Specification

Drawing No.	TNY1T-H1-SEE01-04 [1/8]
Issued Date.	5-Jun-25

TO:

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

Product Name	Crystal Oscillator
Product Model	
Frequency	19.2 MHz
Customer Part Number	
Customer Specification Number	
KYOCERA Part Number	KC7050K19.2000C1SE00
Remarks RoHS Compliar	it / MSL 1

Customer Acceptance

Accept Signature	Accept 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 KYOCERA Corporation Corporate Electronic Components Group RF Devices Division Yamagata higashine Plant 5850, Higashine-koh, Higashine-shi, Yamagata 999-3701 Japan TEL. No. 0237-43-5611 FAX. No. 0237-43-5615

Design Department	Quality	Approved by	Checked by	Issued by
Crystal Components Application Engineering Section2 RF Devices Engineering Department 1 RF Devices Division	Assurance			issued by

Revision History

Rev. No.	Description of revise	Date	Approved by	Checked by	Issued by
00	First Edition	5-Jun-25			

KYOCERA Corporation

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1. Scope

This specification shall be defined of the Clock Oscillator for the integrated circuits (ICs).

2. Customer Part Number

3. KYOCERA Part Number KC7050K19.2000C1SE00

4. Electrical Characteristics 4-1. Absolute Maximum Rating

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Item	Symbol	Rated Value	Units
Power Supply Voltage	V _{CC}	-0.3 to +4.0	V
Input Voltage	V _{IN}	-0.3 to V _{CC} +0.3	V
Storage Temperature	T _{STG}	-55 to +125	°C
Note:			

If the part is used beyond absolute maximum ratings, it may cause internal destruction. The part should be used under the recommended operating conditions the reliability of this part may be damaged if those conditions are exceeded.

4-2. Recommended Operating Conditions

Item	Symbol	Min	Тур	Max	Units	Remarks
Power Supply Voltage	V _{CC}	1.6	3.3	3.63	V	
Input Voltage	V _{IN}	0		V _{cc}	V	
Operating Temperature	T _{OPR}	-10	25	+70	°C	

4-3. Electrical Characteristics

Item	Symbol	Min	Тур	Max	Units	Remarks
Output Frequency	Fo		19.2		MHz	
Frequency Tolerance*	F_ _{tol}	-30		+30	ppm	
Current Consumption (Loaded/ 1.6≤V _{CC} ≤2.25V)				2.5		
Current Consumption (Loaded/ 2.25 <v<sub>CC≤2.8V)</v<sub>	I _{cc}			3	mA	
Current Consumption (Loaded/ 2.8 <v<sub>CC≤3.63V)</v<sub>				3.5		
Standby Current	I _{ST}			5	μA	
Symmetry (Duty Ratio)	SYM	45	50	55	%	@50% Vcc
Rise Time/ Fall Time				6		1.6≤V _{CC} ≤2.25V
	Tr/ Tf			5	ns	2.25 <v<sub>CC≤2.8V</v<sub>
(10% V _{CC} to 90% V _{CC})				4.5	<u> </u>	2.8 <v<sub>CC≤3.63V</v<sub>
Output Voltage-"L"	V _{OL}			$10\% V_{CC}$	V	lo∟=4mA
Output Voltage-"H"	V _{OH}	90% V _{CC}			V	Іон =-4mA
Output Load	CL			15	pF	CMOS
Input Voltage-"L"	V _{IL}			30% V _{CC}	V	
Input Voltage-"H"	V _{IH}	$70\% V_{CC}$			V	
Output Disable Time	t_ _{dis}			200	ns	
Output Enable Time	t_ _{ena}			2	ms	
Start-up Time	t_ _{sta}			2	ms	@Minimum operating voltage to be 0sec
1 Sigma Jitter**	J _{Sigma}			5	ps	
Peak to Peak Jitter**	J _{PK-PK}			50	ps	
Phase Jitter				1	ps	BW:12kHz to 20MHz

Note: All electrical characteristics have defined on the maximum loaded and recommended operating conditions.

* Include initial tolerance, operating temperature range, rated power supply voltage change, load change,

aging (1year @+25°C), shock and vibration

**Based on Time Interval Analyzer "Wavecrest SIA-3000".

Table 1

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Drawing No.	TNY1T-H1-SEE01-04 [4/8]
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4-4. Measurement Condition

The reference temperature shall be $+25\pm2^{\circ}$ C. The measurement shall be performed at the temperature range of +5 °C to +35 °C unless otherwise the result is doubtful.

