



## TCXO SPECIFICATION



Customer: \_\_\_\_\_  
Customer P/N: \_\_\_\_\_  
TKD P/N: TC20D026000GECC111  
Part Name: SMD VC-TCXO 2016  
Product Description: 26.000000MHz  
Issue Date: 2023/11/20

### **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

<b>Approved</b>	<b>Checked</b>	<b>Designer</b>
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Rev.	Description of Revision History	Date	Designer	Checked By
A	New Revision	2023/11/20	Wang ShuangXi	Zhan Chao



## TCXO SPECIFICATION

- 1.Description** : 2016 VC-TCXO
- 2.Nominal Frequency** : 26.000000MHz
- 3.Electrical Specifications** :

Item	Parameters		Condition	Electrical Specifications			
				Min	Typ	Max	Units
1	Nominal Frequency			26.000000			MHz
2	Frequency Stability	Vs.Temperature (Note1)	@-40°C ~ -30°C	-2.0		2.0	ppm
			@-30°C ~ 85°C	-0.5		0.5	ppm
3	Stability	Vs.Load	±10%	-0.2		0.2	ppm
4		Vs.Supply Voltage	Standard Vcc±5%	-0.2		0.2	ppm
5	Operating Temperature Range			-40		85	°C
6	Frequency Tolerance		( Note2 )	-2.0		2.0	ppm
7	Supply Voltage		( Note3 )	2.66	2.80	2.94	V
8	Current Consumption					2.0	mA
9	Output Level			0.8			Vp-p
10	Output Waveform		( Note4 )	Clipped Sine			
11	Output Load			10kΩ //10pF			
12	Duty Cycle			40	50	60	%
13	Control Voltage Range			0.4	1.4	2.4	V
14	Frequency Control Range (refer: Vcon=1.4V)		Vcon=0.4V	-15		-9	ppm
			Vcon=2.4V	9		15	ppm
15	Input Impedance			500			kΩ
16	Aging		1st year@25°C	-1.0		1.0	ppm
17	Phase Noise		@10 Hz offset		-94		dBc/Hz
			@100 Hz offset		-119		dBc/Hz
			@1 kHz offset		-138		dBc/Hz
			@10 kHz offset		-148		dBc/Hz
			@100 kHz offset		-153		dBc/Hz
			@1 MHz offset		-154		dBc/Hz
18	Start-up Time		To 90% of Vp-p			2.0	ms
19	Storage Temperature			-40		85	°C

Note1 Referenced to the midpoint between minimum and maximum frequency value

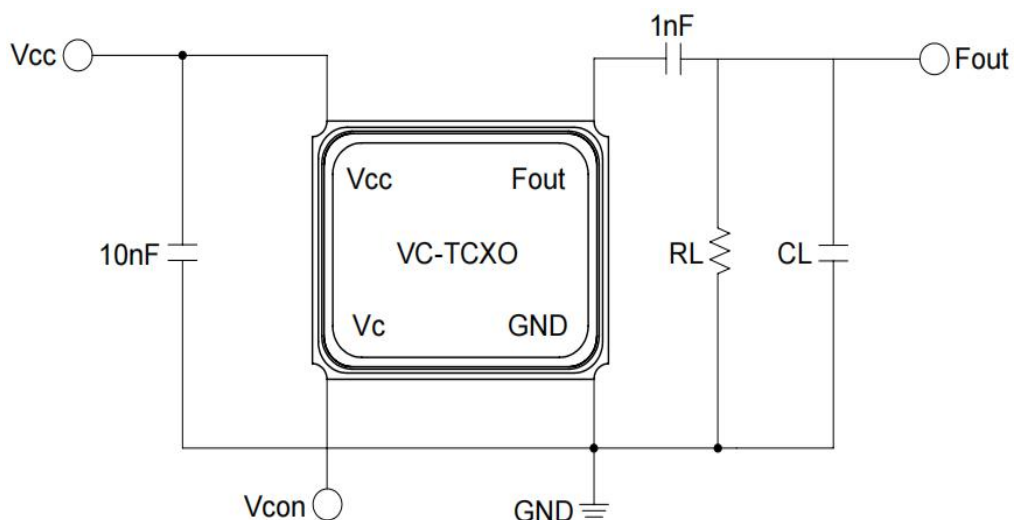
Note2 Refer to nominal frequency

Note3 Selectable operating voltage range:1.7~3.6V,electrical parameters measured under typical supply voltage

