# **Specifications**

Drawing No.	USY1N-H1-13168-00 1/7
Issued Date.	Jul,5,2013

# Messrs: Digi-Key

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

Product Name	Tuning Fork Crystal			
Product Model	ST3215SB			
Frequency	32.768 kHz			
Customer Part Number	-			
Customer Specification Number	-			
KYOCERA Part Number	ST3215SB32768C0HPWBB			
Remarks Pb-Free, RoHS Compliant, MSL 1				

**Customer Acceptance** 

Accept Signature	Approved Date	
	Department	
	Person in charge	

Seller

**KYOCERA Corporation** 

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TEL. No. 075-604-3500 FAX. No. 075-604-3501 Manufacturer

**KYOCERA Crystal Device Corporation** 

(Crystal Units Division)

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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

Drawing No.	USY1N-H1-13168-00	2/7
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# **Revision History**

Rev.No.	Description of revise	Date	Approved by	Checked by	Issued by
0	First Edition	Jul,5,2013	T.Soda	A.Muraoka	Y.Nozaki

Drawing No. USY1N-H1-13168-00	3/7
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### 1. APPLICATION

This specification sheet is applied to tuning fork crystal "ST3215SB".

### 2. PART NUMBER

ST3215SB32768C0HPWBB

### 3. RATINGS

Items	SYMB.	Rating	Unit
Operating Temperature	Topr	-40~+85	deg. C
Storage Temperature range	Tstg	-55~+125	deg. C

### 4. CHARACTERISTICS

### **4-1 ELECTRICAL CHARACTERISTICS**

Item	Symbol	Electrical Specification				
ilem	Symbol	Condition	Min	Тур.	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			7.0		pF
Equivalent series resistance	R1				70	kΩ
Q-Value	Q		13000			
Motional capacitance	C1		3.0		4.4	fF
Shunt capacitance	Co		0.6		1.2	pF
Turning point	Тр		20		30	deg. C
Secondary temperature Coefficient	K		-4.0			10 <sup>-8</sup> /degC <sup>2</sup>
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

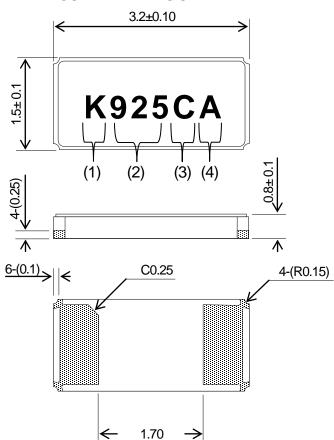
### **4-2 MOISTURE SENSITIVITY LEVEL**

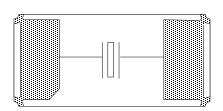
Level 1

### 5. APPEARANCES, PHYSICAL DIMENSION

#### **OUTLINE DIMENSION**

# **CONNECTION (TOP VIEW)**





UNIT: mm

### **MARKING**

1 Κ Identification

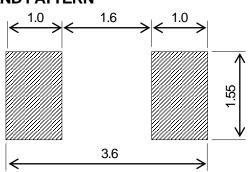
2 Date Code(3 Digits) Last 1 digit of year and week Code.

3 Load Capacitance (Example) 7pF → C

4 Management Code Alphabet or Number 1digit.

\*The font of marking above is for reference purpose.

