

Date: 2009/08/12

**Messrs: Digi-Key****Specification**

※In the case of specification change, KKC Part Number also will change.

Customer part number	-
Customer specification Number	-
Product	Quartz Crystal
Model	CX49GFNB
Frequency	per KB101-09511-211 3/8
KKC Part Number	per KB101-09511-211 3/8

【Pb-Free, RoHS compliant】

【MSL 1】

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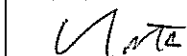
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**Design**KYOCERA KINSEKI Yamagata Co.  
Crystal Product Division  
Development Design Section**Issued by**

M.Adachi

**Approved by**

T.Ueta



Recycled paper is being used for the conservation of nature.

Date: 2009/08/12

**Change History**

Rev	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
0	Spec release	2009/08/12	<i>M. Udachi</i>	<i>[Signature]</i>	<i>[Signature]</i>

Date: 2009/08/12

## [ KKC PART NUMBER LIST ]

No.	Nominal Frequency (MHz)	Part number	ESR ( $\Omega$ )	Drive Level (mW)	Nominal Frequency Code + Identification
1	3.579545	CX49GFNB03579H0PESZZ	150	0.006~0.5	3.5BKSS
2	4	CX49GFNB04000H0PESZZ	150	0.006~0.5	4.0AKSS
3	4.194304	CX49GFNB04194H0PESZZ	120	0.0048~0.5	4.1AKSS
4	4.332	CX49GFNB04332H0PESZZ	120	0.0048~0.5	4.3CKSS
5	4.433619	CX49GFNB04433H0PESZZ	120	0.0048~0.5	4.4BKSS
6	4.9152	CX49GFNB04915H0PESZZ	100	0.004~0.5	4.9BKSS
7	6	CX49GFNB06000H0PESZZ	90	0.0036~0.5	6.0AKSS
8	7.2	CX49GFNB07200H0PESZZ	90	0.0036~0.5	7.2AKSS
9	8	CX49GFNB08000H0PESZZ	90	0.0036~0.5	8.0AKSS
10	10	CX49GFNB10000H0PESZZ	90	0.0036~0.5	10AKSS
11	12	CX49GFNB12000H0PESZZ	70	0.0028~0.5	12AKSS
12	14.31818	CX49GFNB14318H0PESZZ	50	0.002~0.5	14AKSS
13	16	CX49GFNB16000H0PESZZ	50	0.002~0.3	16ZKSS
14	16.9344	CX49GFNB16934H0PESZZ	50	0.002~0.3	16M ◊
15	18.432	CX49GFNB18432H0PESZZ	50	0.002~0.3	18WKSS
16	20	CX49GFNB20000H0PESZZ	50	0.002~0.3	KSS20L
17	24	CX49GFNB24000H0PESZZ	50	0.002~0.3	24XKSS
18	24.576	CX49GFNB24576H0PESZZ	50	0.002~0.3	KSS24G
19	27	CX49GFNB27000H0PESZZ	50	0.002~0.3	27UKSS

Date: 2009/08/12

**1. APPLICATION**

This specification sheet is applied to quartz crystal "CX49GFNB".

**2. KKC PART NUMBER**

per KB101-09511-211 3/8

**3. RATINGS**

Items	SYMB.	Rating	Unit	Remarks
Operating Temperature	Topr	-10~+70	°C	
Storage Temperature Range	Tstg	-40~+85	°C	

