# **Specifications**

Drawing No.	UKY1C-H2-25AAA-00[37] 1/10
Issued Date.	2025/06/30

# TO:

Note:

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

Product Type	Quartz Crystal		
Series	CX3225SA		
Frequency	10000 kHz		
Customer Part Number	-		
Customer Specification Number	-		
KYOCERA Part Number	CX3225SA10000D0PSVL1		
Remarks Pb-Free, RoHS Compliant, MSL 1, AEC-Q200 Compliant			

**Customer Approval** 

Approval 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

RF Devices Division Corporate Electronic Components Group Crystal Components Division

Design Department	Quality Assurance	Approved by	Checked by	Checked by	Issued by
KYOCERA Corporation Crystal Components Application Engineering Section 2 Electronic Devices Division Corporate Electronic Components Group	-	-	-	-	-

Drawing No.	UKY1C-H2-25AAA-00[37] 2/10
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# **Revision History**

Rev.No.	Description of revision	Date	Approved by	Checked by	Issued by
00	First Edition	2025/06/30	ı	ı	ı

### 1 APPLICATION

This specification sheet is applied to quartz crystal "CX3225SA10000D0PSVL1"

### 2 KYOCERA PART NUMBER

CX3225SA10000D0PSVL1

### 3 RATINGS

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

## 4 CHARACTERISTICS

#### **ELECTRICAL CHARACTERISTICS**

LECTRICAL CHAP						T (0 III	
Items		Electrical Specification				Test Condition	Remarks
	Symb.	Min.	Тур.	Max.	Unit		
Mode of Vibration		F	undament	tal			
Nominal Frequency	F0		10		MHz		
Nominal Temperature	T <sub>NOM</sub>		+25		°C		
Load Capacitance	CL		8		pF		
Frequency Tolerance	df/F	-50		+50		+25±3°C	
Frequency Temperature Characteristics	df/F	-150		+150	PPM	-40 to +125 °C	Based on an oscillation frequency at +25 °C
Frequency Aging Rate		-2.0		+2.0		1 <sup>st</sup> year	+25±3°C
Equivalent Series Resistance	ESR			200	Ω		
Drive Level	Pd	0.01		200	μW		
Insulation Resistance	IR	500			ΜΩ	100V(DC)	

#### 5 Measurement Condition

(1) Frequency measurement

Measuring instrument : IEC PI-Network Test Fixture

Load Capacitance : 8pF
Drive Level : 10µW

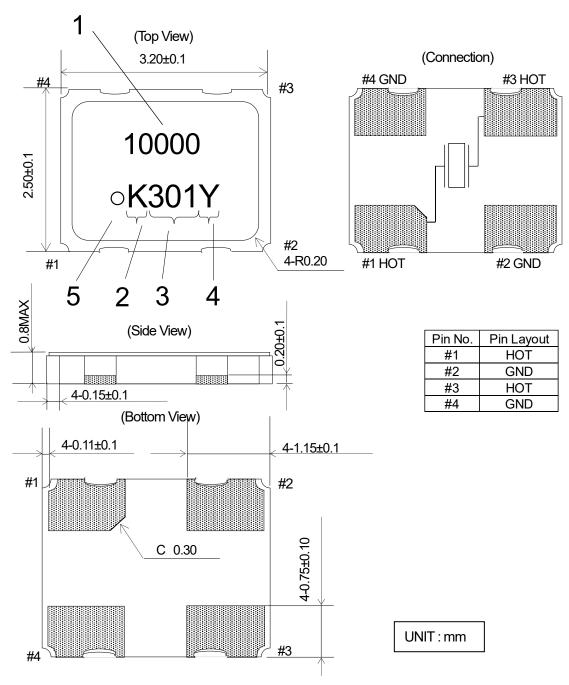
(2) Equivalent series resistance (ESR) measurement

Measuring instrument : IEC PI-Network Test Fixture

Load Capacitance : Series
Drive Level : 10µW

## 6 APPEARANCES, DIMENSIONS

#### (1) OUTLINE DIMENSION (not to scale)



#### (2) MARKING

1. Nominal Frequency

2. Identification

3. Date Code

4. Manufacturing Location

5. No.1 pin is expressed.

First 5 digits of the frequency is indicated.

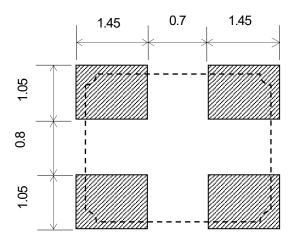
[K] mark is surely 1 pin direction.

