

**Messrs: Atheros**

**Specification**

Customer part number	-
Customer specification Number	-
AVL part number	CX101F-040.000-H0445
Product	Quartz Crystal
Model	CX-101F
Frequency	40000kHz
Part Number	CX3225SB40000H0WZK24

**Pb Free, RoHS Compliant**



[STAMP]

**Sales office**

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<b>Design</b> KYOCERA KINSEKI Yamagata Co. Crystal Units Division	<b>Issued by</b> 	<b>Approved by</b> 
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※Recycled paper is being used for the conservation of nature.

Date: 2008/ 5/30

**Change History**

Rev	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
0	spec release	2003/10/ 1	A.ITO	Y.TAKAHASHI	T.UETA
①	•Form change				
②	•AVL part number addition				
③	•soldering condition change. Eutectic solder paste → Lead free solder past Melting point: +180±5°C → +220±5°C Preheating Temp: +150°C → +180°C	2008/ 5/30	<i>A. Ito</i>	<i>Y. Takahashi</i>	<i>T. Ueta</i>

**1. APPLICATION**

This specification sheet is applied to quartz crystal "CX-101F".

**2. PART NUMBER**

CX3225SB40000H0WZK24

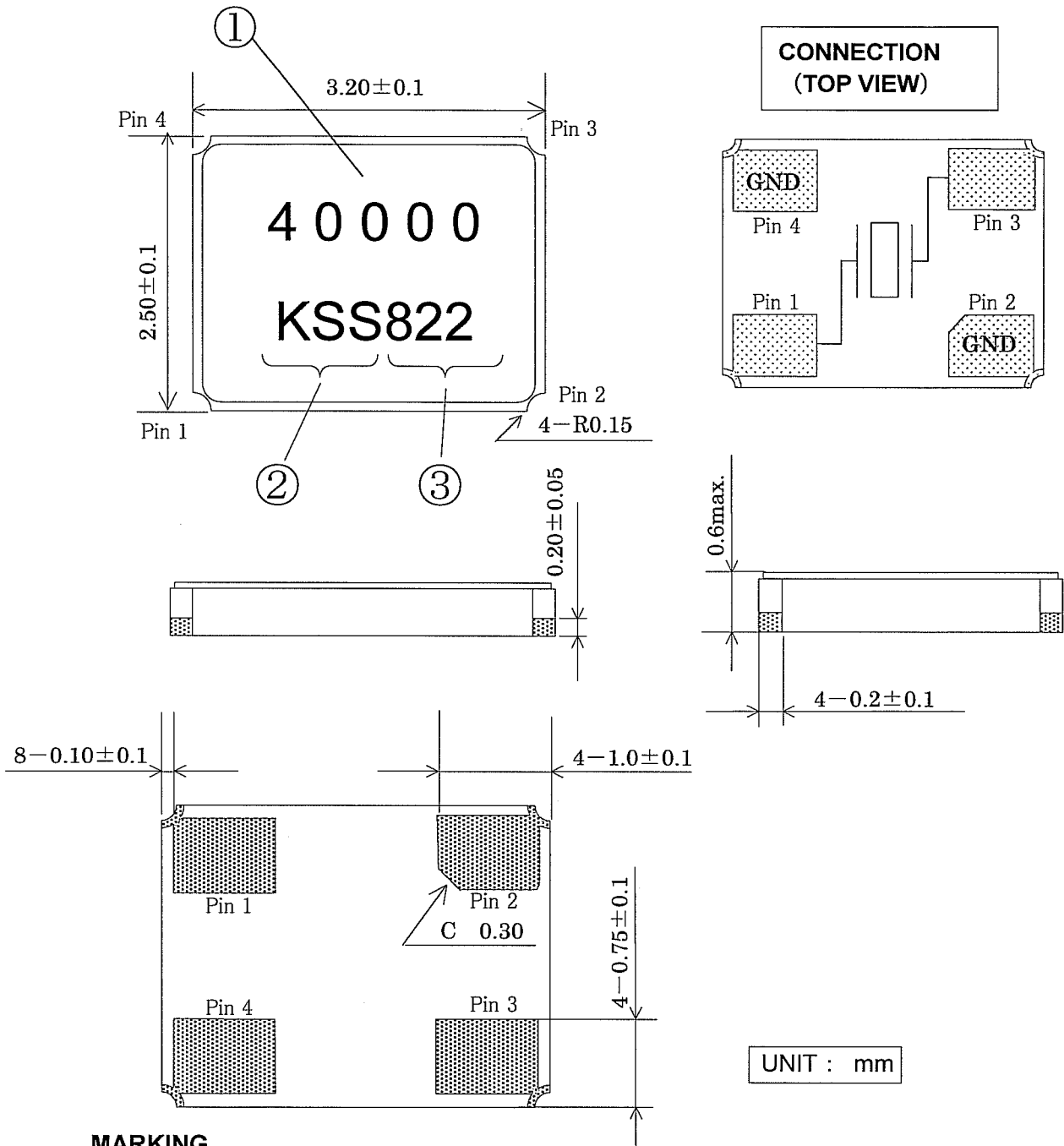
