XO SPECIFICATION

Customer：

Customer P/N：

TKD P/N：XO25A156250HDLE31A

Part Name：SMD LVDS XO2520

Product Description：156.250000M

Issue Date：2026/9/28

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
Xiong Feng	Wang Peng	Wang YuTing

地址：湖北省随州市曾都经济开发区交通大道1131号

Address： No. 1131, Jiaotong Avenue, Zengdu Economic Development Zone,SuiZhou,Hubei

Sales Tel: 0722-7509016, Fax: 0722-7509036, URL: www.sztkd.com

Rev.	Description of Revision History	Date	Prepared By	Checked By
A	Initial Release	2026/9/28	Wang YuTing	Wang Peng

XO SPECIFICATION

1.Description : 2520 LVDS Output Oscillator

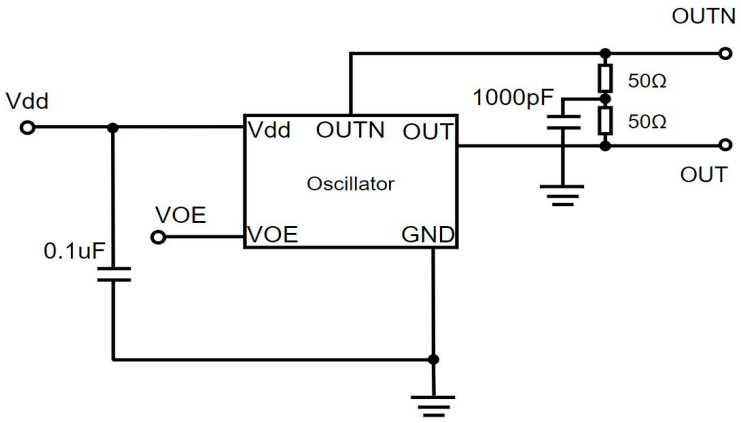
2.Nominal Frequency : 156.250000M

3.Electrical Specifications :

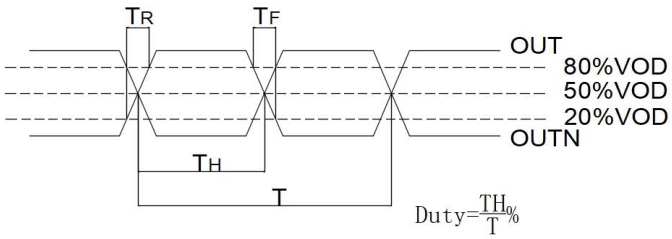
Item	Parameters	Condition	Electrical Specifications			
			Min	Typ	Max	Units
1	Nominal Frequency		156.250000			MHz
2	Oscillation Mode		Fundamental			
3	Frequency Stability Overall	（Note1）	-20		20	ppm
4	Operating Temperature Range		-40		105	℃
5	Supply Voltage		1.71	1.80	1.89	V
6	Supply Current	Output Enabled(Idd/OE)			19	mA
7	Standby Function		Yes			
8	Current Consumption(Standby)	OE=Low			60	μA
9	Output Waveform		HLVDS			
10	Output Swing	OUT/OUTN	0.4		0.8	V
11	Differential output voltage	OUT-OUTN	0.8		1.6	V
12	Enable		80%Vdd			V
13	Disable				20%Vdd	V
14	Output Rise/Fall Time	20%~80% of Waveform			0.35	ns
15	Duty Cycle		45	50	55	%
16	Output Load		100			Ω
17	Aging	1st year@25°C	-3		3	ppm
18	Start-up Time	90%Vdd to Final Amplitude			10	ms
19	Phase Jitter	12kHz - 20MHz		30	50	fs-rms
20	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

