

# Specifications

Drawing No.	UKY1C-H1-17103-00[40] 1/9
Issued Date.	Feb. 1,2017

## TO: Mouser

---

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

Product Name	Quartz Crystal
Product Model	CX5032GA
Frequency	12000kHz
Customer Part Number	-
Customer Specification Number	-
KYOCERA Part Number	CX5032GA12000P0KPQZ1
Remarks	RoHS Compliant, MSL 1 AEC-Q200 Compliant

### Customer Acceptance

Accept Signature	Approved Date	
	Department	
	Person in charge	

### Seller

#### **KYOCERA Crystal Device Corporation**

(Sales Division)

6 Takeda Tobadono-cho, Fushimi-ku, Kyoto

612-8501 Japan

TEL. No. 075-604-3500

FAX. No. 075-604-3501

### Manufacturer

#### **KYOCERA Crystal Device Corporation**

Crystal Units Division

5850, Higashine-Koh, Higashine-Shi, Yamagata

999-3701 Japan

TEL. No. 0237-43-5611

FAX. No. 0237-43-5615

Design Department	Quality Assurance	Approved by	Examination by	Issued by
KYOCERA Crystal Device Corporation Crystal Units Engineering Section Crystal Units Division	W.Muraoka	H. Shoji	A.Ito	M.Hashimoto

## Revision History

Rev.No.	Description of revise	Date	Approved by	Examination by	Issued by
1	First Edition	Feb. 1,2017	H. Shoji	A.Ito	M.Hashimoto

### 1. APPLICATION

This specification sheet is applied to quartz crystal “CX5032GA12000P0KPQZ1”

### 2. KYOCERA PART NUMBER

CX5032GA12000P0KPQZ1

### 3. RATINGS

Items	SYMB.	Rating	Unit	Remarks
Operating Temperature	Topr	-40 to +85	°C	
Storage Temperature Range	Tstg	-40 to +150	°C	

### 4. CHARACTERISTICS

#### ELECTRICAL CHARACTERISTICS

Items	Electrical Specification					Test Condition	Remarks
	SYMB.	Min.	Typ.	Max.	Unit		
Mode of Vibration		Fundamental					
Nominal Frequency	F0		12		MHz		
Nominal Temperature	T <sub>NOM</sub>		+25		°C		
Load Capacitance	CL	18.0			pF		
Frequency Tolerance	df/F	-30.0		+30.0	PPM	+25±3°C	
Frequency Temperature Characteristics	df/F	-30.0		+30.0		-40 to +85°C	
Frequency Aging Rate		-5.0		+5.0		1 <sup>st</sup> year	+25±3°C
Equivalent Series Resistance	ESR			150	Ω		
Drive Level	Pd	0.01		500	μW		
Insulation Resistance	IR	500			MΩ	100V(DC)	