Last 1 digit of YEAR and WEEK (Ex) 2022, Jan, 01 -> 201

Y...Japan (Yamagata)

Note: The font of marking is for reference only.

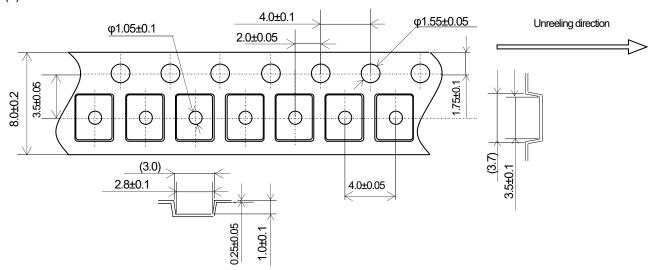
# 7 RECOMMENDED LAND PATTERN (not to scale)



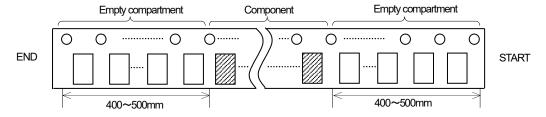
UNIT : mm

# 8 TAPING & REEL

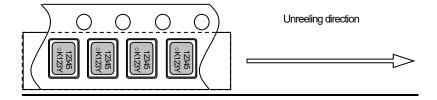
#### (1) Dimensions



#### (2) Leader and trailer tape

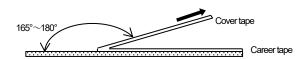


#### (3) Direction (The direction shall be seen from the top cover tape side)

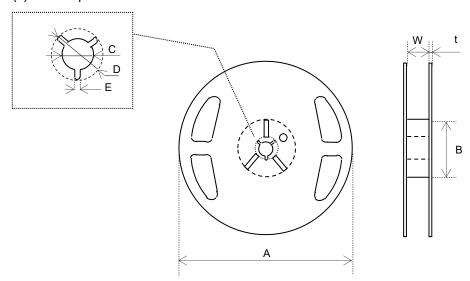


### (4) Specification

- 1. Material of the carrier tape is either polystyrene or A—PET (ESD).
- 2. Material of the cover tape is PET/PE (ESD).
- 3. The seal tape shall not cover the sprocket holes and not protrude from the carrier tape.
- 4. Tensile strength of carrier tape: 10N or more.
- 5. The R of the corner of each cavity is 0.2R max.
- 6. The alignment between centers of the cavity and sprocket hole shall be 0.05mm or less.
- 7. The orientation shall be checked from the top cover tape side as shown in 8-(3).
- 8. Peeling force of cover tape: 0.1 to 1.0N.
- 9. The component will fall out naturally when cover tape is removed and set upside down.



## (5) Reel Specification



### φ180 Reel (3,000pcs max.)

1 ( / 1	/			
Symbol	Α	В	С	D
Dimension	φ180 +0/-3	φ60 +1/-0	φ13±0.2	φ21±0.8
Symbol	Е	W	t	
Dimension	2.0±0.5	9±1	2.0±0.5	

(Unit:mm)

## φ330 Reel (15,000pcs max.)

Symbol	Α	В	С	D
Dimension	φ330±2.0	φ100±1.0	φ13±0.2	φ21±0.8
Symbol	Е	W	t	
Dimension	2.0±0.5	9.5±0.5	2.2±0.1	

(Unit:mm)

# 9 ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS:

(The solder used for the test is Pb-Free Sn-3Ag-0.5Cu.)

After following test, frequency shall not change more than  $\pm 10 \times 10^{-6}$  and CI,  $\pm 20\%$  or  $5\Omega$ .

