Specifications

Drawing No.	UKY1C-H1-17B34-00[40] 1/9
Issued Date.	Nov.13,2017

TO: KCST

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

Product Name	Quartz Crystal
Product Model	CX5032GA
Frequency	20000kHz
Customer Part Number	-
Customer Specification Number	-
KYOCERA Part Number	CX5032GA20000D0PSTZ1
Remarks RoHS Compliant、MSL 1 AEC-Q200 conformity	

Customer Acceptance

Accept Signature	Approved Date	
	Department	
	Person in charge	

Seller
KYOCERA Corporation
Corporate Electronic Components Group
Electronic Components Sales Division
6 Takeda Tobadono-cho, Fushimi-ku, Kyoto
612-8501 Japan
TEL. No. 075-604-3500
FAX. No. 075-604-3501

Manufacturer

Corporate Electronic Components Group
Crystal Components Division

DesignDepartment	QualityAssurance	Approved by	Examinationby	Issued by
KYOCERACorporation Crystal Units Design Engineering Yamagata Section CrystalProduct Division	W.Muraoka	Y.Takahashi	A.Ito	A.Homma

Revision History

Rev.No.	Description of revise	Date	Approved by	Examination by	Issued by
1	First Edition	Nov.13,2017	Y.Takahashi	A.Ito	A.Homma

1. APPLICATION

This specification sheet is applied to quartz crystal "CX5032GA20000D0PSTZ1"

2. KYOCERA PART NUMBER

CX5032GA20000D0PSTZ1

3. RATINGS

Items	SYMB.	Rating	Unit	Remarks
Operating Temperature	Topr	-40to +125	°C	
Storage Temperature Range	Tstg	-40to +150	°C	

4. CHARACTERISTICS

ELECTRICAL CHARACTERISTICS

Items	Electrical Specification					Test Condition	Remarks
	SYMB.	Min.	Typ.	Max.	Unit		
Mode of Vibration			Fundamental				
Nominal Frequency	F0		20		MHz		
Nominal Temperature	T_{NOM}		+25		°C		
Load Capacitance	CL		8.0		pF		
Frequency Tolerance	df/F	-50.0		+50.0	PPM	+25±3°C	
Frequency Temperature Characteristics	df/F	-100.0		+100.0		-40to +125°C	
FrequencyAging Rate		-5.0		+5.0		1st year	+25±3°C
Equivalent Series Resistance	ESR			70	Ω		
Drive Level	Pd	0.01		500	μW		
Insulation Resistance	IR	500			MΩ	100V(DC)	

5. Measurement Condition

5.1 Frequency measurement

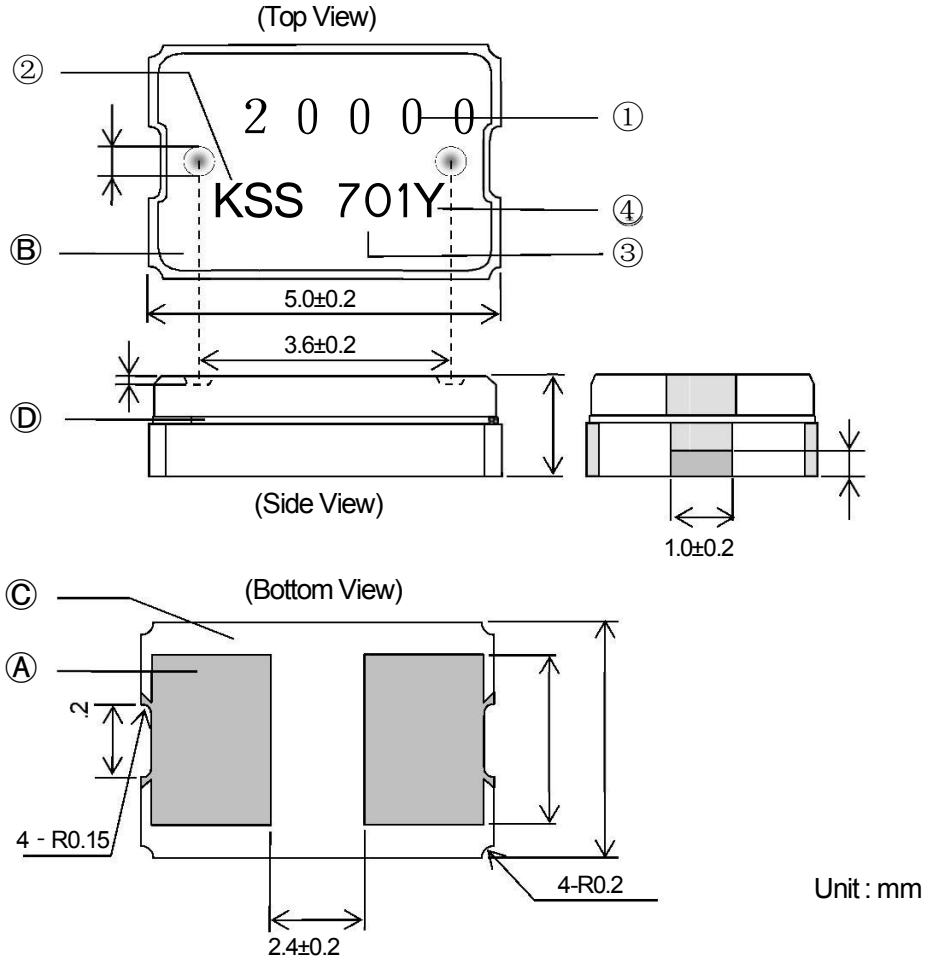
Measuring instrument : PI-Network Test Fixture
Load Capacitance : 8.0pF
Drive Level : 10μW