### 5. Measurement Condition

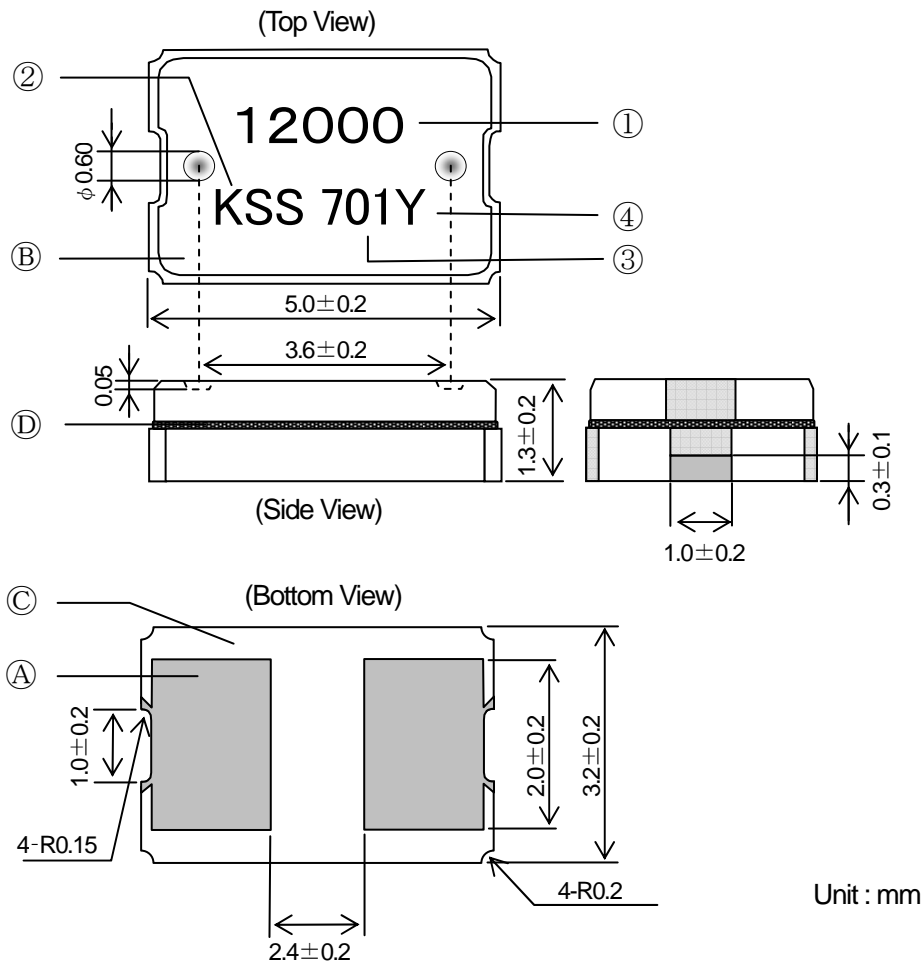
#### 5.1 Frequency measurement

Measuring instrument : PI-Network Test Fixture  
 Load Capacitance : 18.0pF  
 Drive Level : 10μW

#### 5.2 Equivalent series resistance (ESR) measurement

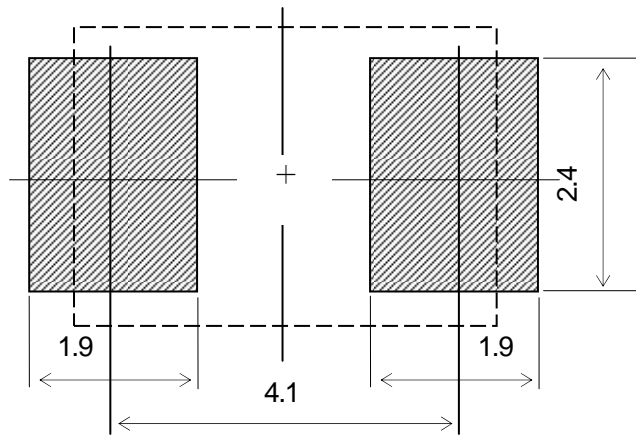
Measuring instrument : PI-Network Test Fixture  
 Load Capacitance : Series  
 Drive Level : 10μW

**6. APPEARANCES, PHYSICAL DIMENSION**  
**OUTLINE DIMENSION (not to scale)**



①	Terminal	W-Ni-Au(Pb-Free)
②	CAP	CERAMICS (BLACK)
③	BASE	CERAMICS (BLACK)
④	GLASS	LOW TEMPERATURE GLASS
	MARKING	NOTE
①	NOMINAL FREQUENCY	(5 DIGITS MAX) UNIT: kHz
②	IDENTIFICATION	—
③	DATE CODE	YEAR ···· LAST 1 DIGIT of YEAR AND WEEK EXAMPLE ····Jan. 1,2017 → 701
④	MANUFACTURING LOCATION	Y : Japan (Yamagata) T : Thailand
* The font of marking is reference.		

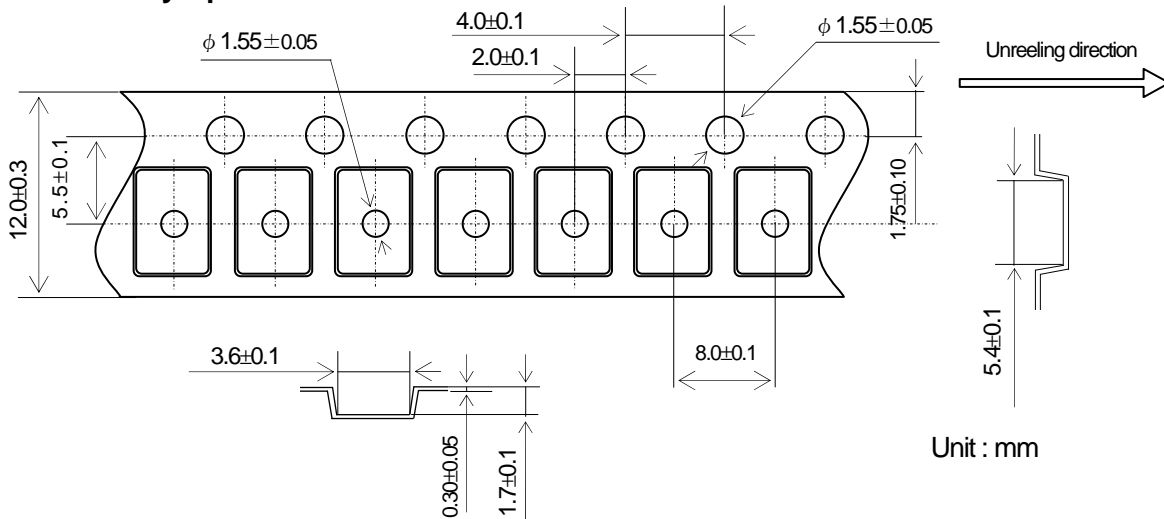
**7. RECOMMENDED LAND PATTERN (not to scale)**