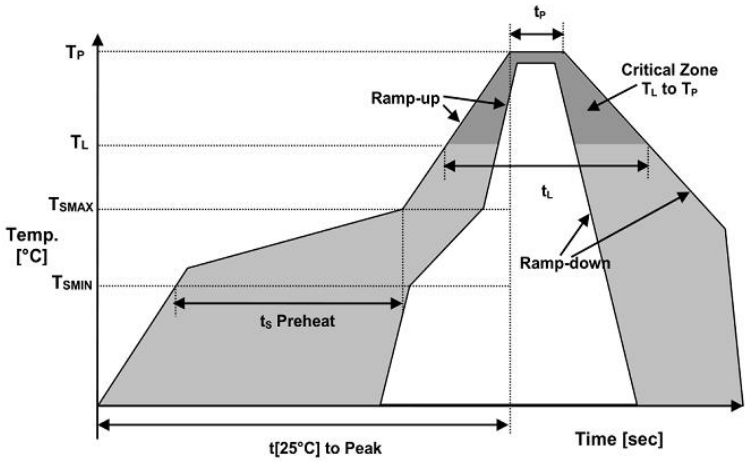
4.Test Circuit (LVDS Load)



5.Output Waveform (LVDS Load)



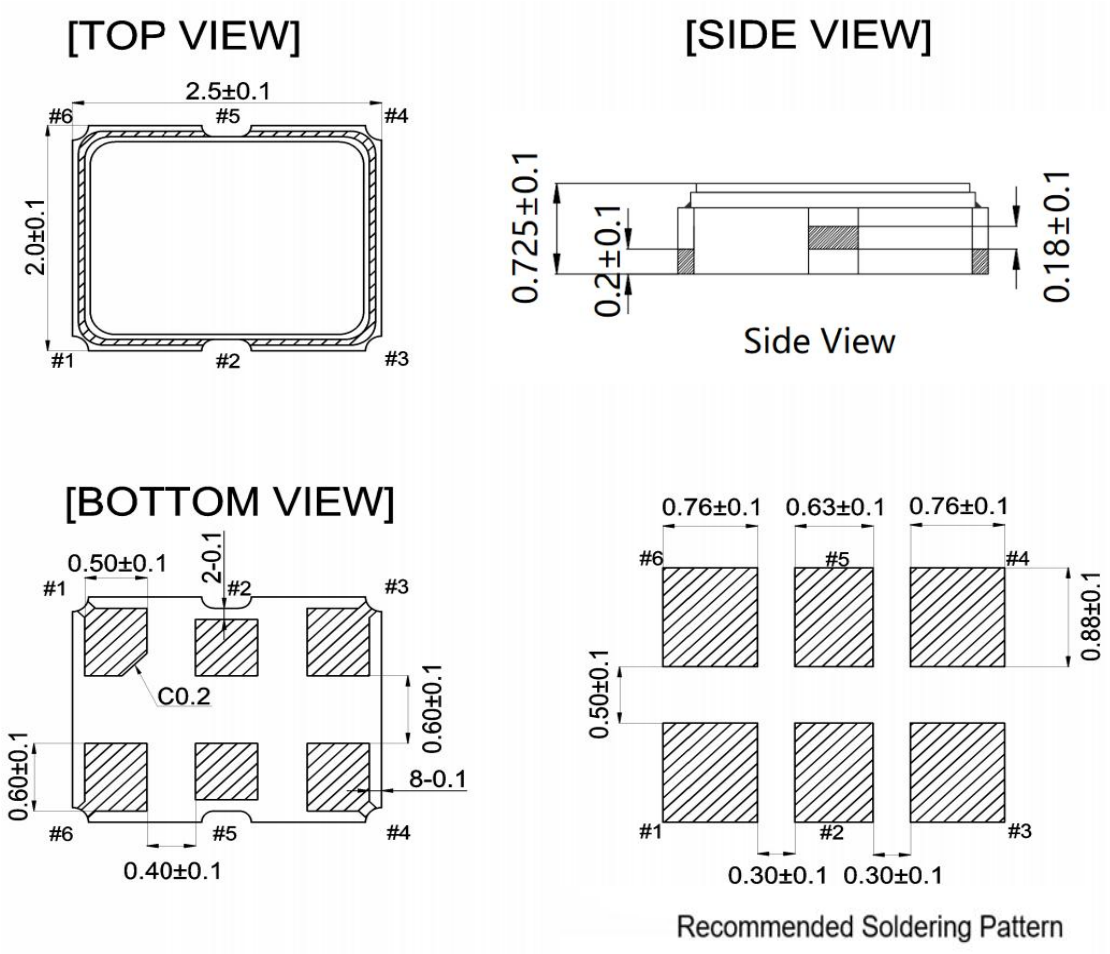
6.Recommended Reflow Profile（Refer to JEDEC J-STD-020D）



