XO SPECIFICATION

Customer：

Customer P/N：

TKD P/N：XO32D010000GAHE11G

Part Name：SMD XO 3225

Product Description：10.000000MHz

Issue Date：2026/9/11

Product Standard：☑Pb-free ☑RoHS 2.0 ☑REACH ☑HF

CUSTOMER'S APPROVAL

(PLEASE RETURN A COPY WITH APPROVAL)

TKD Science and Technology Co., Ltd.
泰 晶 科 技 股 份 有 限 公 司

Approved	Checked	Prepared By
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Rev.	Description of Revision History	Date	Prepared By	Checked By
A	Initial Release	2026/9/11	Zhang Jia	Li XingLing

XO SPECIFICATION

1.Description : SMD Simple Packaged Xtal Oscillator 3225

2.Nominal Frequency : 10.000000MHz

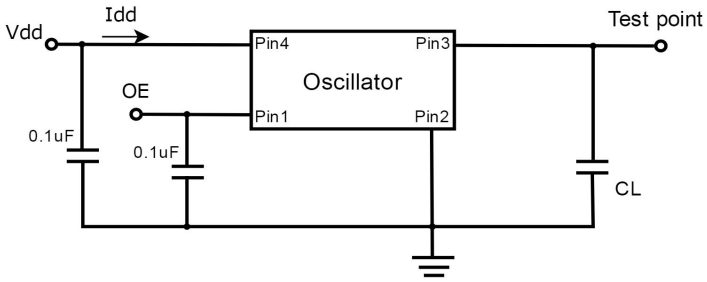
3.Electrical Specifications :

Item	Parameters	Condition	Electrical Specifications			
			Min	Typ	Max	Units
1	Nominal Frequency		10.000000			MHz
2	Frequency Stability Overall	Note1	-50		50	ppm
3	Operating Temperature Range		-40		85	℃
4	Supply Voltage	Note2	1.60	2.80	3.63	V
5	Current Consumption	Operating			15	mA
6	Output Waveform		CMOS			
7	Output Load		15			pF
8	Duty Cycle		45	50	55	%
9	Output Rise/Fall Time				8	ns
10	High Output Voltage		Vdd-0.4			V
11	Low Output Voltage				0.4	V
12	Enable		Vdd*70%			V
13	Disable				Vdd*30%	V
14	Aging	First year at 25±3℃	-3		3	ppm
15	Start-up Time				5	ms
16	Storage Temperature		-55		125	℃

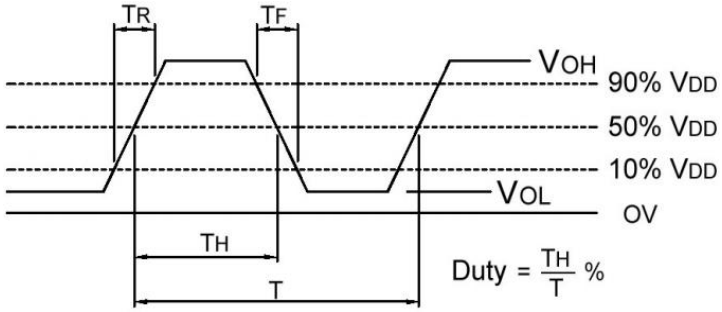
Note1 Frequency stability includes frequency tolerance@25±3℃, frequency stability vs. operating temperature range, voltage variance, load variance and first year aging

