



# CRYSTAL SPECIFICATION

Customer : \_\_\_\_\_

Customer P/N : \_\_\_\_\_

TKD P/N : CD05M012000RF1

Product Description : 49S-12-20-30

Issue Date : 2018.08.08

## CUSTOMER'S APPROVAL

(PLEASE RETURN A COPY WITH APPROVAL)

Hubei TKD Electronic Technology Co.,LTD  
 湖北泰晶电子科技股份有限公司

APPROVED	DESIGNER
代伟	苏婷婷



SALE: TEL : 0722-3309660 FAX : 0722-3309768

QCD: TEL : 0722-3308231 FAX : 0722-3309768

FAE: TEL : 0755-27328651 FAX : 0755-27328001



REV.	Description of Revision History	Date	Designer	Checked By
A	New revision	<u>2018-08-08</u>	<u>Sutingting</u>	<u>DaiWei</u>



## CRYSTAL SPECIFICATION

1. Description: Quartz Crystal
2. Nominal Frequency: 12.000000MHz
3. Oscillation Mode: Fundamental
4. Cutting Mode: AT cut
5. Measurement Instrument: S&A 250B(Measured FL)
6. Electrical Characteristics:

### [1]Operation Conditions:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Operating Temperature Range	Topt	-20		70	°C	
Storage Temperature Range	Tstg	-40		85	°C	
Load Capacitance	CL		20		pF	
Drive Level	DL	0.1		100	uW	

### [2]Frequency Stability:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Tolerance	dF/Fo	-30		30	ppm	Refer to Center Frequency@25±3°C
Stability Over Temperature	dF/F25	-30		30	ppm	Refer to Operating Temperature
Aging	dF/F25	-3		3	ppm	Per Year

dF/Fo:Frequency Deviation Refer to Center Frequency

dF/F25:Frequency Deviation Refer to 25°C Frequency

### [3]Electrical Performance:

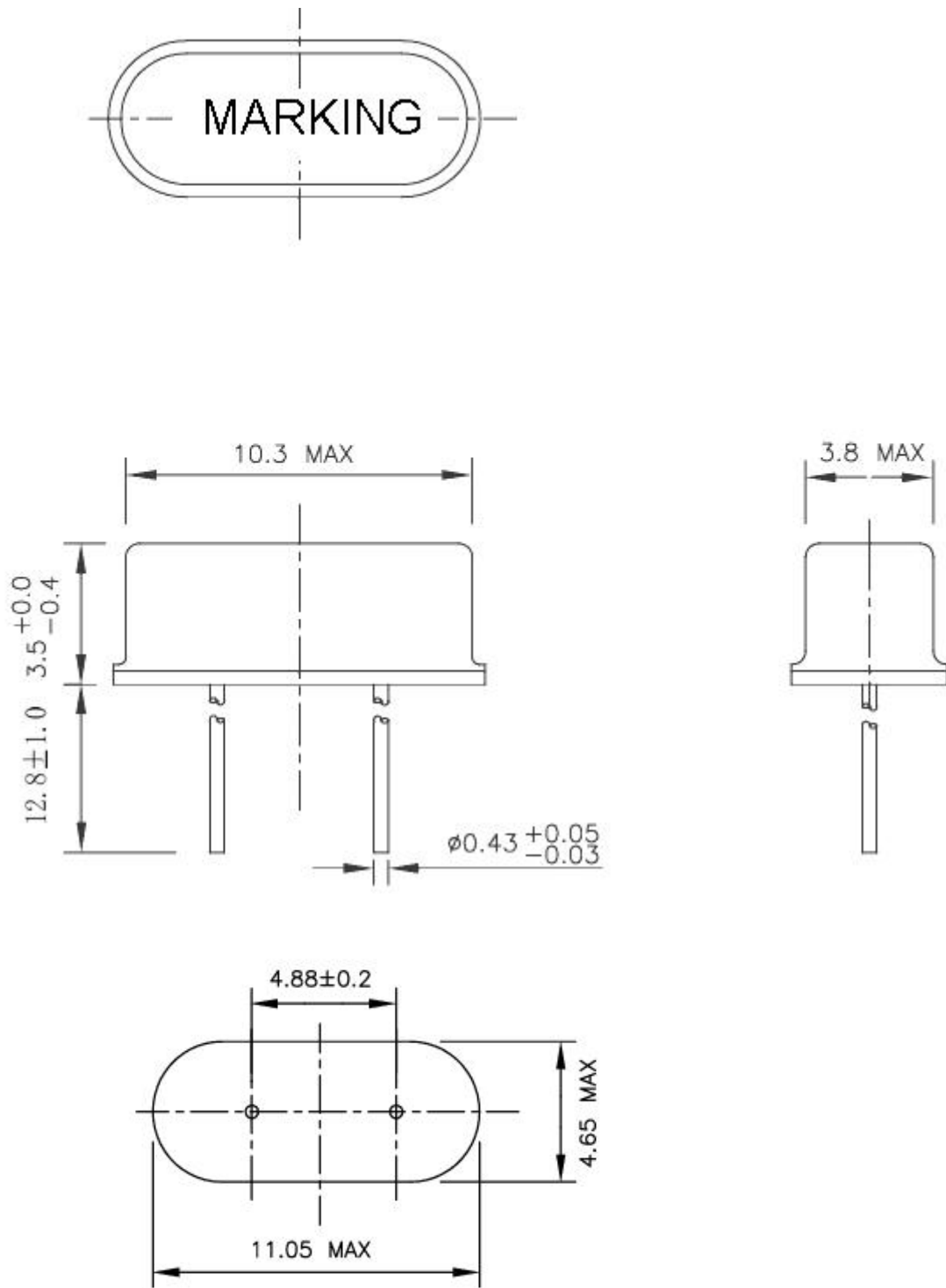
Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Equivalent Series Resistance	ESR			40	Ω	@Series
Shunt Capacitance	C0			7	pF	
Insulation Resistance	IR	500			MΩ	@DC 100 Volt