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

7.Product Dimensions

Unit：mm



Pin Connection

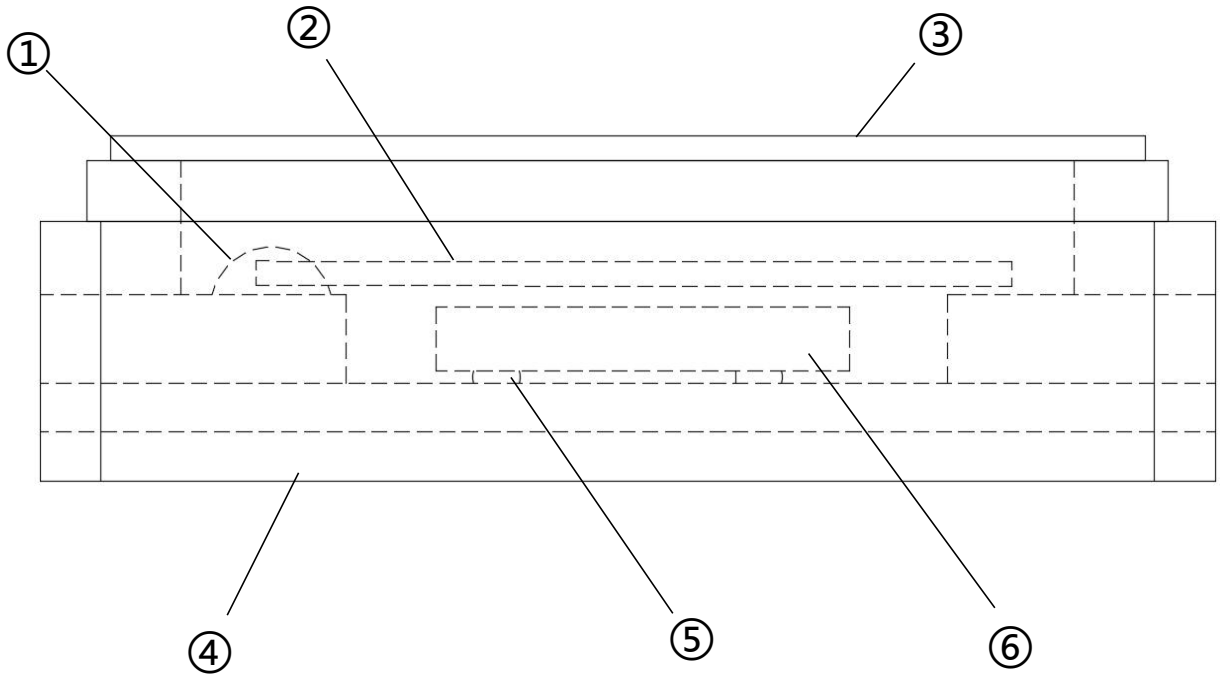
Name	Connection
Pin 1	OE
Pin 2	NC
Pin 3	GND
Pin 4	OUT
Pin 5	OUTN
Pin 6	Vdd

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

Function

Pin1 Input	Pin4&5 output
High level	Oscillation Output
Low level	High Z

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	Bump	Au
⑥	IC	Si

9.Product Identification (Marking)

T： TKD Logo

D： LVDS Oscillator Code

156F： 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.