Note2 All parameters are measured at Typical supply voltage

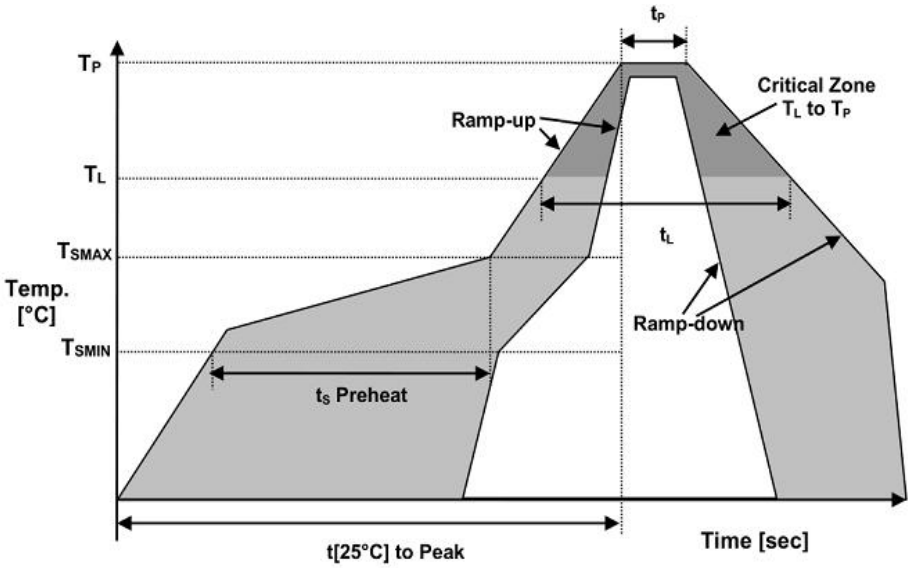
4.Test Circuit (CMOS Load)



5.Output Waveform (CMOS Load)



6.Recommended Reflow Profile （Refer to JEDEC J-STD-020D）

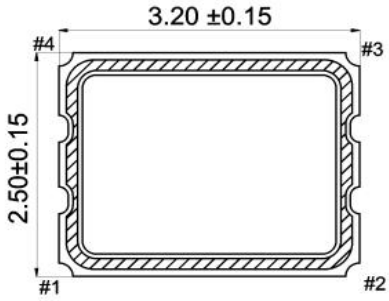


Reflow Profile		
Minimum Preheat Temperature	T_{SMIN}	150℃
Maximum Preheat Temperature	T_{SMAX}	200℃
Time（T_{SMIN} -T_{SMAX}）	t_S	60-180s
Temperature	T_L	217℃
Peak Temperature	T_P	260℃
Ramp-Up Rate	R_{UP}	3℃/s max
Ramp-Down Rate	R_{DOWN}	6℃/s max
Time within 5℃ of Peak Temperature	t_P	20-40s
Time t(25℃) to Peak Temperature	t(25℃)to Peak	480s
Time	t_L	60-150s

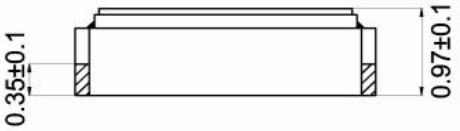
7.Product Dimensions

Unit：mm

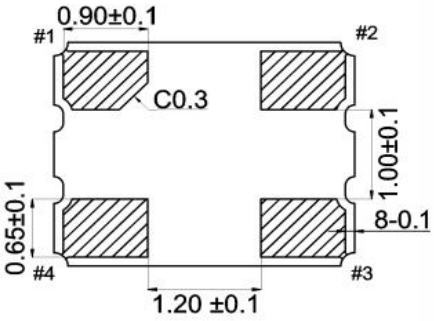
[TOP VIEW]

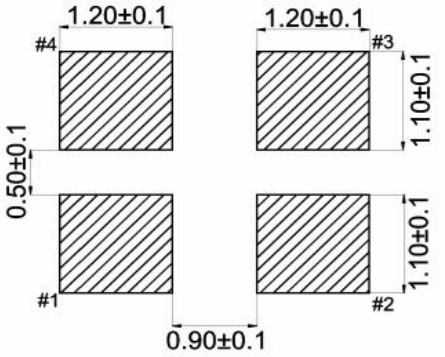


[SIDE VIEW]



[BOTTOM VIEW]