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)

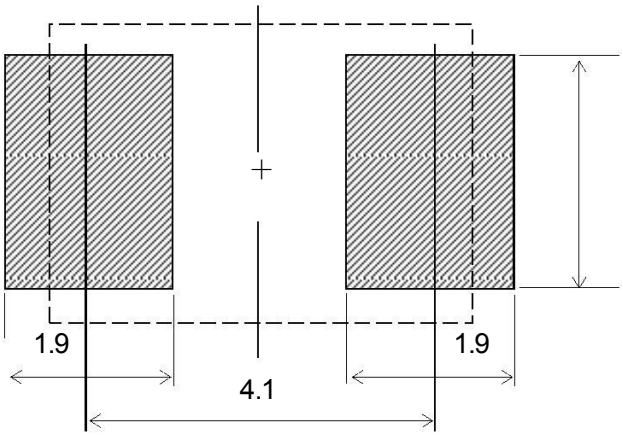


Unit : mm

Ⓐ	Terminal	W-Ni-Au(Pb-Free)
Ⓑ	CAP	CERAMICS（BLACK）
Ⓒ	BASE	CERAMICS（BLACK）
Ⓓ	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.		

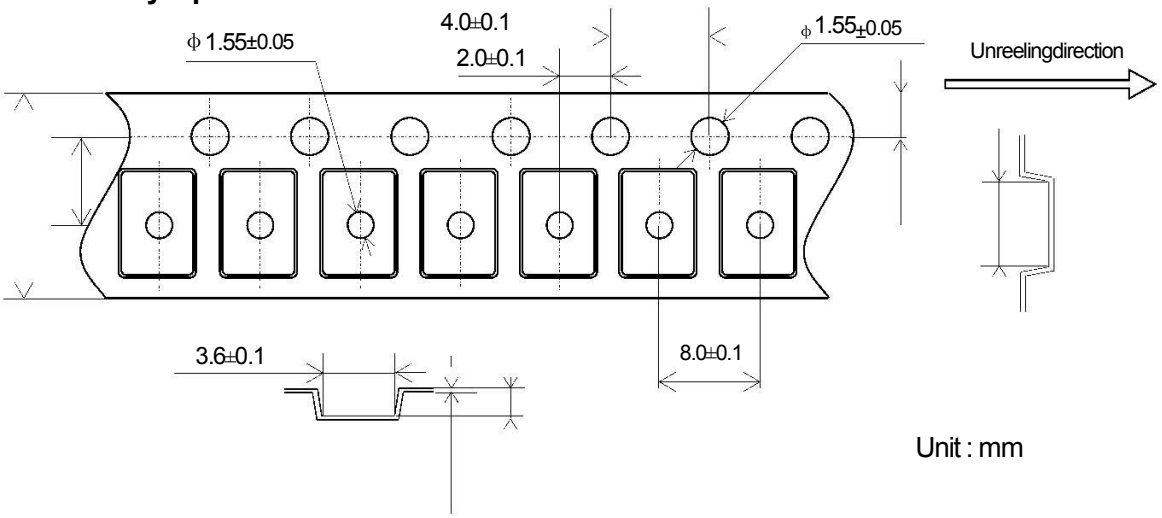
7. RECOMMENDED LAND PATTERN (not to scale)