**4. ELECTRICAL CHARACTERISTICS**

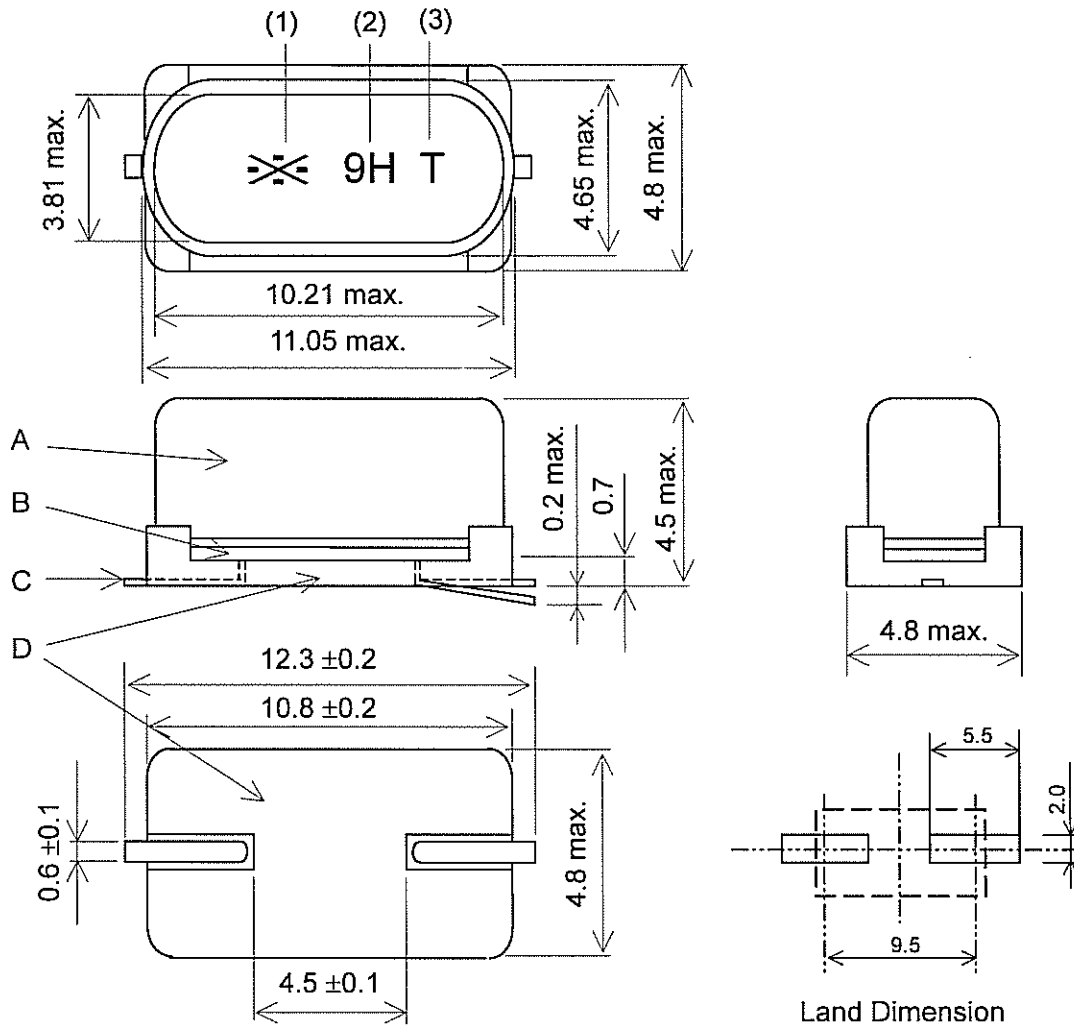
Items	Electrical Specification					Test Condition	Remarks
	SYMB.	Min.	Typ.	Max.	Unit		
Mode of Vibration		Fundamental					
Nominal Frequency	F0		※		MHz		
Nominal Temperature	T <sub>NOM</sub>		25		°C		
Load Capacitance	CL		12.0		pF		
Frequency Tolerance	df/F	-50.0		+50.0	PPM	+25 ±5°C Network Analyzer E5100A 200 μA	
Frequency Temperature Characteristics	df/F	-50.0		+50.0		-10~+70°C	
Frequency Ageing Rate		-5.0		+5.0		1 year	+25 ±5°C
Equivalent Series Resistance	ESR			※	Ohms	Network Analyzer E5100A 200 μA	
Shunt capacitance	C0			7.0	pF		
Drive Level	Pd	※		※	mW		
Insulation Resistance	IR	500			M ohms	100V(DC)	

※ per KB101-09511-211 3/8

## 5. APPEARANCES, PHYSICAL DIMENSION

### OUTLINE DIMENSION (not to scale)

SYMB.	PARTS	MATERIALS & PLATE	
A	CAN	NSSR	Ni Plating
B	BASE	SPC	Ni Plating
C	LEAD	Kov	Ni Plating + Solder Dipped (Sn-0.7Cu)
D	SPACER	PPS or Nylon 46	



### MARKING

(Unit:mm)

(1) Nominal Frequency Code + Identification  
(per KB101-09511-211 3/8)