Recommended Soldering Pattern

Pin Connection

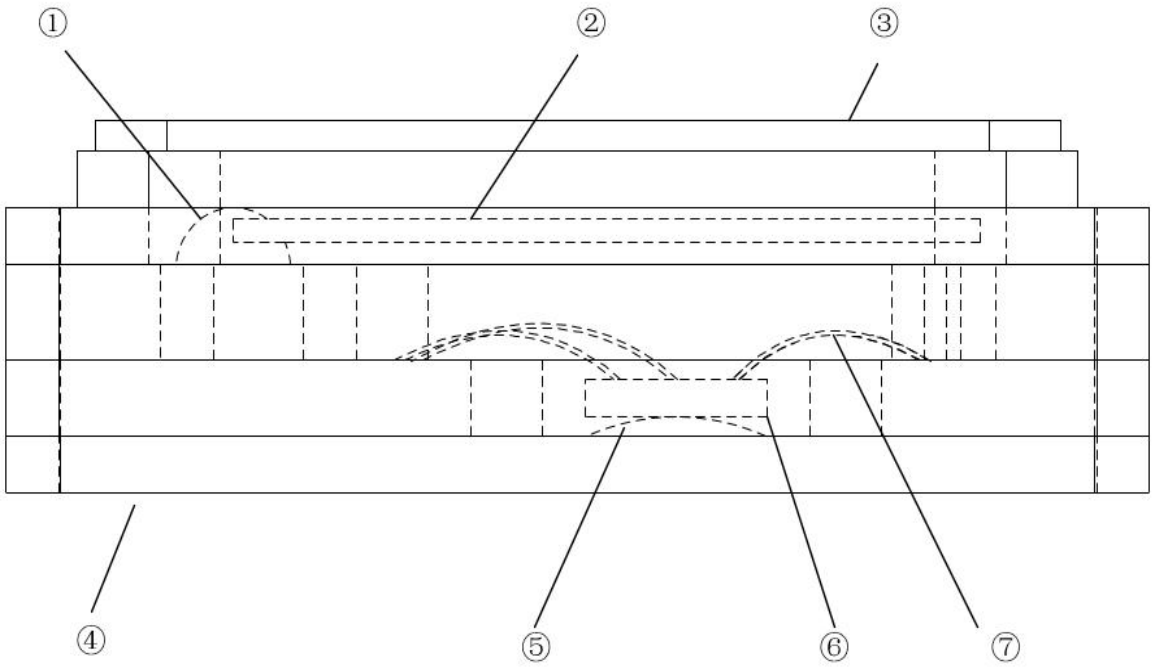
Name	Connection
Pin 1	Tri-State
Pin 2	GND
Pin 3	Fout
Pin 4	Vdd

Function

Pin 1 Input	Pin 3 Output
High level	Oscillator Output
Low level	High Z

To ensure optimal oscillator performance,place a by-pass capacitor of 0.1uF as close to the part as possible between Vdd and GND pads

8.Structure illustration



No.	Components	Materials
①	Conductive Adhesive	Ag+Silicone Resin
②	Crystal Blank	SiO_2
③	Lid	Fe-Ni-Co Alloy
④	Base	Ceramic+Noble Metal
⑤	Conductive Adhesive of Solid IC	Ag+Epoxy Resin
⑥	IC	Si
⑦	Gold Wire	Au

9.Product Identification (Marking)

