

Preliminary Specifications

Drawing No.	Y1101-12122-005	1 / 9
Issued Date.	Feb,5,2013	

Messrs MediaTek Inc.

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

Product Name	Crystal Units with Thermistor
Product Model	CT2520DB series
Frequency	26000kHz
Customer Part Number	-
Customer Specification Number	-
KYOCERA Part Number	CT2520DB26000C0FZZA1
Remarks Pb-Free, RoHS Compliant, MSL 1	

Customer Acceptance

Accept Signature	Approved Date	
	Department	
	Person in charge	

Seller

KYOCERA Corporation

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Manufacturer

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Design Department	Quality Assurance	Approved by	Checked by	Issued by
KYOCERA Crystal Device Corporation Crystal Unit Application Engineering Section Crystal Units Division 2	S.Itoh	T.Soda	A.Muraoka	Y.Nozaki

Revision History

Rev.No.	Description of revise	Date	Approved by	Checked by	Issued by
1	First Edition	Aug,28,2012	T.Nakazawa	H.Miura	Y.Nozaki
2	Add 3rd order curve fitting coefficient Add Freq. slope error	Oct,29,2012	T.Nakazawa	H.Miura	Y.Nozaki
△3	Change 3rd order curve fitting coefficient	Nov,19,2012	T.Nakazawa	H.Miura	Y.Nozaki
△4	Change Operating Temperature -25~85deg.C→-30~85deg.C	Dec,4,2012	T.Nakazawa	H.Miura	Y.Nozaki
△5	Add Full cycle temperature hysteresis Test Condition				
△6	Change 3rd order curve fitting coefficient Test Condition				
△7	Change Freq. slope error Temp Range				
△8	Change Operating Temperature -30~85deg.C→-40~85deg.C	Feb,5,2013	T.Soda	A.Muraoka	Y.Nozaki
△9	Add Freq. slope error -40°C to -30°C				

1. APPLICATION

This specification sheet is applied to Crystal Units with Thermistor "CT2520".

2. KYOCERA PART NUMBER

CT2520DB26000C0FZZA1

3. RATINGS 

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

4. CHARACTERISTICS**4-1 ELECTRICAL CHARACTERISTICS**

Items	Electrical Specification					Test Condition	Remarks
	SYMB.	Min	Typ.	Max	Unit		
Mode of Vibration		Fundamental					
Nominal Frequency	F0		26		MHz		
Nominal Temperature	T _{NOM}		25		°C		
Load Capacitance	CL		7.0		pF		
Frequency Tolerance	dF	-10.0		+10.0	ppm	+25±3°C	
Frequency Temperature Characteristics	dF _T	-10.0		+10.0		-25~+85°C	
Frequency Ageing Rate	Fa	-1.0		+1.0	ppm	First year	+25±3°C
		-1.5		+1.5		2 years	
		-2.5		+2.5		5 years	
		-5.0		+5.0		10 years	
Equivalent Series Resistance	ESR			30	Ω		
Spurious mode series resistance		500			Ω		±500 kHz
Tuning sensitivity	S	-10%	28	+10%	ppm/pF		
Drive Level	Pd	0.01	0.05	0.1	mW		
Insulation Resistance	IR	500			MΩ	100V(DC)	

4-2 ELECTRICAL CHARACTERISTICS (Thermistor)

Items	Electrical Specification					Remarks
	SYMB.	Min	Typ.	Max	Unit	
Resistance			100k		Ω	25°C *Note1
B-Constant			4250		K	25°C - 50°C *Note1
Tolerance		-1.0		+1.0	%	

*Note1

Resistance of Thermistor

$$R/R_0 = \exp(B(1/T - 1/T_0))$$

R : Resistance in ambient Temp. T[K] (K : absolute temperature)

R₀ : Resistance in ambient Temp. T₀[K]

B : B-Constant of Thermistor

4-3 ELECTRICAL CHARACTERISTICS (Hysteresis)

Items	Electrical Specification					Test Condition/ Remarks
	SYMB.	Min	Typ.	Max	Unit	
Full cycle temperature hysteresis				0.5	ppm	Ta=-40°C to +85°C for each 2deg.c.
Small cycle temperature hysteresis				0.05	ppm	Temp. range:-40°C to +85°C *Note2
Freq. perturbation		-0.5		0.5	ppm/deg.C	Temp. range:-40°C to +85°C reading every 2 degree C over operation temperature.