**3. RATINGS**

Items	SYMB.	Rating	Unit	Remarks
Operating Temperature	Topr	0~+85	°C	
Storage Temperature range	Tstg	-40~+85	°C	

**4. CHARACTERISTICS****ELECTRICAL CHARACTERISTICS**

Items	Electrical Specification					Test Condition	Remarks
	SYMB.	Min	Typ.	Max	Unit		
Mode of Vibration		Fundamental					
Nominal Frequency	F0		40		MHz		
Nominal Temperature	T <sub>NOM</sub>		+25		°C		
Load Capacitance	CL		12.0		pF		
Frequency Temperature characteristics	df/F	-18.0		+18.0	PPM	0~+85°C Network Analyzer E5100A 200 μA	
Frequency Ageing Rate		-1.0		+1.0		1year	+25±5°C
Equivalent Series Resistance	ESR			35	Ω	Network Analyzer E5100A 200 μA	
Drive Level	Pd	0.01		500	μW		
Insulation Resistance	IR	500			MΩ	100V(DC)	
Shunt Capacitance	C <sub>0</sub>			2.0	PF		

## 5. APPEARANCES, PHYSICAL DIMENSION OUTLINE DIMENSION (not to scale)

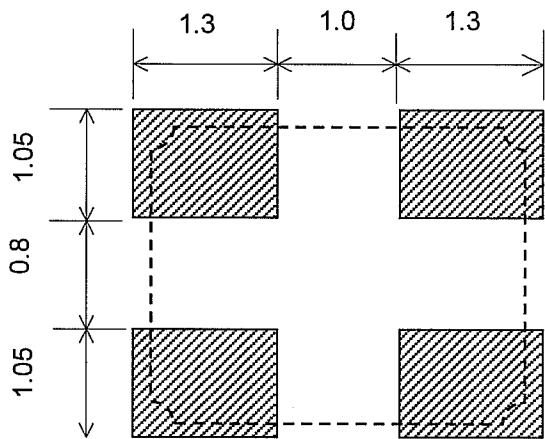


### MARKING

- ① Nominal Frequency Move the number of maximum indication beams of the frequency to five digits, and omit less than kHz.
- ② Identification
- ③ Date Code Year...LAST 1 DIGIT of YEAR AND WEEK ※For details to P12  
(Ex) May 30 2008 → 822

※The font of marking is reference.