T： TKD Logo

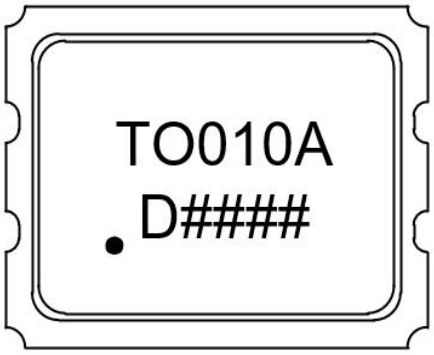
O： Oscillator Code

010A： Frequency Code

●： Pin1 Index

D： Date Code

####： XO Lot Code

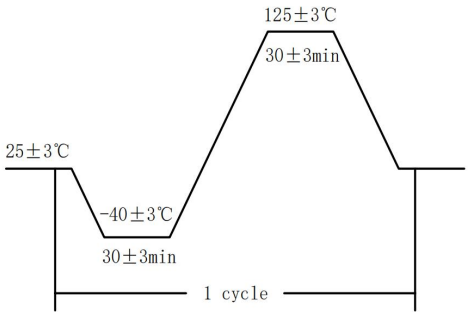
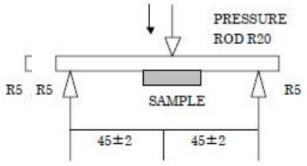


Date Code

Year		2019	2020	2021	2022
		2023	2024	2025	2026
		2027	2028	2029	2030
		2031	2032	2033	2034
Month	JAN	a	n	A	N
	FEB	b	p	B	P
	MAR	c	q	C	Q
	APR	d	r	D	R
	MAY	e	s	E	S
	JUN	f	t	F	T
	JUL	g	u	G	U
	AUG	h	v	H	V
	SEP	j	w	J	W
	OCT	k	x	K	X
	NOV	l	y	L	Y
	DEC	m	z	M	Z

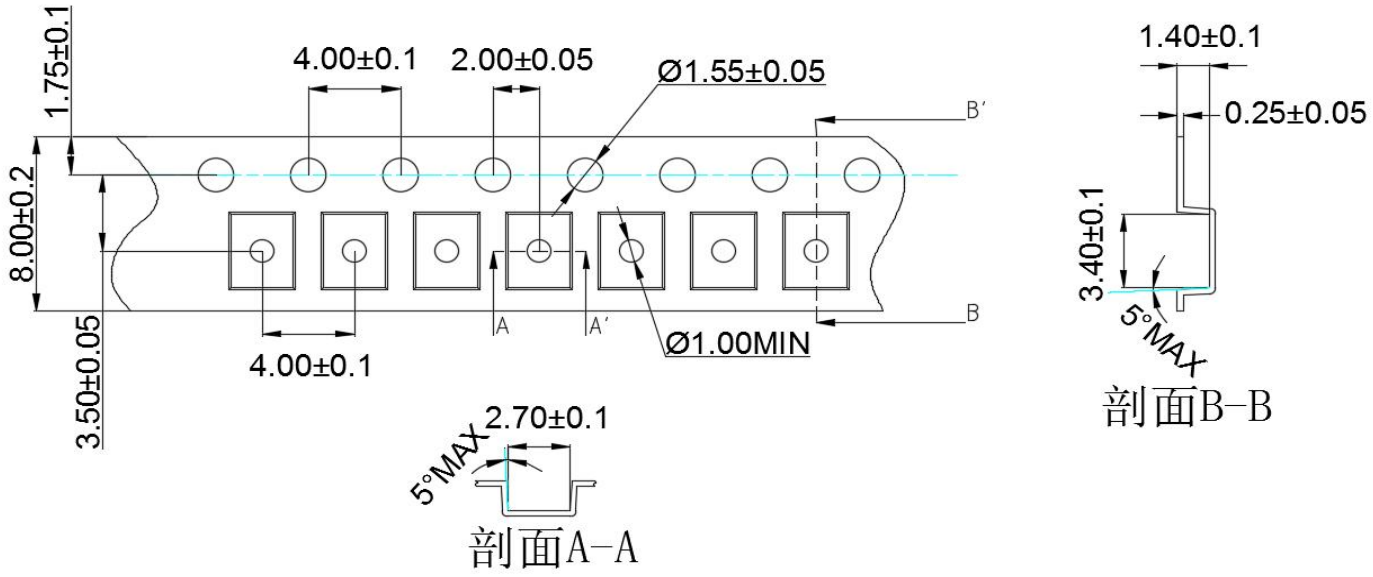
※ This date code will be cycled every four years.