*Note2

Temp rate Change:1°C/minutes.

The average of the 9-point in any 5 °C for 1deg.C Test.

4-4 ELECTRICAL CHARACTERISTICS (DLD)

Items	Electrical Specification					Test Condition/ Remarks
	SYMB.	Min	Typ.	Max	Unit	
Max R-Min R	DLD2			2.5	Ω	Drive Level 10nW~100μW Step Ratio Is √10
R Hysteresis	DLDH2			1.5	Ω	
Max FR-Min FR	FDDL			2.0	ppm	
FR Hysteresis	FDLH			0.7	ppm	

4-5 ELECTRICAL CHARACTERISTICS (3rd order curve fitting coefficient)



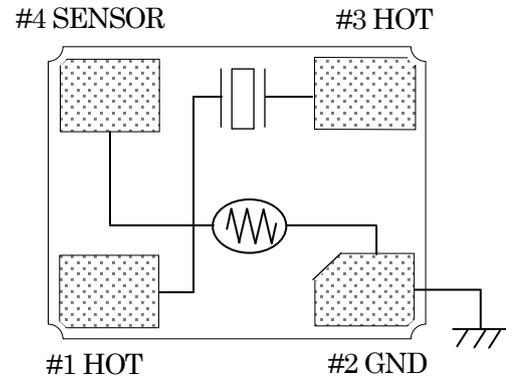
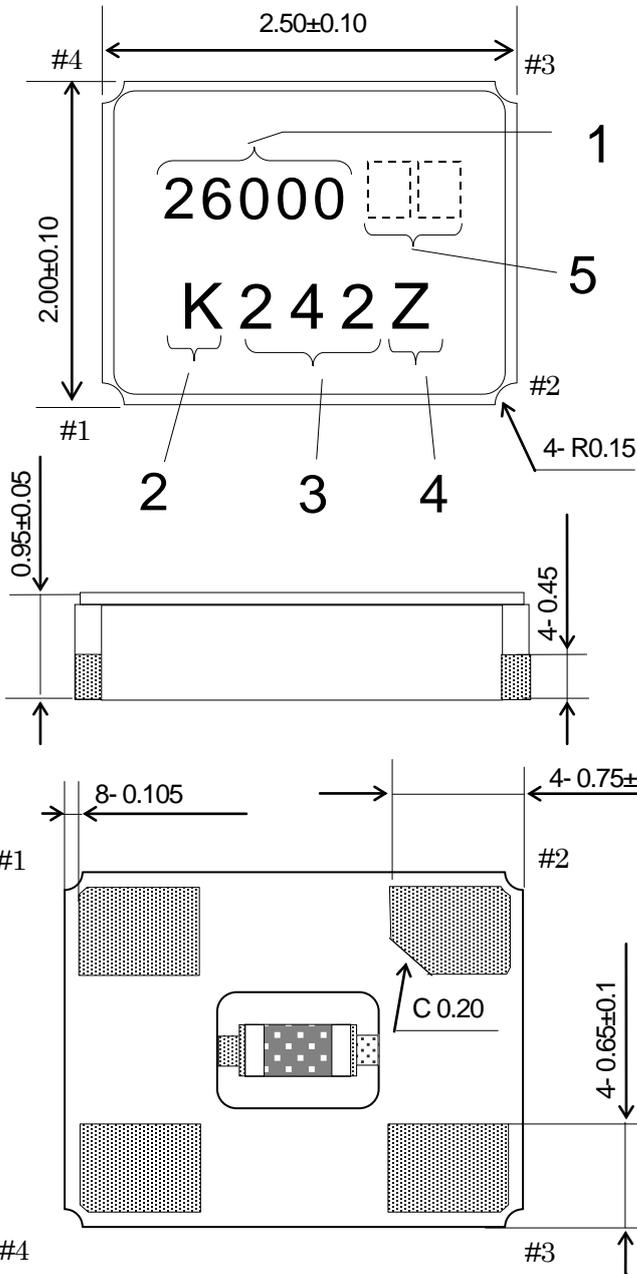
Items	Electrical Specification					Test Condition/ Remarks
	SYMB.	Min	Typ.	Max	Unit	
1 st order coefficient	C1	-0.35		-0.1	ppm/deg.C	Ta=-40°C to +85°C per 2deg.c
2 nd order coefficient	C2	-12		-5	e ⁻⁴ ppm/deg.C ²	
3 rd order coefficient	C3	8.7		11	e ⁻⁵ ppm/deg.C ³	