Vcc

4-5. Measurement Circuit

The electrical characteristics shall be measured by test circuit "Fig. 1". Also jitter shall be measured by test circuit "Fig. 3".

4-6. Clock Timing Chart

The clock timing chart is "Fig. 2".

Pad3

Pad2

Clock Oscillator Test Fixture

Pad

Oscillator

E/D Control

0

 π



50 ohm SMA Termination



90%Vcc

50%Vcc



<Measurement Conditions>

- Time Interval Analyzer
 WaveCrest SIA-3000
- DTS timer calibration
- Over 30 minutes warm-up
 - Extend 30 minutes calibration
- Jitter histogram conditions (Tail-fit)
- More than 50,000cyc Hits
- ➢ Bit Error Ratio (BER) −12 (14sigma)

Fig.3 Jitter Test Circuits

WaveCrest SIA-3000

ATT 6dB

50 ohm COAX with SMA Connectors

5. Dimensions and Marking

10uF 0.01uF

Power

Supply





Output Frequency

The output frequency is three-digit without a decimal point. The frequency greater than the number of digits have rounded down.

(E.g. 14.31818MHz → "14.3")

Manufacturing Date Code



Table 2

Pa	ad arrangement
1	Stand-by Function
2	Case GND
3	Output
4	V _{CC}

	Stand-by Function						
	Pad1 Pad3 (Output)						
	Active	OPEN					
	Active	"H" Level					
	High Z (No-Oscillation)	"L" Level					
-							

	KYOCERA	Corporation	
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6. Parts Numbering Guide

$\frac{\text{KC7050K}}{\text{A}} \xrightarrow{\text{19.2000}}{\text{B}} \frac{\text{C}}{\text{C}} \xrightarrow{\text{1}}_{\text{D}} \frac{\text{S}}{\text{E}} \xrightarrow{\text{E}}_{\text{F}} \xrightarrow{\text{00}}_{\text{G}}$

- A. Series (SMD Oscillator)
- B. Output Frequency
- C. Output
 - C: C-MOS
- D. Supply Voltage
 - 1: 1.8V/ 2.5V/ 3.3V Compatible
- E. Frequency Tolerance* S: ±30ppm

F: Symmetry (Duty Ratio) and Stand-by Function E: Symmetry: 45% to 55% with Stand-by Function G. Suffix for Individual Requirements (STD Specification is "00")

Packing (Tape & Reel 1,000pcs/Reel) *Over All Conditions: Include initial tolerance, operating temperature range, rated power supply voltage change, load change, aging (1year @+25°C), shock and vibration

7. Environmental Characteristics

	Items	Conditions	Criteria of Acceptance
7_1	Solderability	Soaking:	Dipped potion:
7-1.	Solderability	+245±5°C, 5.0±0.5sec	Minimum 95% coverage
7 - 2.	Soldering Heat	Reflow soldering:	Without looseness or crack etc
	Resistance	Peak +260°C max, 10sec, Twice max	
7-3	Temperature Cycle	10cycles:	
7-5.		-55°C to +125°C (30minuts each/ cycle)	
7-4.	Mechanical	5 times	
	Shock (Pulse)	14,750m/sec ² (1,500G), Duration of pulse 0.5msec	
		(MIL-STD-883D-2002.3 Condition B)	
7-5		4 times each axis X, Y, Z:	
	Vibration	20 to 2,000Hz and 2,000Hz to 20Hz/cycle	Clause 7-10 shall be satisfied.
, 0.		Peak acceleration 196m/sec ² (20G)	
		(MIL-STD-883D-2007.2 Condition A)	
7-6	High Temperature	1000 hours:	
<i>i</i> -0.	riigh remperature	Temperature: +85+5/-3°C	
77	Low Temperature	1000 hours:	
1-1.		Temperature: -40+5/-3°C	
		10 cycles:	
7-8.	Humidity Cycle	Based on 1004 specifications	Clause 7-1 shall be satisfied.
		(MIL-STD-883D-1004.7)	
7-9.	Hermeticity 1	Soaking:	No hubbles appeared
	(Gross leak)	+125°C, 5minutes	No bubbles appeared
7-10	.Hermeticity 2	Measured by Helium Detector Equipment	$5 \times 10^{-9} \text{ D}_{2} = 3^{3}/222 \text{ meV}$
	(Fine leak)	(MIL-STD-883D-1014.10 Condition A1)	5x10 Pa m/sec max

After each testing, the parts shall be subjected to standard atmospheric conditions more than 2 hours. After that, the electrical characteristics shall be measured. The result of the test shall be satisfied **Table 1**.