Unit: mm

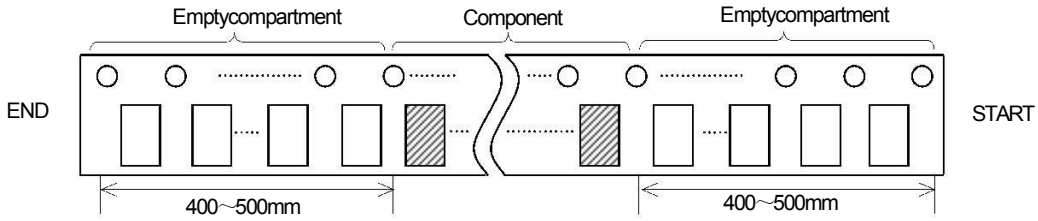
8. TAPING & REEL

8.1 Carry tape dimension



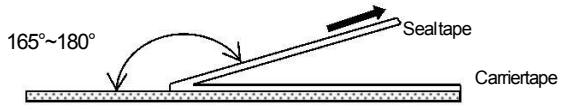
Unit : mm

8.2 Leader and trailer tape

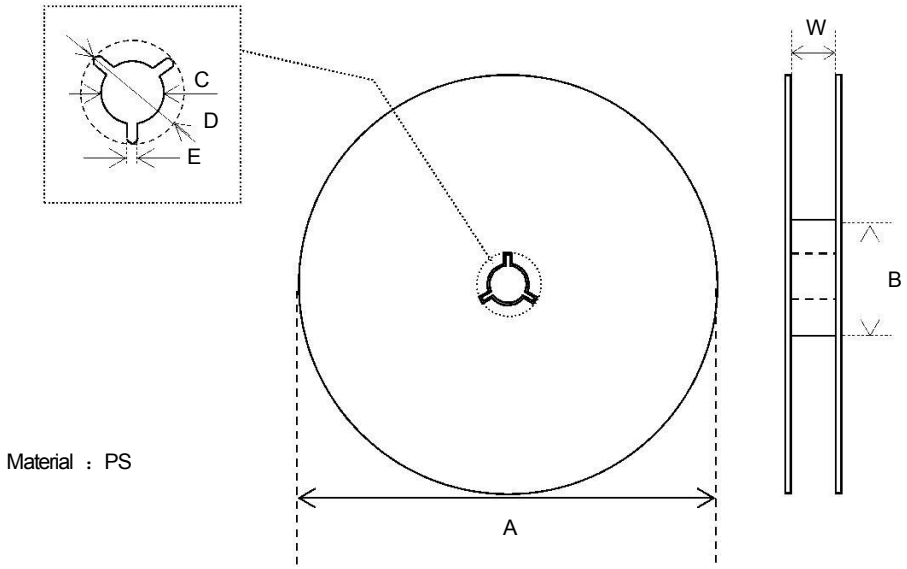


8.3 Taping specification

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→±0.3mm
9. The marking on parts is not fixed its direction, its electrical characteristic is equal.



8.4 Reel specifications



Material : PS

ϕ180 Reel (1,000 pcs. Max.)

Symbol	A	B	C	D
Dimension	ϕ180	ϕ60	ϕ13	ϕ21
Symbol	E	W		
Dimension	2.0	13.0		

(Unit: mm)

9.Enviromental 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, ±20% or 5Ω 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 devide the printed circuit board into another one, use it with attentive confirmation so that a warp cased 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 Corporation Yamagata Higashine plant / Japan(Yamagata)

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

13. Quality Assurance

To be guaranteed by Kyocera Corporation Yamagata Higashine plant QualityAssurance Division

14. Quality guarantee

In case when Kyocera 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 waivered.

15.Others

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