(2) Lot number

Year: Last 1 digit

Month: Refer to the following table

Month	1	2	3	4	5	6	7	8	9	10	11	12
Mark	A	B	C	D	E	F	G	H	J	K	L	M

Example) Aug. 2009 : 9H

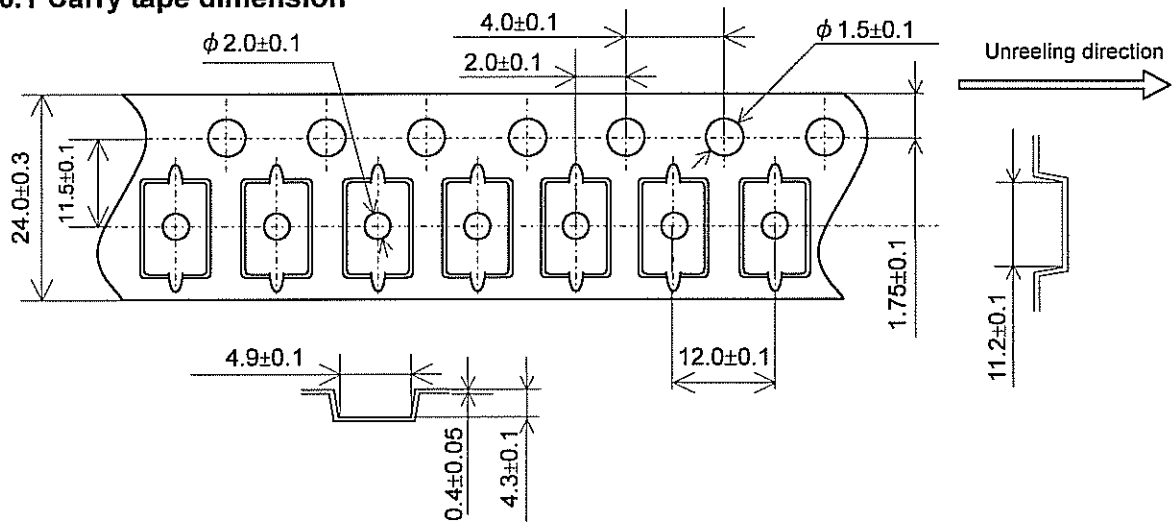
(3) Manufacturing Location

T: KYOCERA KINSEKI (Thailand) Co., Ltd.

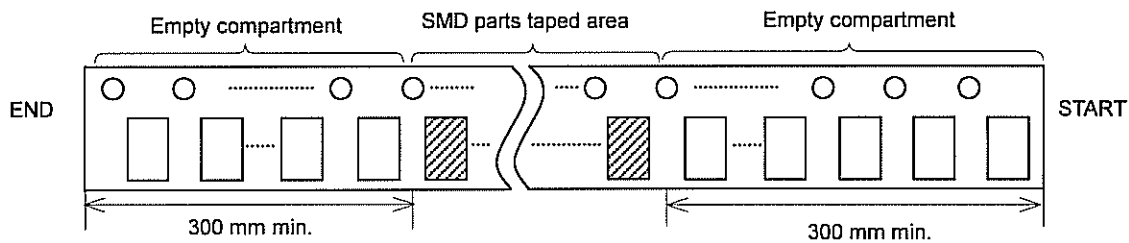
\*\* The font of marking is reference.\*\*