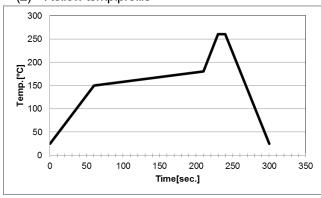
High Temperature Exposure (Storage)   Method 108   Method 109   Method 108   Method 109   Meth	No	Stress	Reference	Additional Requirements
Unpowered. Measurement at 24±4 hours after test conclusion.  9.2 Temperature Cycling  JESD22 Method JA-104  Mesourement at 24±4 hours after test conclusion.  1000 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  MIL-STD-202 Method 108  MIL-STD-202 Method 108  MIL-STD-202 Method 211  MIL-STD-202 Method 211  MIL-STD-202 Method 211  MIL-STD-202 Method 211  MIL-STD-202 Method 215  Method 215  Method 216  MIL-STD-202 Method 217  Method 218  MIL-STD-202 Method 219  Method 219  MIL-STD-202 Method 210  Method 210  MIL-STD-202 Method 210  Mil-STD-202 Method 210	9.1	High Temperature Exposure	MIL-STD-202	1000 hrs. at rated operating temperature (e.g. 85°C part can
Measurement at 24±4 hours after test conclusion.		(Storage)	Method 108	be stored for 1000 hrs at 85°C. Same applies for 125°C).
Temperature Cycling				Unpowered.
Wethod JA-104   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.   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.   Test leaded device lead integrity only. Conditions: A(227 g), Method 211   C(227 g).   Note: Also aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents.   Figure 1 of Method 213.   Condition C   Method 201   Sigs 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.   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.   For both Leaded & SMD.   Electrical Test not required.   Magnification 50 X. Conditions:   Leaded: Method 2 @ 235°C, Category 3.   SMD: a) Method B @ 215°C category 3.   Method B @ 215°C category				
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 Method 103 MIL-STD-202 Method 108 Measurement at 24±4 hours after test conclusion.  9.4 Operational Life MIL-STD-202 Method 108 Method 108 Measurement at 24±4 hours after test conclusion.  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 Method 215 Method 216 Method 217 Method 217 Method 218  9.8 Vibration MIL-STD-202 Method 204 Method 206 Method 207 Method 208 Method 209 Method 209 Method 209 Method 200 Method 2	9.2	Temperature Cycling		, ,
30min maximum dwell time at each temperature extreme. 1 min. maximum transition time. 2 min. maximum transition time. 3 min. maximum transition time. 3 min. maximum transition time. 4 min. min. maximum transition time. 4 min. min. maximum transition time. 4 min. maximum transition time. 4 min. min. maximum transition time. 4 min. min. maximum transition time. 4 min. maximum transition time. 4 min. min. maximum transition time. 4 min. maximum transition. 4 min. maxi			Method JA-104	
9.3 Biased Humidity  MIL-STD-202 Method 103  Method 103  Method 103  Method 103  Method 103  Method 108  MIL-STD-202 Method 108  Method 215  Method 216  Method 217  Method 218  Method 219  Method 219  Method 210  Method 204  Method 204  Method 204  Method 210  Method 31  Method 32  Me				
9.3 Biased Humidity				· ·
9.4 Operational Life  MIL-STD-202 Method 108  9.5 Terminal Strength (Leaded)  9.6 Resistance to Solvents  MIL-STD-202 Method 211  9.7 Mechanical Shock  MIL-STD-202 Method 215  9.8 Vibration  MIL-STD-202 Method 204  Method 204  MIL-STD-202 Method 215  9.8 Vibration  MIL-STD-202 Method 204  MIL-STD-202 Method 215  9.8 Vibration  MIL-STD-202 Method 204  MIL-STD-202 Method 215  9.9 Resistance to Solvents  MIL-STD-202 Method 215  9.9 Resistance to Mil-STD-202 Method 204  Method 204  MIL-STD-202 Method 215  9.9 Resistance to Mil-STD-202 Method 204  Method 204  Mil-STD-202 Method 204  Method 210  Method 210  Method 210  Method 210  Method 210  Method 2 Resistance to Solvents  Mil-STD-202 Method 210  Method 210  Method 210  Method 210  Method 210  Method 210  Method 2 Resistance to Solvents  Mil-STD-202 Method 210  Method 2 Resistance to Solvents  Mil-STD-202 Method 210  Method 2 Resistance to Solvents  Mil-STD-202 Method 2 Resistance to Solvents  Method 3 Resistance to Solvents  Method 4 Resistance to Solvents  Method 5 Resistance to Solvents  Method 8 Resistance to S	0.0	Discould be still be	NAU OTD 000	
each crystal leg and GND. Measurement at 24±4 hours after test conclusion.  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  MIL-STD-202 Method 215  MIL-STD-202 Method 215  Mill-STD-202 Method 215  Mill-STD-202 Method 213  P.7 Mechanical Shock  MIL-STD-202 Method 213  Mill-STD-202 Method 213  Mill-STD-202 Method 213  P.8 Vibration  MIL-STD-202 Method 204  Method 204  Method 204  Method 205  Method 204  Method 210  Meth	9.3	Blased Humidity	_	