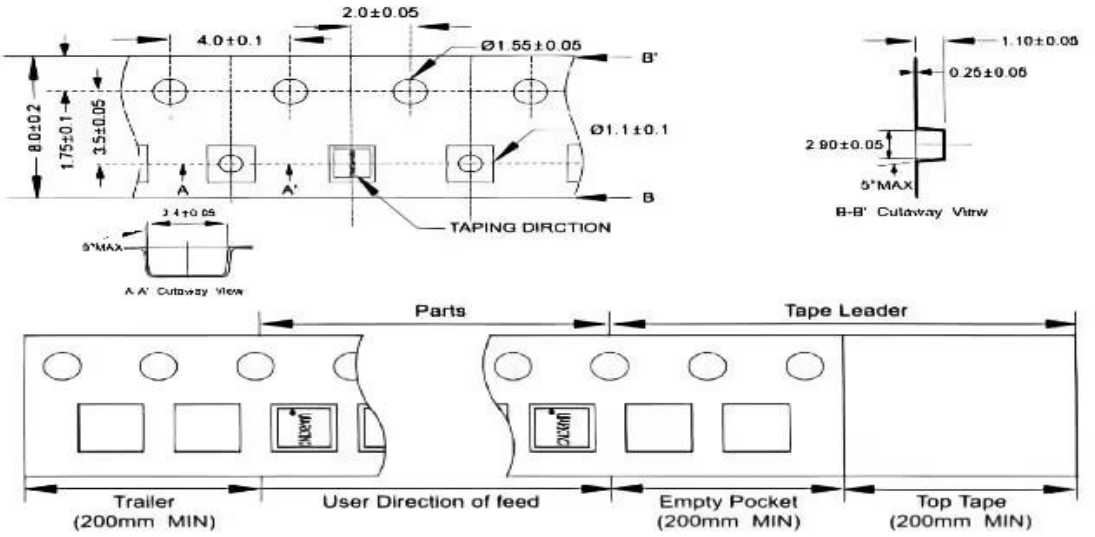
10.Reliability

No.	Test Item	Test Conditions	Reference
1	High-temperature startup	Temperature：85℃（or the specification shall prevail） Duration：30min Operation：Perform power on/off tests, 0.1ms each time, 10 times total; 10ms each time, 10 times total	Normal startup
2	Low-temperature startup	Temperature：-40℃（or the specification shall prevail） Duration：30min Operation：Perform power on/off tests, 0.1ms each time, 10 times total; 10ms each time, 10 times total	Normal startup
3	Temperature Cycle 1	Temperature：-40℃~85℃（or the specification shall prevail） 2℃/step (on/off every two temperature points) startup time between 0.1ms and 10ms，2 cycles	Determine according to the specification parameters
4	Temperature Cycle 2	Temperature：-40℃~85℃（or the specification shall prevail） Vdd, frequency test at each temperature，2 cycles	Determine according to the specification parameters
5	Rapid temperature change	Temperature：-40℃~85℃（or the specification shall prevail） Vdd，10℃/min，2 cycles	Determine according to the specification parameters
6	High-temperature lifespan	Temperature：85℃（or the specification shall prevail） Duration：1000 hours Vdd, connect a standard load between the crystal pins and GND according to the reference specification.	-10ppm≤△F≤+10ppm
7	High-temperature storage	Temperature：85℃（or the specification shall prevail） Duration：1000 hours	-10ppm≤△F≤+10ppm
8	Low-temperature storage	Temperature：-40℃（or the specification shall prevail） Duration：1000 hours	-10ppm≤△F≤+10ppm