4-6 ELECTRICAL CHARACTERISTICS (Freq. slope error)


Items	Electrical Specification					Test Condition/ Remarks
	SYMB.	Min	Typ.	Max	Unit	
-10°C to +60°C		-0.05		+0.05	ppm/deg.C	
-30°C to +85°C		-0.1		+0.1	ppm/deg.C	
-40°C to -30°C		-0.15		0.15	ppm/deg.C	

Freq. slope error between measured S curve data and 3rd curve fitting data over operation temperature under per 2°C test

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



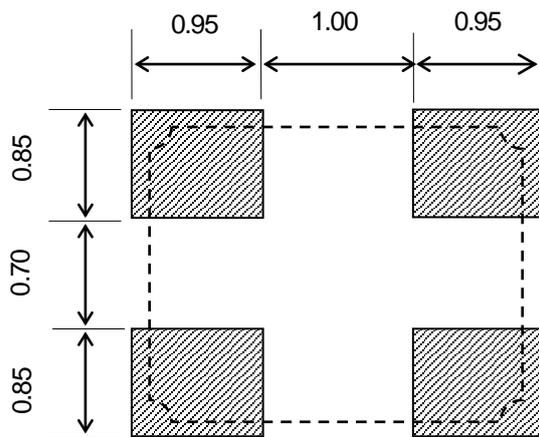
PIN No.	PIN Layout
#1	HOT
#2	GND
#3	HOT
#4	SENSOR

UNIT : mm

MARKING

- 1 Nominal Frequency Move the number of maximum indication beams of the frequency to five digits, and omit less than kHz.
- 2 Identification [K] mark is surely 1 Pin direction.
- 3 Date Code LAST 1 DIGIT of YEAR AND WEEK
 (Ex) October 21, 2012 → 242
- 4 Manufacturing Location Y → Yamagata Z → Shiga Yohkaichi
- 5 Option Code Alphabet & Number 2digits or blank.(For T-Sensor)

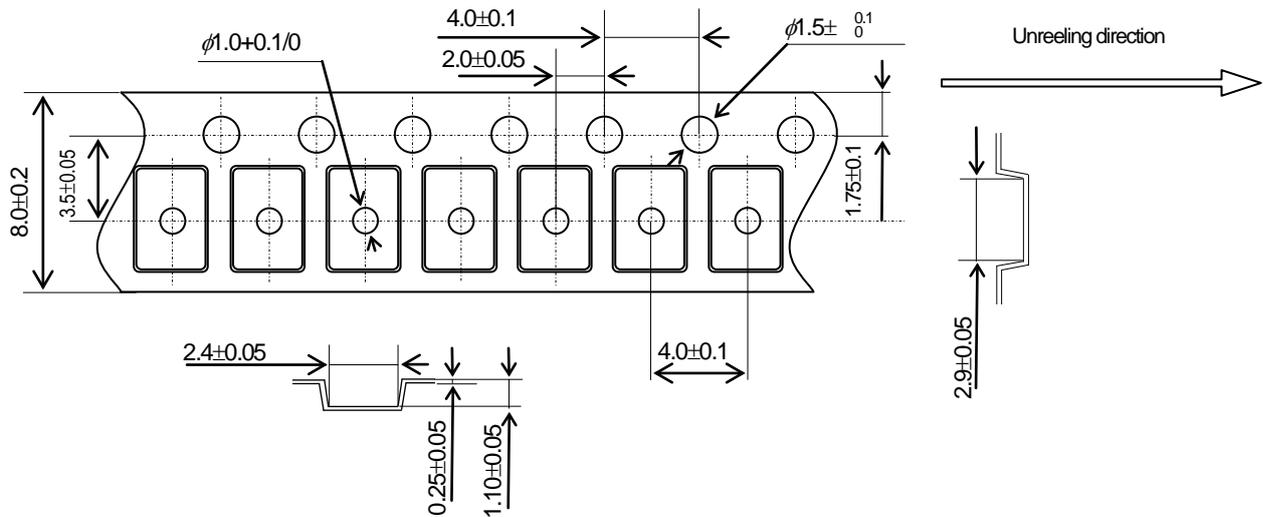
6. RECOMMENDED LAND PATTERN (not to scale)



