equivalent in-series resistance, and confirm oscillating. Please remove resistance which inserted after the notes above-mentioned examination in the crystal oscillating child in series, and use it.

10. Storage conditions

Storage at prolonged high temperature or low temperature and the storage by high humidity cause degradation of frequency accuracy, and degradation of soldering nature. Storage is performed at the temperature of +18 to +30°C, and the humidity of 20 to 70 % in the state of packing, and a term is 6 months.

11. Manufacturing location

Kyocera Crystal Device Corporation Shiga Yohkaichi Plant

Kyocera Crystal Device (Thailand) Co., Ltd

12. Quality Assurance

Kyocera Crystal Device Quality Assurance Division

13. Quality guarantee

When the failure by the responsibility of our company occurs clearly after delivery within 1 year, a substitute article etc. is appropriated gratuitously and this is guaranteed. However, when passing 1 year after delivery, there is a case where I am allowed to consider as onerous repair after both consultation.

14. Others

When any questions and opinions are in the written matter of these delivery specifications, I will ask connection of you from the company issue day within 45 days. In a connection no case, a written matter is consented to it and employed within a term.