Table 3

8. Recommended Land pattern and Soldering Guide



Note:

Since the part doesn't have Bypass Capacitor between V_{cc} and GND, Please mount high frequency type capacitor $0.01 \mu F$ to the nearest position of oscillator.

Fig.4 Land pattern

9. Taping Specifications



					Unit: (mm)
Symbol	Α₀	Β₀	W	F	Ε
Dimensions	5.4±0.1	7.4±0.1	16.0±0.2	7.5±0.1	1.75±0.1
Symbol	Ρ ₁	P 2	Ρο	D ₀	Τ
Dimensions	8.0±0.1	2.0±0.1	4.0±0.1	1.5+0.1/-0	0.3±0.05
Symbol	κ	D 1			
Dimensions	2.0±0.1	1.55±0.1			

Fig.6 Emboss Carrier Tape



Available Reflow times: Maximum twice

Fig.5 Reflow profile (Lead Free Available)



			Unit: (mm)
Symbol	Α	N	W ₁
Dimensions	180 +0/-3	60+1/_0	17.0±0.2
Symbol	W 2	С	D
Dimensions	19.5±1.0	13.0±0.2	21.0±0.8
Symbol	Ε		
Dimensions	2.0±0.5		

Fig.7 Reel

9-1. Taping Quantities

- The taping of per reel shall be packed 1,000 pcs.
- The parts shall be contained continuously in the pocket.
- 9-2. Leader and Blank Pockets
 - The package shall be consisted of leader, blank pockets and loaded pocket as follows "Fig. 8".
 - The power of peeling strength between top tape and carrier tape shall be 0.1N(10gf) to 1.0N(100gf) as follows "Fig. 9".



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Reel Label		
The reel label shall be consisted as b	elow. (Based on EIAJ C-3 for	rmat)
 A) Customer Part Number 	r È D) Shipping Date	e
B) Lot No.	E) Vender Name	9
C) Quantities	,	

9-4 Exterior Package Label

9-3.

The oscillator shall be packed properly to avoid defect in transportation. The exterior package label shall be consisted as below.

- Name of Customer A)
- B) P/O No.
- C) Customer Part Number
- Quantities E) F) Shipping Date
- G) Vender Name

D) Lot No.

10. The agreement of this specifications

In case there is any obscure point or doubt concerning the contents of the specification, it shall be settled through consultation of both parties.

11. 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.

12. Remarks on Usages

A) Storage Conditions

The parts shall be stored in temperature range of -5 to +40°C, humidity 40 to 60% RH, and avoid direct sunlight. Then the parts shall be used within 6 months.

B) Handling Conditions

Although the part has protection circuit against static electricity, when excess static electricity is applied, the inside IC may get damaged.

Before mounting on the PCB, please make sure the direction of the part is correct. Otherwise the part of temperature will increase. And also the part will have some damages.

Please do not use the parts under the unfavorable condition such as beyond specified range in this specification.

Please do not use the parts under the condition, in the water or in the salt water also environment of dew or harmful gas.

Please make sure the condition of pick and place following pick up nozzle guideline.

Picking Method: Case of Head Unit 1.6 x 1.2mm (Inside Diameter)

The proper condition of pick and place will be different each equipment. Therefore, please check before testing.

C) Rework Condition

Please do not pick up Head Unit. We can't guaranty electrical performance and reliability.

D) Soldering Conditions

This product can respond to the general Pb-free reflow profile. The wave soldering cannot be supported.

E) Soldering in Mounting

In case of Solder paste and conductive glue contact product lid or product side face exception for product terminal it's possible to influence product characteristics. Please be careful above contents.

F) Washing Conditions

Ultra sonic cleaning is available. However there is a possibility that Crystal in the part may cause damaged under certain condition. Therefore please test before using. After washing, please dry the parts completely. Otherwise water drops between the parts and PCB may cause migration.

G) This product can be used for general electronic equipment (information equipment, communication equipment, audiovisual equipment, measuring equipment, home appliances, etc.)Intended to be used. Equipment and systems (traffic equipment, safety equipment, aviation / space control, nuclear power control, life support equipment) that require special quality and reliability and whose failure or malfunction may endanger human life or harm the human body. (Including medical devices, etc.), basic driving functions (running, turning, stopping) and collision safety in traffic equipment, applications related directly or indirectly to collision safety, and applications that are expected to have a significant impact on property, etc. It is not intended to be used.In the unlikely event that this product is used for any of these purposes, we will not be liable for any damages resulting from such use.

In case of using this part without above precaution, Kyocera is unable to guarantee the specific characteristics.