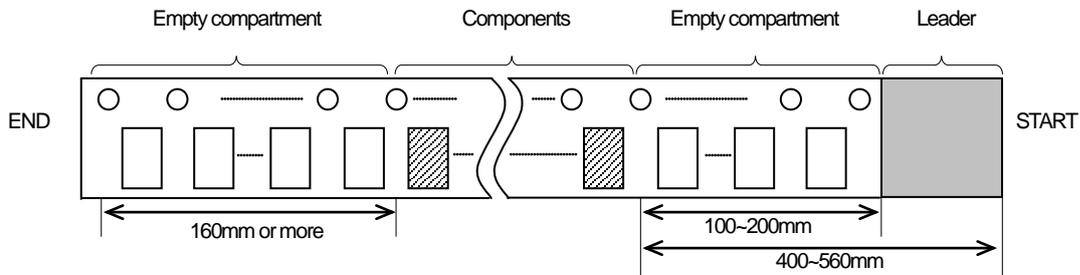
UNIT : mm

7.TAPING&REEL

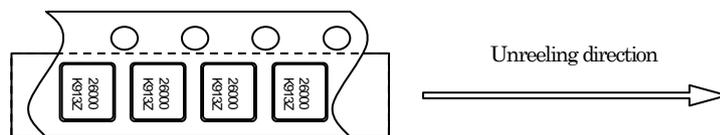
7-1.Dimensions



7-2.Leader and trailer tape

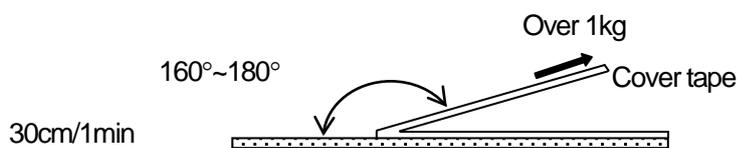


7-3.Direction (The direction shall be seen from the top cover tape side)

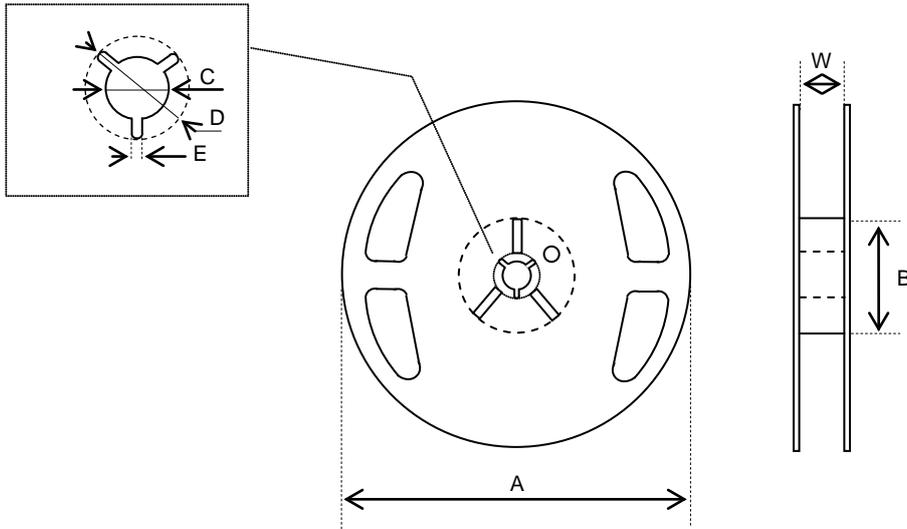


7-4.Specification

1. Material of the carrier tape shall be EC-AP, Polycarbonate, A-PET or PS(all ESD).
2. Material of the seal tape shall be polyester(ESD)
3. The seal tape shall not cover the sprocket holes. And not protrude from the carrier tape.
4. Tensile strength of the tape : 10N or more.
5. The R of the corner without designation is 0.2RMAX.
6. Disalignment between centers of the cavity and sprocket hole shall be 0.05mm or less.
7. Cumulative pitch tolerance of "P₀" shall be ± 0.2 mm at 10 pitches
8. Keep direction of a printing at tape inside.
9. Peeling force of the seal tape: 0.1 to 0.7N.
10. The component can fall headlong naturally from taping in she environment, such dry conditions, when this components were transferred to cover was removed and the component was moved upside down.
11. Surface resistivity \rightarrow Carrier tape: $\geq 1 \times 10^7$, Cover tape: $> 1 \times 10^{11}$