### 7. Marking:Laser

TKD :Company Logo  
12.000:Nominal Frequency

TKD12.000

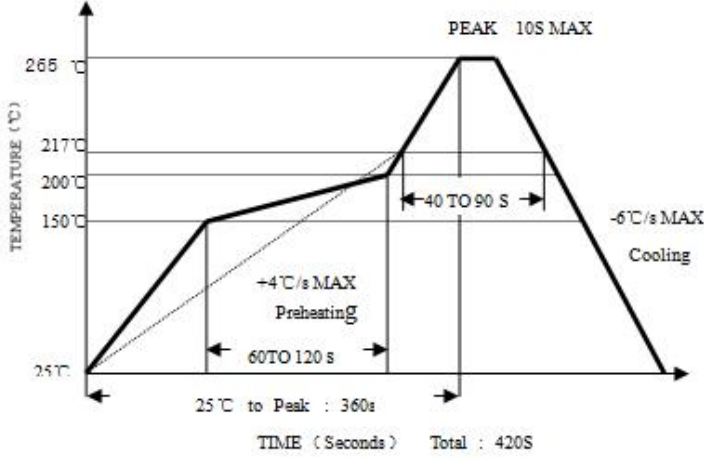
8. Outline drawing (unit: mm)



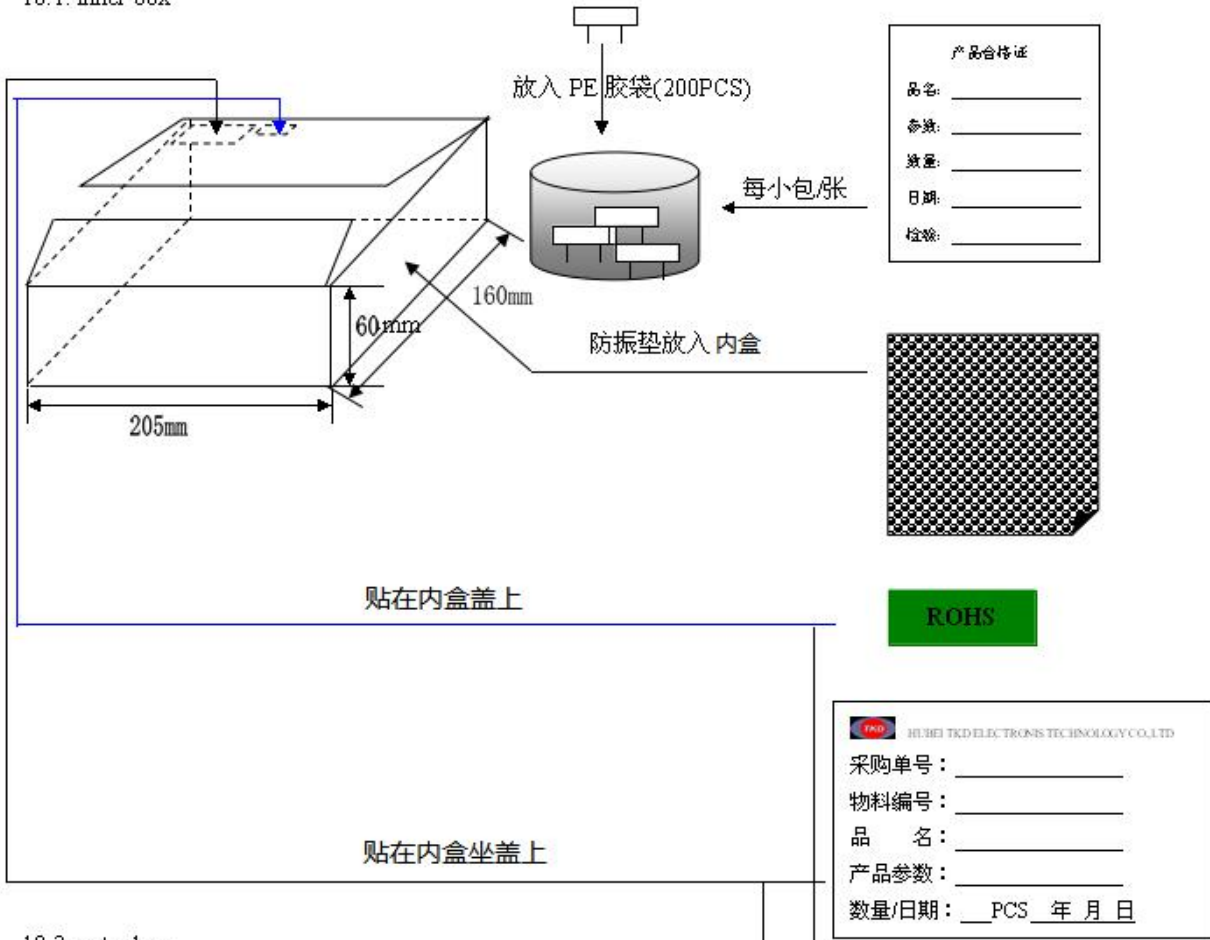


9. Reliability Specification

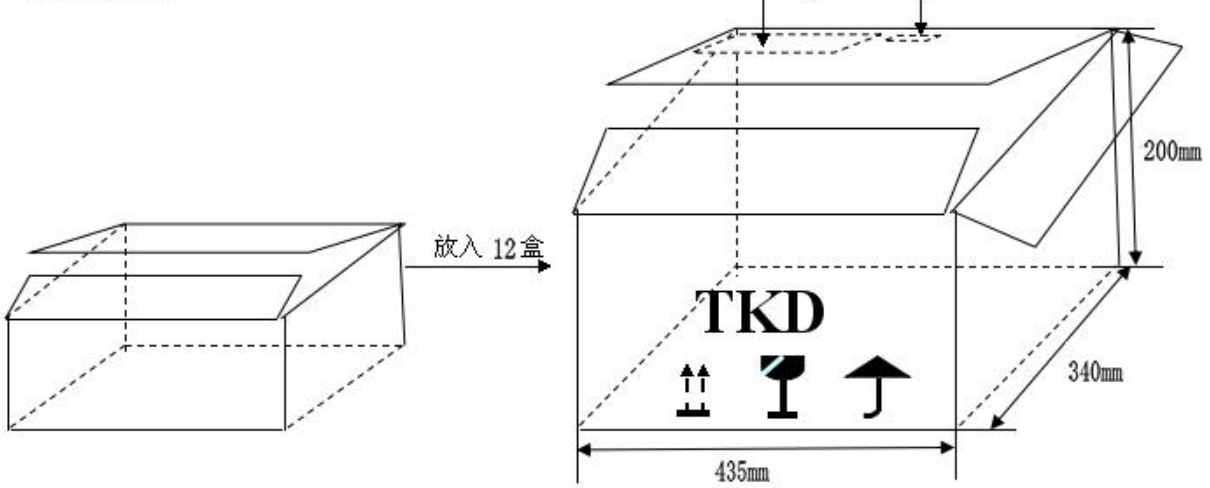
Test Item	Condition of test	Performance Requirements															
Tensile Strength Termination	The unit's lead wire should withstand a tensile force applied to the termination in the direction of its draw-out axis of up to 1000g maintained as is for 10±2s	There should be no abnormalities detected on the unit															
Solder ability	The lead is immersed in a 235±5°C solder bath within 2±0.5 seconds.	A new uniform coating of solder shall cover minimum 95% of the surface being immersed.															
Vibration	Endurance condition by a frequency sweep shall be made. The entire frequency range from 10HZ to 50HZ and return to 10HZ, shall be transverse in 1min. Amplitude (total excursion): 1.5mm this motion shall be applied for a period of 2h each of 3 mutually perpendicular axes (a total of 6h)	(1). Frequency Change: ±5ppm (2). Resistance: ±15%															
Drop	Form 70cm height 3 times on 3cm hard wooden floor	(1). Frequency Change: ±5ppm (2). Resistance: ±15%															
Shock	Peak acceleration: 981m/s <sup>2</sup> duration of the pulse :6ms three successive shocks shall be applied in both direction of 3 mutually perpendicular axes (a total of 18 shocks)	(1). Frequency Change: ±5ppm (2). Resistance: ±15%															
Damp heat	The unit shall be stored at a temperature of 40±2°C with relative humidity of 90% to 95% for 48h, then it shall be subjected to standard atmospheric conditions for 1 ~ 2h after which measurement shall be made.	(1). Frequency Change: ±5ppm (2). Resistance: ±15%															