10.Reliability

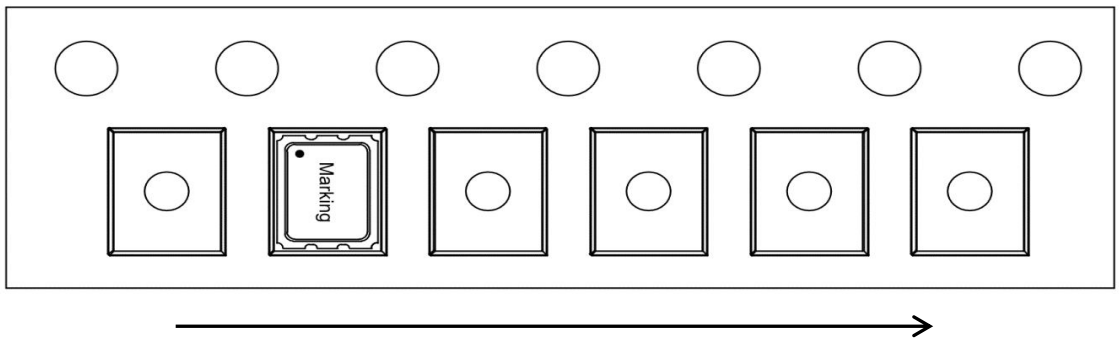
No.	Item	Test Methods	Criteria
1	Low Temperature Storage	Temperature：-40℃ ± 3℃（or the specification shall prevail） Duration：500 hours	±5.0 ppm
2	High temperature and humidity	Temperature：85ºC ± 2ºC Humidity：RH 85% Duration：500 hours	±5.0 ppm
3	Thermal Shock	 Temperature：-40℃~125℃（or the specification shall prevail） Duration：100 cycles	±5.0 ppm
4	High Temperature Operating Life	Temperature ：85℃ （or the specification shall prevail） Duration：1000 hours Vdd Applied	±10.0 ppm
5	Vibration	Duration ： 2 hours/each direction Frequency range：10～55 Hz Direction：3 axes	±5.0 ppm
6	Mechanical Shock	Acceleration：100 g Duration：6.0 ms Test cycles：3 times for all 6 axes，half sine	±5.0 ppm
7	Drop Test	Height：100 cm Test cycles：3 times	±5.0 ppm
8	Solderability	Soldering bath temperature：245℃ ± 5℃ Duration：2±0.6 seconds	95% Coated
9	Resistance to Soldering Heat	Soldering temperature：260℃ ± 5℃ Duration：15±5 seconds	±5.0 ppm
10	Board Flex	Height：3.0 mm Duration：5 seconds Speed：0.5 mm/s 	±5.0 ppm