## 6. RECOMMENDED LAND PATTERN (not to scale)



UNIT : mm

## 7. Quality Assurance

Location

Kyocera Kinseki Yamagata Corporation ... Kyocera Kinseki Yamagata

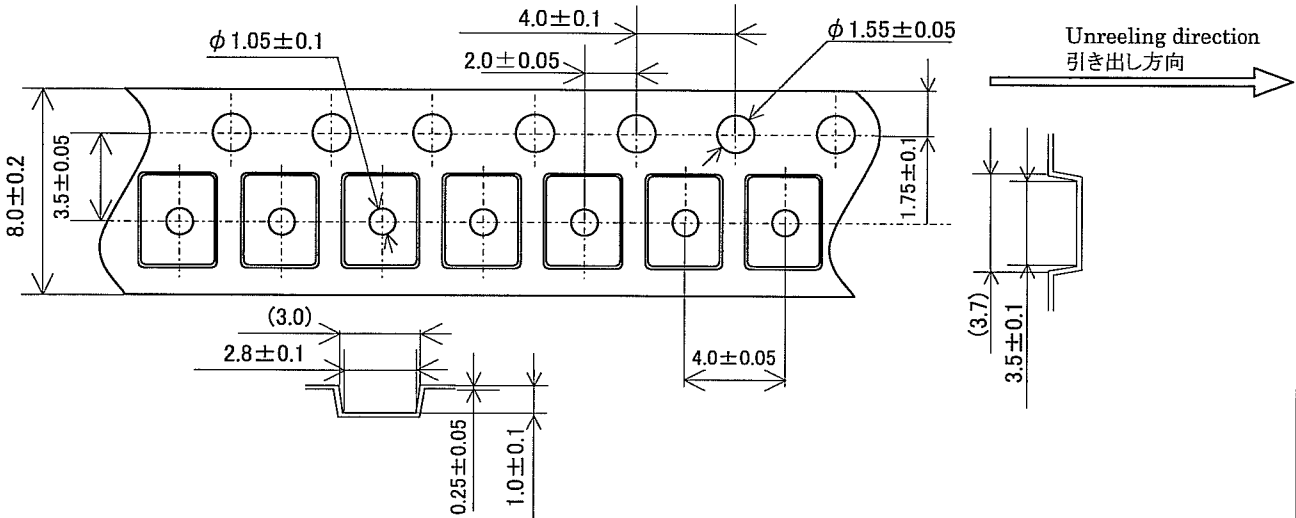
Quality Assurance Division

Quality guarantee

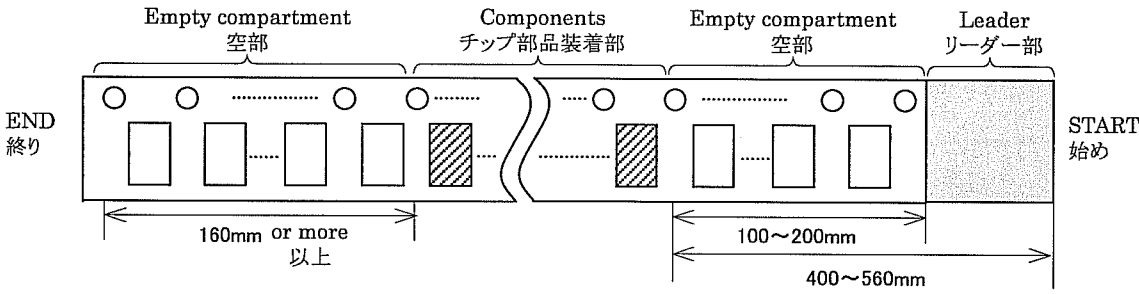
When the failure by the responsibility of our company occurs clearly after delivery within 1 year, a substitute article etc. is appropriated gratuitously and this is guaranteed. However, when passing 1 year after delivery, there is a case where I am allowed to consider as onerous repair after both consultation.

**8.TAPING & REEL**

**8-1.Dimensions (寸法図)**

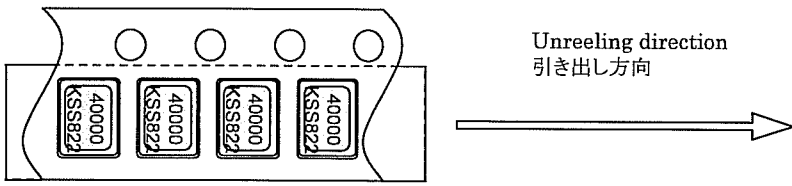


**8-2.Leader and trailer tape (リーダー部テープ部及び終末端部テープ)**



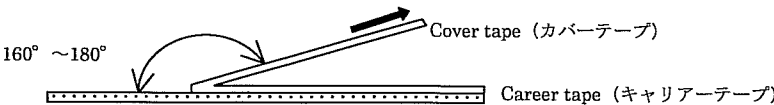
**8-3.Direction (The direction shall be seen from the top cover tape side)**

テーピング方向 (トップカバーテープ側から見る。)