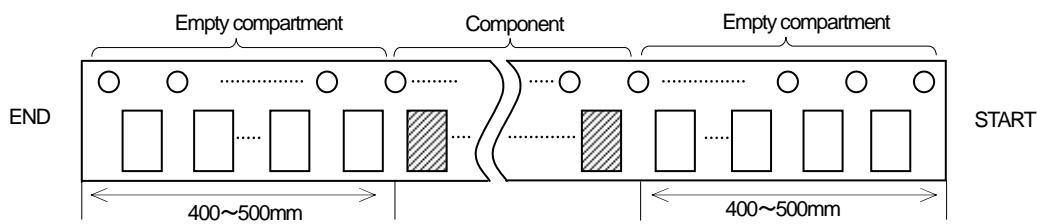
Unit : mm

## 8. TAPING & REEL

### 8.1 Carry tape dimension

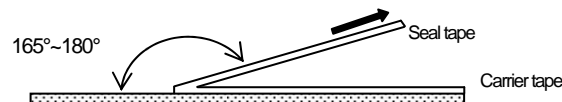


### 8.2 Leader and trailer tape

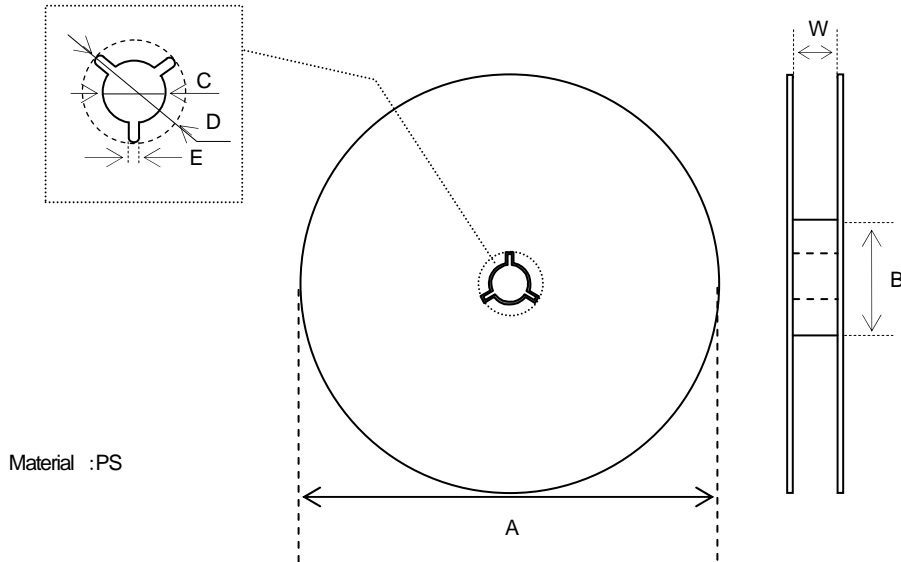


### 8.3 Taping specification

1. Material of the carrier tape shall be A—PET or PS (ESD)
2. The seal tape shall not cover the sprocket holes. And not protrude from the carrier tape.
3. Tensile strength of the tape : 10N or more.
4. The number of lack is 0.1% of 1 reel total part number (the number of the table letters) or the part following whose 1 either is big. (But, the thing which lack of the continuance is not in.)
5. The R of the corner without designation is 0.3R MAX.
6. Misalignment between centers of the cavity and sprocket hole shall be 0.05mm or less.
7. Peeling force of the seal tape (Peeling speed 300mm/min.): 0.1 to 1.0N.
8. Cumulative pitch error of feed hole : 50 pitch  $\rightarrow \pm 0.3$ mm
9. The marking on parts is not fixed its direction, its electrical characteristic is equal.



8.4 Reel specifications



φ 180 Reel (1,000 pcs. Max.)