Measurement at 24±4 hours after test conclusion.			ivietnod 103	· · · · · · · · · · · · · · · · · · ·
9.4 Operational Life  MIL-STD-202 Method 108  MIL-STD-202 Method 108  MIL-STD-202 Method 108  MIL-STD-202 Method 211  9.6 Resistance to Solvents  MIL-STD-202 Method 211  MIL-STD-202 Method 211  MIL-STD-202 Method 213  MIL-STD-202 Method 214  MIL-STD-202 Method 215  MIL-STD-202 Method 215  MIL-STD-202 Method 215  MIL-STD-202 Method 216  MIL-STD-202 Method 217  MIL-STD-202 Method 218  MIL-STD-202 Method 219  MIL-STD-202 Method 219  MIL-STD-202 Method 210  Mil-				1
temperature. Rated VDD applied with 1 MW and inverter in parallel, 2X crystal CL capacitors between each crystal leg and GND.  9.5 Terminal Strength (Leaded) MIL-STD-202 Method 211 MIL-STD-202 Method 211 MIL-STD-202 Method 215 Mechanical Shock MIL-STD-202 Method 215 Method 215 MIL-STD-202 Method 215 Mil-STD-202 Method 215 Method 213  9.8 Vibration MIL-STD-202 Method 213  9.8 Vibration MIL-STD-202 Method 204 Method 204 Method 204 Method 204 Mil-STD-202 Method 215 Method 205 Method 206 Method 207 Method 207 Method 208 Mil-STD-208 Method 209 Method 209 Method 200 Metho	0.4	Operational Life	MIL STD, 202	
parallel, 2X crystal CL capacitors between each crystal leg and GND.  Measurement at 24±4 hours after test conclusion.  Method 211  President device lead integrity only. Conditions: A (227 g), C (227 g).  Resistance to Solvents  MIL-STD-202 Method 215  Mechanical Shock  MIL-STD-202 Method 213  Method 213  Prigure 1 of Method 213. Condition C  Method 204  Method 206  Method 207  Method 210  Method 210  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.  Por 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 D category 3 @ 260°C.  Procedure 1 with solder within 2: Solder ability  Method 2:10  Procedure 1 with solder within 1.5 mm of device body for 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 D category 3 @ 260°C.  Put Plammability  Method 2:10  Method 3:10  Method 3:10  Method 3:10  Method 3:10  Method 3:10  Method 2:10  Method 3:10  Method 4:10  Method 5:10  Method 5:10  Method 5:10  Method 6:10  Method 6:10  Method 6:10  Method 6:10  M	3.4	Operational Life		
and GND. Measurement at 24±4 hours after test conclusion.  Test leaded device lead integrity only. Conditions: A (227 g), C (227 g).  9.6 Resistance to Solvents  MIL-STD-202 Method 215  9.7 Mechanical Shock  MIL-STD-202 Method 213  9.8 Vibration  MIL-STD-202 Method 204  Method 206  Mil-STD-202 Method 207  Method 200  Method 201  Method 200  Method 200  Method 201  Method 200  Method 200  Method 201  Method 201  Method 200  Method 201  Method 200  Method 201  Method 201  Method 201  Method 202  Method 202  Method 202  Method 202  Method 202  Method 202  Method 203			Wicalog 100	
Measurement at 24±4 hours after test conclusion.  9.5 Terminal Strength (Leaded) MIL-STD-202 Method 211 C (227 g).  Note: Also aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents.  9.7 Mechanical Shock MIL-STD-202 Method 213 MIL-STD-202 Method 213 C (227 g).  Note: Also aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents.  Figure 1 of Method 213. Condition C  Method 213  9.8 Vibration MIL-STD-202 Method 204 Method 205 Method 206 Method 207 Method 207 Method 208 Method 208 Method 208 Method 210 M				1.
Method 211 C (227 g).  9.6 Resistance to Solvents MIL-STD-202 Method 215 Figure 1 of Method 213. Condition C  9.7 Mechanical Shock MIL-STD-202 Method 213  9.8 Vibration MIL-STD-202 Method 204 Signer 1 of Method 213. Condition C  9.9 Resistance to MIL-STD-202 Method 204 Soldering Heat Method 210  9.9 Resistance to Soldering Heat Method 210  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 @ 215°C category 3. c) Method B @ 215°C category 3. c) 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 Mile-STD-202 Mothod 215 Note: Also aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents. Also aqueous wash chemical - OKEM clean or equivalent. Do not use banned solvents. Potem of equivalent. Do not use banned solvents.  Figure 1 of Method 213. Condition C  Figure 1 of Method 213. Condition C  Figure 1 of Method 213. Condition S  Figure 1 of Method 213. Condition C  Solder ab 2 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.  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 with solder within 1.5 mm of device body for Leaded & SMD. Electrical Test not required. Magnification 50 X. Conditions: Leaded: Method A @ 235°C, category 3. SMD: a) Method B @ 215°C category 3. SMD: a) Method B @ 215°C category 3. c) Method D category 3 @ 260°C.  9.11 Flammability UL-94 V-0 or V-1 Acceptable				