Dry heat	The unit shall be stored at a temperature of 100°C±5°C for 24h, then it shall be subjected to standard atmospheric conditions for 1~2h after which measurement shall be made.	(1). Frequency Change: ±5ppm (2). Resistance: ±15%															
Cold	The unit shall be stored at a temperature of -40°C±5°C for 48h, then it shall be subjected to standard atmospheric conditions for 1~2h after which measurement shall be made.	(1). Frequency Change: ±5ppm (2). Resistance: ±15%															
Aging	The unit shall be stored at a temperature of 85°C±5°C for 7d then it shall be subjected to standard atmospheric conditions for 1~2h after which measurement shall be made.	Refer to verdict specification															
Temperature cycling	The unit shall be subjected to 5 successive change of temperature cycles, each as show in table below, then it shall be subjected to standard atmospheric conditions for 1 ~ 2h after which measurement shall be made <table border="1" data-bbox="400 1794 1062 2089"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40°C±3°C</td> <td>30min</td> </tr> <tr> <td>2</td> <td>Standard atmospheric conditions</td> <td>Within 30s</td> </tr> <tr> <td>3</td> <td>100°C±3°C</td> <td>30min</td> </tr> <tr> <td>4</td> <td>Standard atmospheric conditions</td> <td>Within 30s</td> </tr> </tbody> </table>		Temperature	Duration	1	-40°C±3°C	30min	2	Standard atmospheric conditions	Within 30s	3	100°C±3°C	30min	4	Standard atmospheric conditions	Within 30s	Refer to verdict specification
	Temperature	Duration															
1	-40°C±3°C	30min															
2	Standard atmospheric conditions	Within 30s															
3	100°C±3°C	30min															
4	Standard atmospheric conditions	Within 30s															