Symbol	A	B	C	D
Dimension	φ 180	φ 60	φ 13	φ 21
Symbol	E	W		
Dimension	2.0	13.0		

(Unit : mm)

### 9.Environmental requirements

(Reference: AEC-Q200 Rev. D. The solder used by examination is hereafter set to Sn-3Ag-0.5Cu.)

After following test, Frequency applies to each item and CI,  $\pm 20\%$  or  $5\Omega$  of large value.

No	Stress	Reference	Additional Requirements
9.1	High Temperature Exposure (Storage)	MIL-STD-202 Method 108	1000 hrs. at rated operating temperature (e.g. 85°C part can be stored for 1000 hrs at 85°C. Same applies for 125°C). Unpowered. Measurement at 24±4 hours after test conclusion.
9.2	Temperature Cycling	JESD22 Method JA-104	1000 cycles (-40°C to 125°C) Note: If 85°C part the 1000 cycles will be at that temperature rating. Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time.
9.3	Biased Humidity	MIL-STD- 202 Method 103	1000 hours 85°C/85%RH. Rated VDD applied with 1 MW and inverter in parallel, 2X crystal CL capacitors between each crystal leg and GND. Measurement at 24±4 hours after test conclusion.
9.4	Operational Life	MIL-STD- 202 Method 108	Note: 1000 hrs @ 125°C. If 85°C part will be tested at that temperature. Rated VDD applied with 1 MW and inverter in parallel, 2X crystal CL capacitors between each crystal leg and GND. Measurement at 24±4 hours after test conclusion.
9.5	Terminal Strength (Leaded)	MIL-STD- 202 Method 211	Test leaded device lead integrity only. Conditions: A (227 g), C (227 g).
9.6	Resistance to Solvents	MIL-STD- 202 Method 215	Note: Also aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents.
9.7	Mechanical Shock	MIL-STD-202 Method 213	Figure 1 of Method 213. Condition C
9.8	Vibration	MIL-STD-202 Method 204	5g's for 20 minutes 12 cycles each of 3 orientations. Note: Use 8"X5" PCB .031" thick with 7 secure points on one 8" side and 2 secure points on corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.
9.9	Resistance to Soldering Heat	MIL-STD-202 Method 210	Condition B No pre-heat of samples. Note: Single Wave solder - Procedure 1 with solder within 1.5 mm of device body for Leaded. Procedure 1 except 230°C and immerse only to level to cover terminals for SMD.
9.10	Solder ability	J-STD-002	For both Leaded & SMD. Electrical Test not required. Magnification 50 X. Conditions: Leaded: Method A @ 235°C, category 3. SMD: a) Method B, 4 hrs @ 155°C dry heat @ 235°C b) Method B @ 215°C category 3. c) Method D category 3 @ 260°C.
9.11	Flammability	UL-94	V-0 or V-1 Acceptable
9.12	Board Flex	AEC Q200-005	60 sec minimum holding time.
9.13	Terminal Strength(SMD)	AEC Q200-006	-



## 10. Cautions for use

(1) Soldering upon mounting

There is a possibility to influence product characteristics when Solder paste or conductive glue comes in contact with product lid or surface.

(2) When using mounting machine

Please minimize the shock when using mounting machine to avoid any excess stress to the product.

(3) Conformity of a circuit

We strongly recommend to make sure that Negative resistance (Gain) of IC is designed to be 10 times the ESR (Equivalent Series Resistance) of crystal unit.

(4) After making the Quartz Crystal mount on a printed circuit board ,if it is required to divide the printed circuit board into another one, use it with attentive confirmation so that a warp caused by this dividing might not affect any damage. When designing a printed circuit board as well as handling the mounting As much as possible. The quartz crystal shall be passed through the reflow furnace. Then it shall be subjected to standard atmospheric conditions, after which cleaning shall be made.

## 11. Storage conditions

Please store product in below conditions, and use within 6 months.

Temperature +18 to +30°C, and Humidity of 20 to 70 % in the packaging condition.

## 12. Manufacturing location

Kyocera Crystal Device Corporation / Japan(Yamagata)

Kyocera Crystal Device (Thailand) Co., Ltd / Thailand(Lamphun)

## 13. Quality Assurance

Kyocera Crystal Device Quality Assurance Division

## 14. Quality guarantee

In case when Kyocera Crystal Device Corporation rooted failure occurred within 1year after its delivery, substitute product will be arranged based on discussion. Quality guarantee of product after 1year of its delivery is waived.

## 15. Others

In case of any questions or opinions regarding the Specification, please have it in written manner within 45 days after issued date.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Kyocera AVX:](#)

[CX5032GA12000P0KPQZ1](#)