Method 211   C (227 g).	9.5	Terminal Strength (Leaded)	MIL-STD- 202	Test leaded device lead integrity only. Conditions: A (227 g),
9.7 Mechanical Shock  MIL-STD-202 Method 213  9.8 Vibration  MIL-STD-202 Method 204  Method 206  Method 204  Method 206  Method 206  Method 206  Method 207  Method 207  Method 208  Method 200  Metho		,	Method 211	
9.7 Mechanical Shock  MIL-STD-202 Method 213  9.8 Vibration  MIL-STD-202 Method 204  Method 205  Method 206  Method 206  Method 206  Method 207  Method 207  Method 208  Method 208  Method 208  Method 209  Method 210  Metho	9.6	Resistance to Solvents	MIL-STD- 202	Note: Also aqueous wash chemical - OKEM clean or
9.8 Vibration  MIL-STD-202 Method 204  Method 204  Mil-STD-202 Method 204  Method 204  Mil-STD-202 Method 204  Mil-STD-202 Method 204  Mil-STD-205 Method 204  Mil-STD-205 Method 206  Mil-STD-206 Method 206  Mil-STD-207 Method 206  Mil-STD-208 Method 210  Mil-STD-209 Method 210  Method 230°C and immerse only to level to cover terminals for SMD.  Method 235°C, category 3.  SMD: a) Method A @ 235°C, category 3.  SMD: a) Method B, 4 hrs @ 155°C dry heat @ 235°C b) Method D category 3 @ 260°C.			Method 215	'
9.8 Vibration  MIL-STD-202 Method 204  Method 204  Method 204  Method 204  Method 204  Mote: 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  Method 210  Method 210  Method 210  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.	9.7	Mechanical Shock		Figure 1 of Method 213. Condition C
Method 204  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  Method 210  Method 210  Method 210  Method 210  Method 210  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  Mothod 204  Mothod 205  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.				
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  Method 210  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.	9.8	Vibration		
sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.  9.9 Resistance to Soldering Heat  MIL-STD-202 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 @ 215°C category 3. SMD: a) 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.			Method 204	·
from 10-2000 Hz.  9.9 Resistance to Soldering Heat Method 210 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 @ 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.				
9.9 Resistance to Soldering Heat  Method 210  Method 210  Method 210  Method 210  Method 210  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  Gondition 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.  For both Leaded & SMD. Electrical Test not required. Magnification 50 X. Conditions: Leaded: Method A @ 235°C category 3. c) Method D category 3 @ 260°C.  9.11  Flammability  UL-94  V-0 or V-1 Acceptable  60 sec minimum holding time.				
Soldering Heat  Method 210  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.	99	Resistance to	MIL-STD-202	
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.	0.0			
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.		John J. John	I Would Live	
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  Go sec minimum holding time.				1 '
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.	9.10	Solder ability	J-STD-002	
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.		_		Magnification 50 X. Conditions:
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.				
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.				
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9.12 Board Flex AEC Q200-005 60 sec minimum holding time.	0.44		111 04	
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9.13 Terminal Strength (SMD) AEC Q200-006 -	9.12	Board Flex	AEC Q200-005	60 sec minimum holding time.
	9.13	Terminal Strength (SMD)	AEC Q200-006	-

#### 10 SOLDERING CONDITION

#### (1) Material of solder

Kind ... lead free solder paste Melting point ... +220±5°C

(2) Reflow temp.profile



	Temp [°C]	Time[sec]
Preheating	+150 to +180	150 (typ.)
Peak	+260±5	10 (max.)
Total	_	300 (max.)

(3) Hand Soldering

+350°C 3 sec max.

(4) Reflow Times

2 times

#### 11 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.

### 12 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.

#### 13 MANUFACTURING LOCATION

KYOCERA Corporation Yamagata Higashine Plant / Japan (Yamagata)

## 14 Quality Assurance

To be guaranteed by KYOCERA Corporation Yamagata Higashine Plant Quality Assurance Division

# 15 Quality guarantee

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

## 16 Others

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