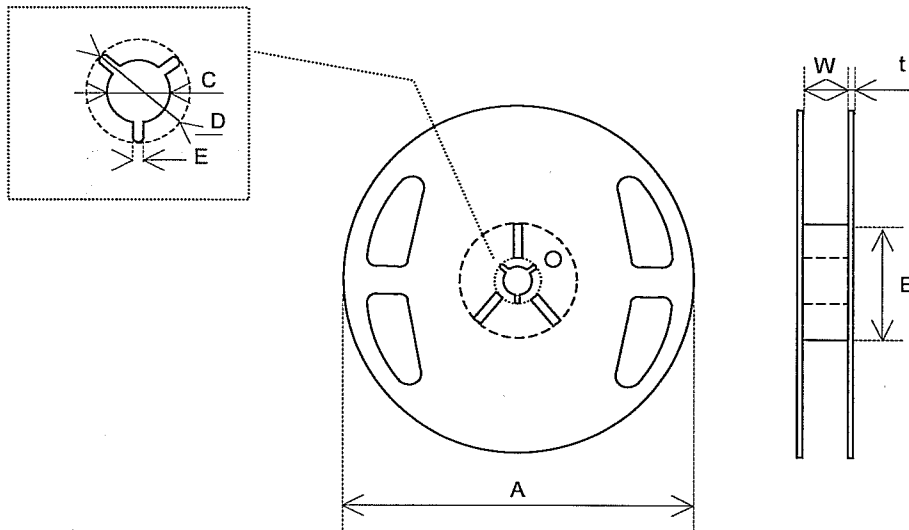


**8-4.Specification (記事)**

1. Material of the carrier tape shall be polystyrene or A-PET (ESD).  
{装着テープの材質は、PS もしくは A-PET とする。(静電対策品) }
2. Material of the seal tape shall be polyester(ESD). { シールテープの材質はポリエステルとする。(静電対策品) }
3. The seal tape shall not cover the sprocket holes. And not protrude from the carrier tape. {シールテープは送り穴をふさいだり、装着テープからはみ出していないこと。}
4. Tensile strength of the tape : 10N or more. {テープの引張り強度は 10N 以上}
5. The R of the corner without designation is 0.2RMAX. {指定無きコーナーの R は 0.2RMAX}
6. Disalignment between centers of the cavity and sprocket hole shall be 0.05mm or less. {角穴の中心と送り穴の中心とのずれは、0.05mm 以下とする。}
7. Cumulative pitch tolerance of "P<sub>0</sub>" shall be ±0.2mm at 10 pitches. {"P<sub>0</sub>"の累積ピッチ許容差は、10 ピッチで±0.2mm とする。}
8. Suppose that it unifies as shown in the above-mentioned figure to the directivity of printing in an embossing tape.  
{エンボステーブ内における印字の方向性は上記図のように統一することとする。}
9. Peeling force of the seal tape: 0.3 to 0.7N. {シールテープ剥離強度 0.3~0.7N}



### Reel specifications

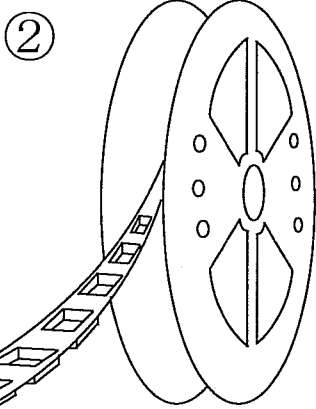
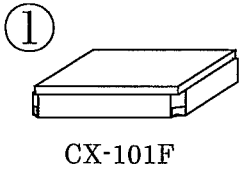


In the case of  $\Phi 180$  Reel(1000 or 3000 pcs)

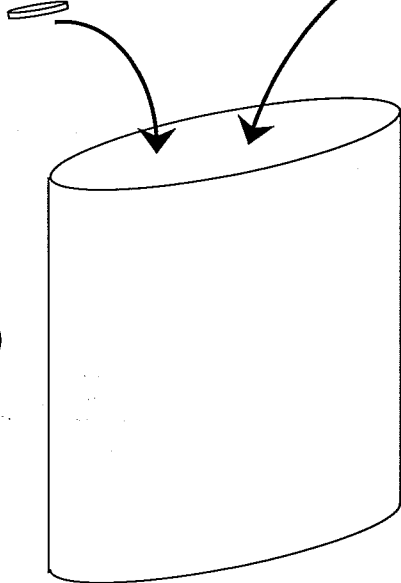
Symbol	A	B	C	D
Dimension	$\phi 180 +0/-3$	$\phi 60 +1/-0$	$\phi 13 \pm 0.2$	$\phi 21 \pm 0.8$
Symbol	E	W	t	
Dimension	$2.0 \pm 0.5$	$9 \pm 1$	$2.0 \pm 0.5$	

(Unit : mm)