11.Package Information

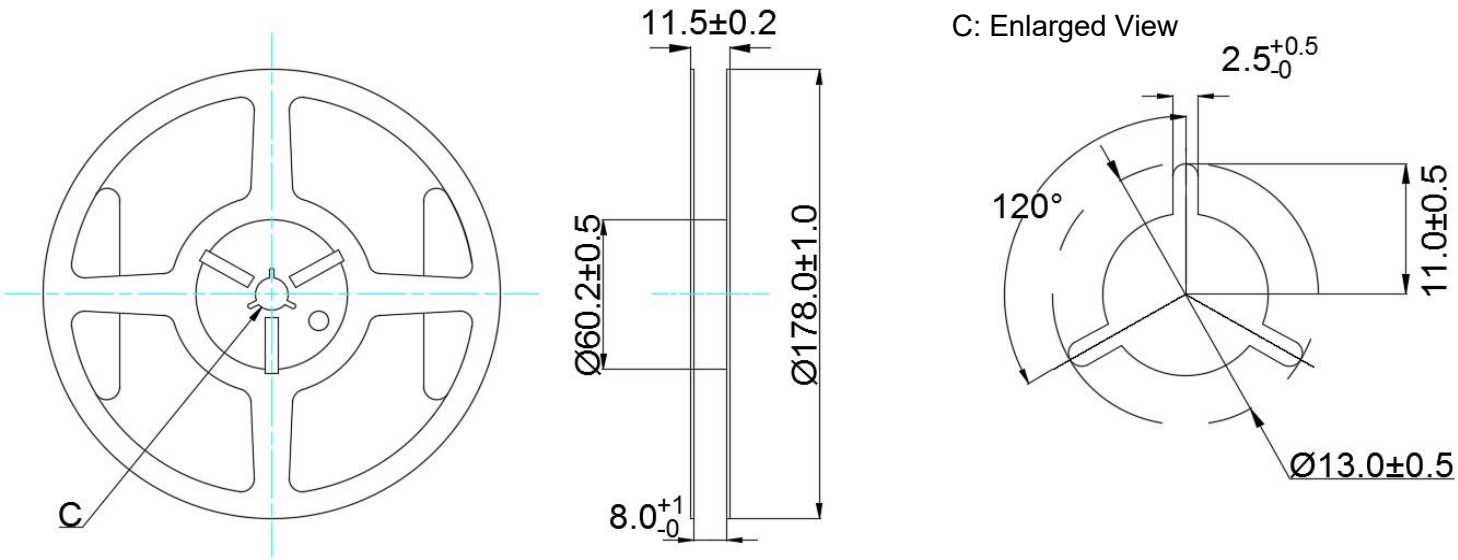
Tape (Carrier) Dimensions Unit: mm



The Direction of Packing



Reel Dimensions 3000 pcs/reel Unit: mm



Handling Instructions

1. Cautions for Handling

a) Prevention against electrostatic breakdown
Your full attention to static electricity is still requested.
b) Direction
Before mounting the crystal oscillator on board, please confirm the direction to make sure the GND terminal and the terminal of power supply are not taken wrongly.

2. Prevention against Vibration and Shock

While the product is being transported or mounted onto board, if undue shock and vibration exceeding the specification are put on, there is risk that the built-in crystal blank is broken.
When undue shock and vibration exceeding the specification are put on the product, please be sure to make confirmation of the product's characteristics.

3. Soldering

In order to assure the reliability of the crystal oscillator, please use the product under the recommended conditions.

4. Surface mounting

a) This product is surface-mounting device.
So, please pay attention to the following things.
b) Extreme deformation of board may make pattern off, the electrode of terminals off and solder broken. Full attention is requested especially when splitting the board with the oscillator mounted where the camber of the board occurs.
c) In case that automatic mounter is used, please choose the type with small shock generation and make confirmation of the shock before use.

5. Cleaning

Because cleaning will cause change to all characteristics, cleaning is forbidden.

6. Store keeping (method and duration)

Long-time storage in the high/low temperature and high humidity leads to deterioration of solderability. So, please keep the product in the temperature of +5~+35 and humidity of 45~70%.
Moreover, please keep the product in the circumstance with measures against static electricity. The storage life is 6 months before the pack is opened and please use it within 168 hours after the pack is opened.
(Please use it after confirming the product solderability.)

7. Caution

This product should not be used in toxic, harmful, or corrosive environments such as mercury, chlorine, sulfur, acid-base environments, etc.

8. Application scenarios

TKD products are designed specifically for general and specific electronic applications. Without confirmation, they should not be used in critical areas beyond expectations, such as space technology, vehicle control, military weapon development, etc., to avoid significant risks to safety, health, property, or society. For intended use only, there is no additional guarantee for specific use products. If you need products for specific purposes, please consult TKD sales representatives in advance.