Reel specifications

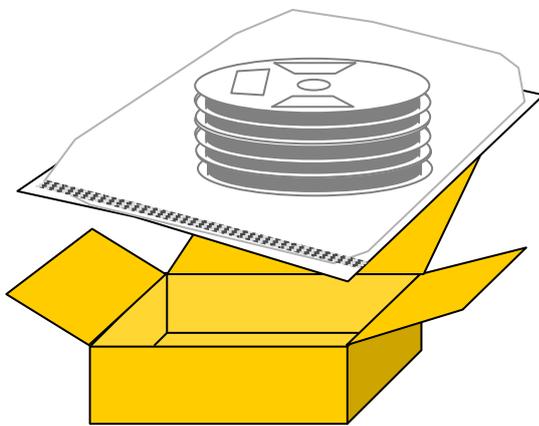
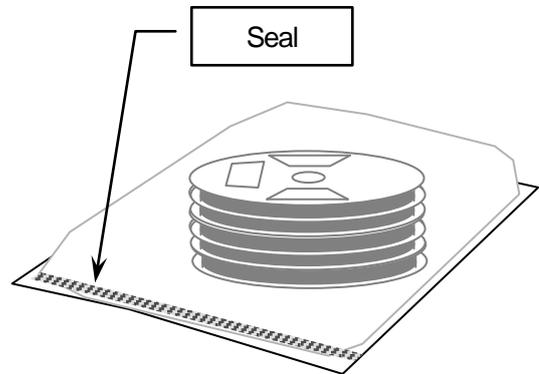
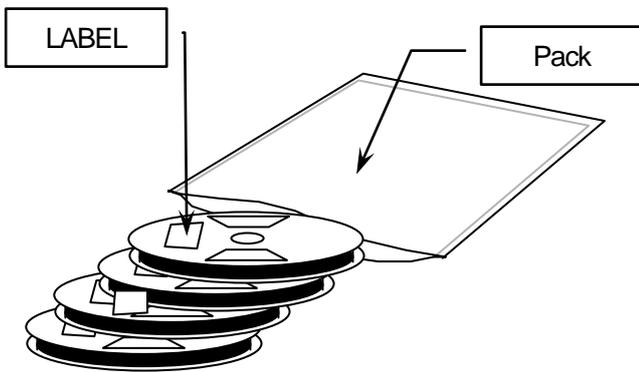
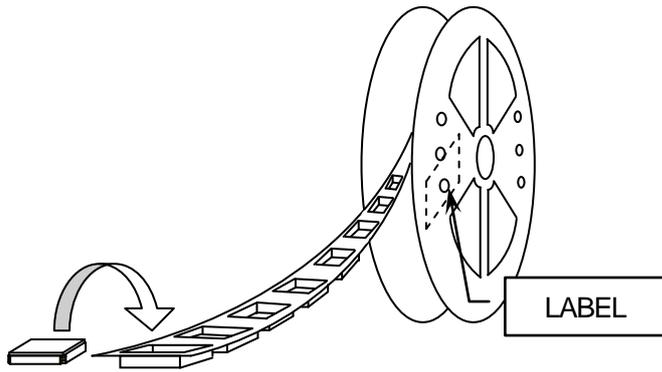


$\phi 330$ Reel (12000 pcs)

Symbol	A	B	C
Dimension	$\phi 330 \pm 2.0$	$\phi 100 \pm 1.0$	$\phi 13 \pm 0.2$
Symbol	D	E	W
Dimension	$\phi 21 \pm 0.8$	2.0 ± 0.5	9.4 ± 0.5

(Unit : mm)

Package



MAX 5REEL