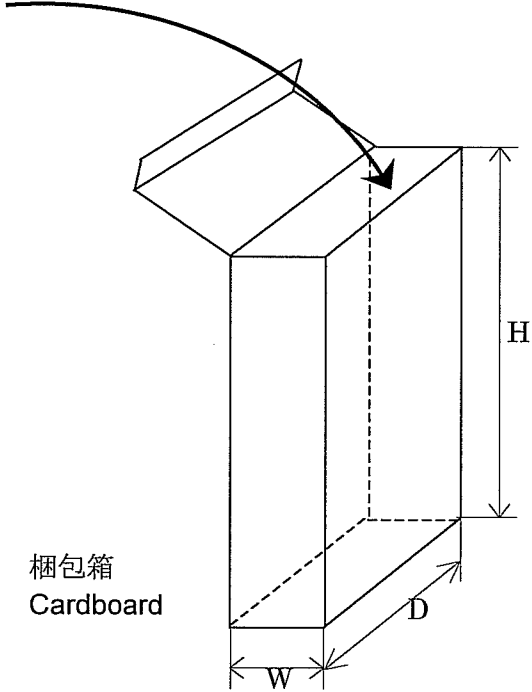
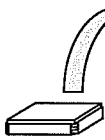
Reel Package 梱包仕様



乾燥剤  
Desiccant



ポリエチレン袋  
Polyethylene Bag



梱包箱サイズ Corrugated Cardboard	
数量 Q'ty	1000 or 3000pcs
W	26mm
D	193mm
H	198mm



## 9.Environmental requirements

After following test, frequency shall not change more than  $\pm 10 \times 10^{-6}$

And CI,  $\pm 20\%$  or  $5\Omega$ .

- 9.1 Resistance to Shock                      Test condition  
                                                             Natural dropped from height 100cm onto hard wood  
                                                                                                                  board in 3 times
- 9.2 Resistance to Vibration                      Test condition  
                                                                                                                  frequency                                      : 10 - 55 -10 Hz  
                                                                                                                  Amplitude                                        : 1.5mm  
                                                                                                                  Cycle time                                        : 15 minutes  
                                                                                                                  Direction                                         : X,Y,Z (3direction),2 h each.
- 9.3 Resistance to Heat                              Test condition  
                                                                                                                  The quartz crystal unit shall be stored at a  
                                                                                                                  temperature of  $+85\pm 2^\circ\text{C}$  for 500 h.  
                                                                                                                  Then it shal be subjected to standard atmospheric  
                                                                                                                  conditions for 1 h ,after whichi measurement shall  
                                                                                                                  be made.
- 9.4 Resistance to Cold                              Test condition  
                                                                                                                  The quartz crystal unit shall be stored at a  
                                                                                                                  temperature of  $-40\pm 2^\circ\text{C}$  for 500 h.  
                                                                                                                  Then it shal be subjected to standard atmospheric  
                                                                                                                  conditions for 1 h ,after whichi measurement shall  
                                                                                                                  be made.
- 9.5 Thermal Shock                                      Test condition  
                                                                                                                  The quartz crystal unit shall be subjected to 500  
                                                                                                                  succesive change of temperature cycles , each as  
                                                                                                                  shown in table below, Then it shall be subjected  
                                                                                                                  to standard atmospheric conditions for 1h, after  
                                                                                                                  which measurements shall be made.  
                                                                                                                  Cycle                                                :  $-40\pm 2^\circ\text{C}$  (30min.)  $\sim +25\pm 2^\circ\text{C}$  (5min.)  
                                                                                                                                                                                                                                                   $\sim +85\pm 2^\circ\text{C}$  (30min.)  $\sim +25\pm 2^\circ\text{C}$  (5min.)

9.6 Resistance to Moisture

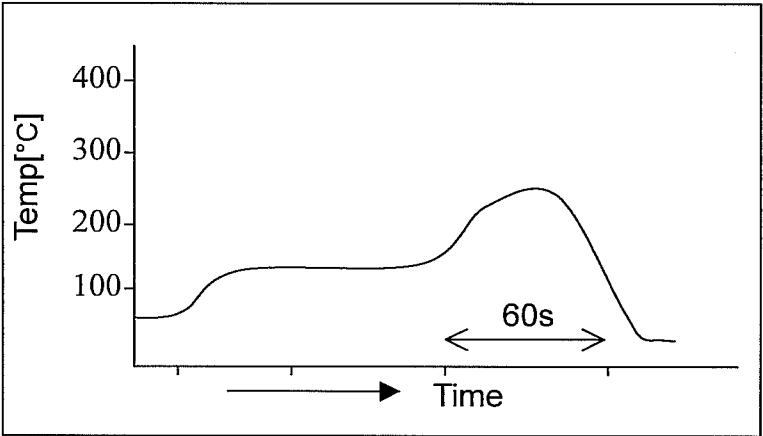
**Test condition**  
 The quartz crystal unit shall be stored at a temperature of  $+60 \pm 2^\circ\text{C}$  with relative humidity of 90% to 95% for 240 h. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurements shall be made