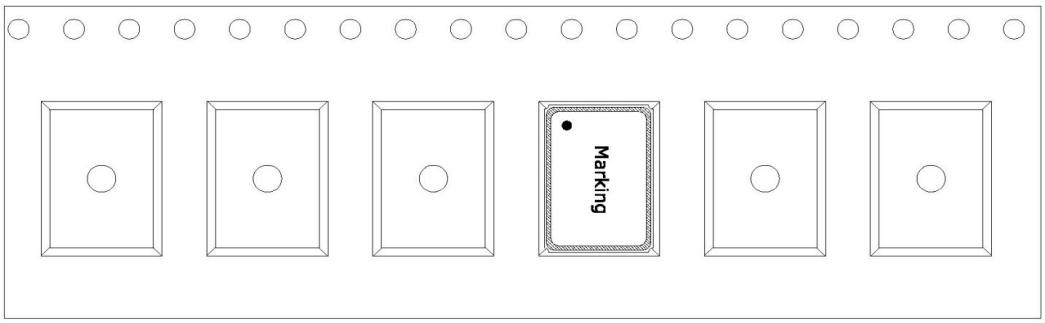
No.	Test Item	Test Conditions	Reference
9	Temperature shock	-55℃-125℃，15℃/min or temp shock，500cycles	-10ppm≤△F≤+10ppm
		-40℃-125℃，15℃/min or temp shock，700cycles	
		-40℃-85℃，15℃/min or temp shock，1000cycles	
10	High temperature and humidity	Temperature：85ºC Humidity：RH 85% Duration：1000 hours	-10ppm≤△F≤+10ppm
11	UHAST	Temperature：130ºC Humidity：85% Duration：96 hours Stored at 2 atmospheres	-10ppm≤△F≤+10ppm
12	Vibration	10-2000Hz，0.75mm，20g Duration ：4 hours/each direction Direction：3 axis	-5ppm≤△F≤+5ppm
13	Mechanical shock	Acceleration：100 g Duration：6.0 ms Test cycles：3 times for all 6 axis，half sine	-5ppm≤△F≤+5ppm
14	Drop Test	Virtual object：150g Height：100cm Floor，marble floor Times：10 times on each side	-5ppm≤△F≤+5ppm
15	Solderability	Soldering bath temperature：245℃ ± 5℃ Duration：5±0.5 second	95% Coated

11.Package Information

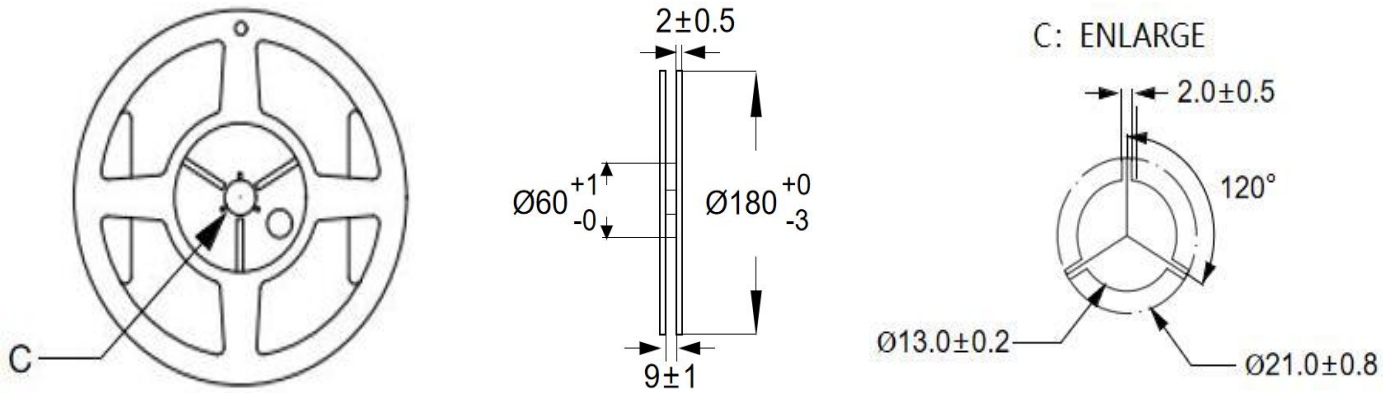
Tape (Carrier) Dimensions Unit：mm



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. Storage (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.

(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.