Test Item	Condition of test	Performance Requirements
Sealing	The crystal filter unit shall be immersed in a industry alcohol for 5±0.5 minutes then 25±3°C 1~2 Hr before testing	Insulation Resistance>500MΩ
Resistance to soldering heat	 <p>Reflow soldering cure see the chart. Soldering iron method: Bit temperature: 350°C±10°C Application time of soldering iron:5s Max</p>	Refer to verdict specification

10.1. inner box



10.2. outer box



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Crystals](#) category:*

*Click to view products by [TKD](#) manufacturer:*

Other Similar products are found below :

[CX3225GB25000M0PPSZ1](#) [718-13.2-1](#) [MC405 32.0000K-R3:PURE SN](#) [7A-40.000MAAE-T](#) [FL2000085](#) [99-BU](#) [9B-15.360MBBK-B](#) [9C-7.680MBBK-T](#) [H10S-12.000-18-EXT-TR](#) [ABC2-6.000MHZ-D4Z-T](#) [ABLS-20.000MHZ-D2-T](#) [ABS071-32.768KHZ-6-T](#) [R38-32.768-12.5-5PPM-NPB](#) [BTD1062E05A-513](#) [21U15A-21.4MHZ](#) [RTX-781DF1-S-20.950](#) [LFXTAL066198Cutt](#) [9C-14.31818MBBK-T](#) [A-11.000MHZ-27](#) [ABL-27.000MHZ-B4Y-T](#) [ABM11-132-24.000MHZ-T3](#) [ABM3B1-25.000MHZ-D2Y-T](#) [SPT2A-.032768B](#) [SPT2A.032768G](#) [SSPT7F-9PF20-R](#) [FX325BS-38.88EEM1201](#) [LFXTAL065253Cutt](#) [LFXTAL066431Cutt](#) [XT9S20ANA14M7456](#) [XT9SNLANA16M](#) [646G-24-2](#) [7A-24.576MBBK-T](#) [7B-30.000MBBK-T](#) [7A-14.31818MBBK-T](#) [6504-202-1501](#) [6526-202-1501](#) [ABLS-12.000MHZ-B2Y-T](#) [ABLS-10.000MHZ-D3W-T](#) [7A-10.000MBBK-T](#) [SG636PCE-20.000MC](#) [3404](#) [E1SAA18-25.000M TR](#) [CM315D32768EZFT](#) [C1E-24.000-7-2020-R](#) [C1E-19.200-12-1530-X-R](#) [C1E-16.000-12-1530-X-R](#) [FL5000014](#) [EUCA18-3.1872M](#) [FX0800015](#) [425F35E027M0000](#)