△ 9.7 Soldering condition

- 1.) Material of solder  
 Kind ... lead free solder paste  
 Melting point ...  $+220 \pm 5^\circ\text{C}$
- 2.) Temp.profile of reflow soldering system

	Temp [°C]	Time[sec]
Peak	$+260 \pm 5$	10 (max.)
Preheating	$+180$ (typ.)	100 (typ.)
Total	—	200 (max.)

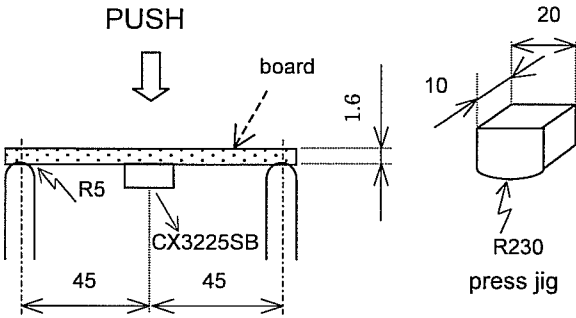
Temp. profile of reflow



9.8 Intensity for bending in circuit board

Solder this product in center of the circuit board of  $40\text{mm} \times 100\text{mm}$ , and add the deflection of 3mm as the bottom figure.

Test board :  $t = 1.6\text{mm}$



UNIT : mm

**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 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 time 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°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.

Date: 2008/ 5/30

## 13.LOT CALENDAR

WEEK	MONTH	SUN	MON	TUE	WED	THU	FRI	SAT		WEEK	MONTH	SUN	MON	TUE	WED	THU	FRI	SAT
週	月	日	月	火	水	木	金	土		週	月	日	月	火	水	木	金	土
0801	1			1	2	3	4	5		0828	7	6	7	8	9	10	11	12
0802		6	7	8	9	10	11	12		0829		13	14	15	16	17	18	19
0803		13	14	15	16	17	18	19		0830		20	21	22	23	24	25	26
0804		20	21	22	23	24	25	26		0831	8	27	28	29	30	31	1	2
0805	2	27	28	29	30	31	1	2		0832		3	4	5	6	7	8	9
0806		3	4	5	6	7	8	9		0833		10	11	12	13	14	15	16
0807		10	11	12	13	14	15	16		0834		17	18	19	20	21	22	23
0808		17	18	19	20	21	22	23		0835		24	25	26	27	28	29	30
0809	3	24	25	26	27	28	29	1		0836	9	31	1	2	3	4	5	6
0810		2	3	4	5	6	7	8		0837		7	8	9	10	11	12	13
0811		9	10	11	12	13	14	15		0838		14	15	16	17	18	19	20
0812		16	17	18	19	20	21	22		0839		21	22	23	24	25	26	27
0813		23	24	25	26	27	28	29		0840	10	28	29	30	1	2	3	4
0814	4	30	31	1	2	3	4	5		0841		5	6	7	8	9	10	11
0815		6	7	8	9	10	11	12		0842		12	13	14	15	16	17	18
0816		13	14	15	16	17	18	19		0843		19	20	21	22	23	24	25
0817		20	21	22	23	24	25	26		0844	11	26	27	28	29	30	31	1
0818	5	27	28	29	30	1	2	3		0845		2	3	4	5	6	7	8
0819		4	5	6	7	8	9	10		0846		9	10	11	12	13	14	15
0820		11	12	13	14	15	16	17		0847		16	17	18	19	20	21	22
0821		18	19	20	21	22	23	24		0848		23	24	25	26	27	28	29
0822		25	26	27	28	29	30	31		0849	12	30	1	2	3	4	5	6
0823	6	1	2	3	4	5	6	7		0850		7	8	9	10	11	12	13
0824		8	9	10	11	12	13	14		0851		14	15	16	17	18	19	20
0825		15	16	17	18	19	20	21		0852		21	22	23	24	25	26	27
0826		22	23	24	25	26	27	28		0853		28	29	30	31			
0827	7	29	30	1	2	3	4	5										