### **6. RECOMMENDED LAND PATTERN**



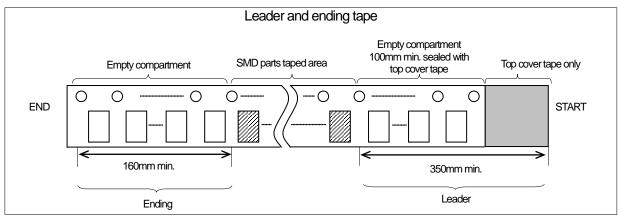
UNIT: mm

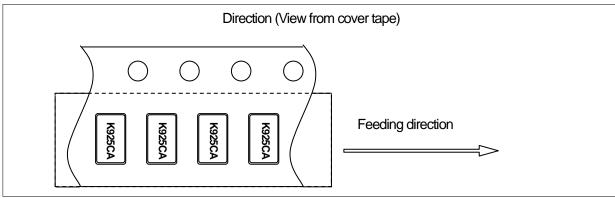
#### 7. TAPING

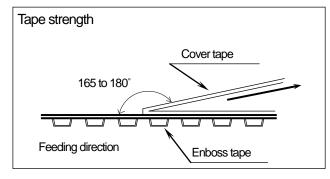
#### 7.1 TAPING

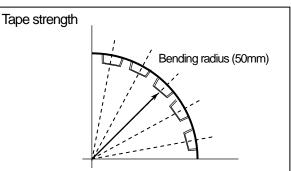
Maximum quantity per 1 reel is Max 3,000pcs(\$\phi\$180 Reel) and oriented part in 1 direction

- 1. Material of the carrier tape shall be polystyrene or A-PET (ESD).
- 2. Material of the seal tape shall be polyester (ESD).
- 3. The seal tape shall not cover the sprocket holes and not protrude from the carrier tape.
- 4. The R of the corner without designation is 0.2R MAX.
- 5. Misalignment between centers of the cavity and a sprocket hole shall be 0.05mm or less.
- 6. Cumulative pitch tolerance of "G" shall be ±0.2mm at 10 pitches.
- 7. The directivity of printing in an embossing tape shall be unified as shown in the above-mentioned figure.
- 8. Peeling force of the seal tape is in the range of 0.1 to 0.7N.

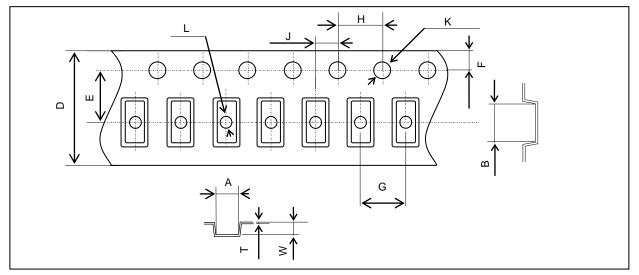








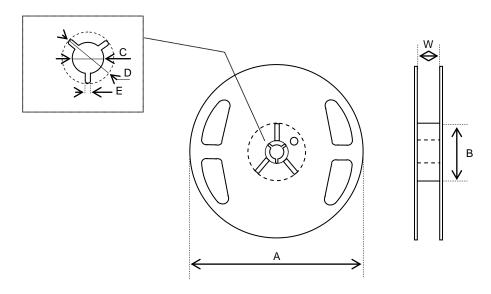
## 7-2 Emboss Taping specifications



symbol	А	В	D	Е	F	G
Dimension	1.8±0.1	3.6±0.1	12.0±0.3	5.5±0.1	1.75±0.1	4.0±0.1
Symbol	Н	J	K	L	W	Т
Dimension	4.0±0.1	2.0±0.1	1.5+0.1/-0	1.0+0.1/-0	1.0±0.1	0.3±0.05

(Unit: mm)

### 7-3 Reel specifications



Symbol	Α	В	С
Dimension	φ180 +0/-1.5	φ60 +1.0/-0	φ13±0.2
Symbol	D	E	W
Dimension	φ21±0.8	2.0±0.5	13.0 +1.0/-0

(Unit: mm)

### 8. RELIABILITY

Frequency Stability and ESR, Stability after stressing.

TEST ITEM		1 Frequency Stability		Remarks
		(ppm)	(%)	
8.1	Low temp. use/storage	±5		
8.2	High temp. use/storage	±5		
8.3	Shock	± 20		
8.4	Vibration	±5	± 30	Ta=25 deg. C
8.5	Soldering iron resistance	±5	± 30	ra=25 deg. C
8.6	Manual hot gas resistance	±10		
8.7	High temp. With humidity	±5		
8.8	Temperature cycle	±5		

### 9. REFLOW PROFILE

#### Pb-free reflow requirements for soldering heat resistance