## 6. TAPING & REEL

### 6.1 Carry tape dimension

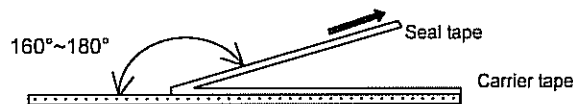


### 6.2 Leader and trailer tape

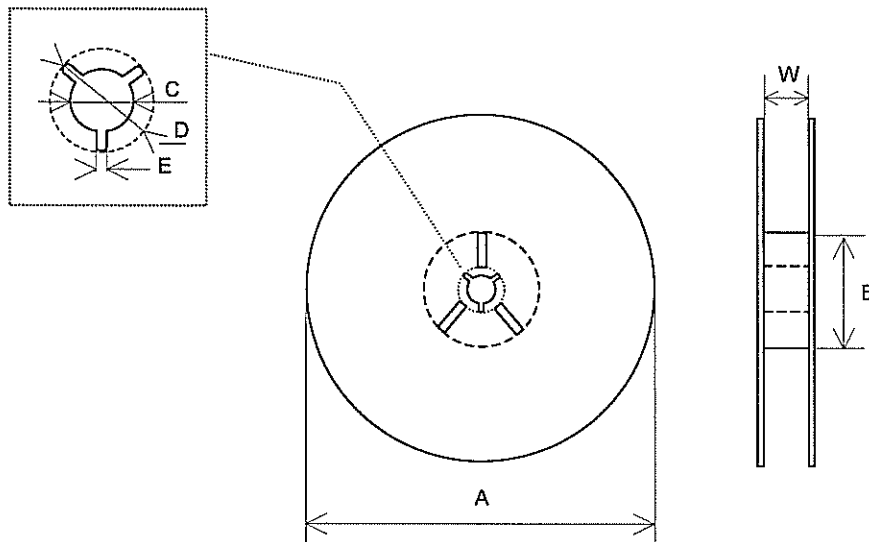


### 6.3 Taping specification

1. The seal tape shall not cover the sprocket holes. And not protrude from the carrier tape.
2. Tensile strength of the tape :  $10N\{1.02kgf\}$  or more.
3. The R of the corner without designation is  $0.2R_{MAX}$ .
4. Disalignment between centers of the cavity and sprocket hole shall be  $0.05mm$  or less.
5. Peeling force of the seal tape (Peeling speed  $300mm/min.$ ):  $20$  to  $70$  gf.



## 6.4 Reel specifications



In the case of  $\phi 330$  Reel (1,000 pcs. Max.)

Symbol	A	B	C	D
Dimension	$\phi 330$	$\phi 80$	$\phi 13$	$\phi 21$
Symbol	E	W		
Dimension	2	25.5		

(Unit : mm)

## 7. Environmental requirements

- 7.1 Leakage** Test condition  
No bubbles shall appear when units are placed in hot water (70-75 °C) having depth of 100-150 mm for 5 minutes.
- 7.2 Shock** Test condition  
After following test, frequency shall not change more than  $\pm 5$  PPM.  
Randomly dropped from height of 20cm onto hardwood surface in 3 times.
- 7.3 Vibration** Test condition  
After following test, frequency shall not change more than  $\pm 5$  PPM.  
Frequency : 10-55 Hz  
Amplitude : 0.7-0.9 mm  
Cycle time : 1-2 min.(10-55-10 Hz)  
Duration: 3 mutually perpendicular planes in each 30 min.
- 7.4 Resistance to Soldering** Test condition  
After following test, frequency shall not change more than  $\pm 10$  PPM.  
Solder by the reflow profile condition on the next page.

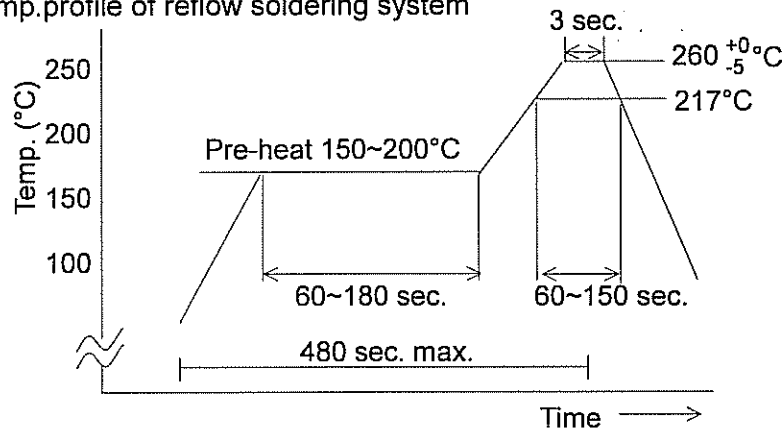
Date: 2009/08/12

## 8. Soldering conditions

### 1) Material of solder

Kind: lead free solder past: (Melting point:  $220 \pm 5^{\circ}\text{C}$ )

### 2) Temp.profile of reflow soldering system



## 9. Quality Assurance

### Location

Kyocera Kinseki (Thailand) Co., Ltd.: Kyocera Kinseki (Thailand) Co., Ltd.

Quality Assurance Division

### 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.

## 10. Cautions for use

### (1) 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 quartz crystal unit's breakage occurring and not functioning normally by too much shock etc.

### (2) Conformity of a circuit

In case of use of an oscillation circuit, please insert in a quartz crystal unit in series resistance 5 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 quartz crystal unit in series, and use it.

## 11. 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 18-30 degrees C, and the humidity of 20-70 Percent in the state of packing, and a term is 6 months.

## 12. Others

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