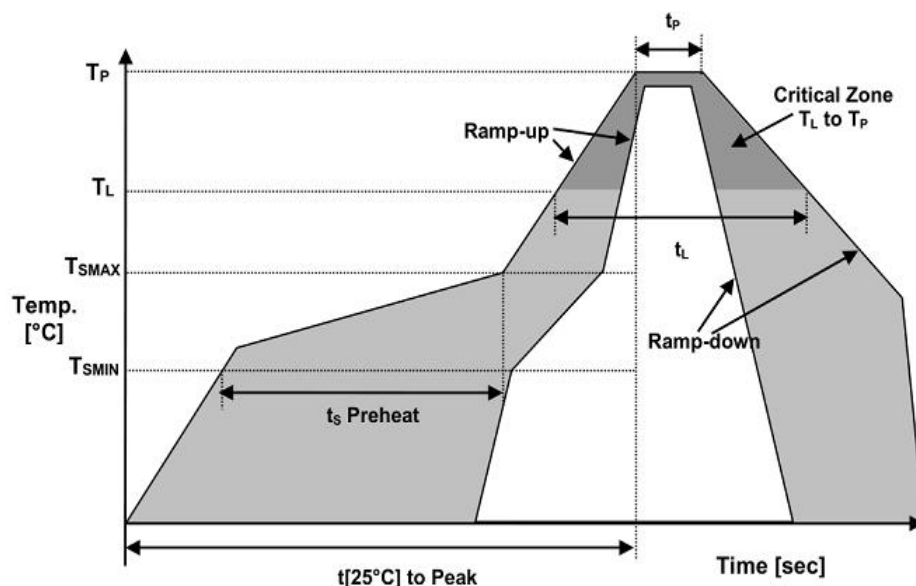
Note4 DC-cut capacitor of output is not put in TCXO. Please add DC-cut capacitor (above 1nF) in output line



#### 4. Test Circuit



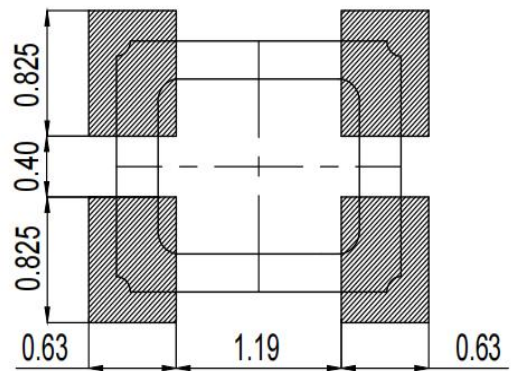
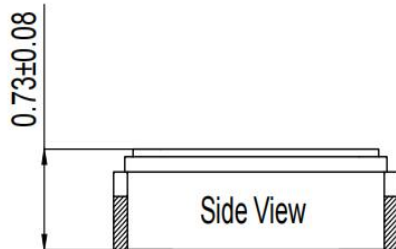
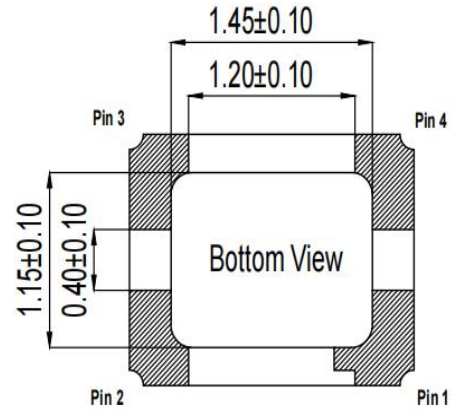
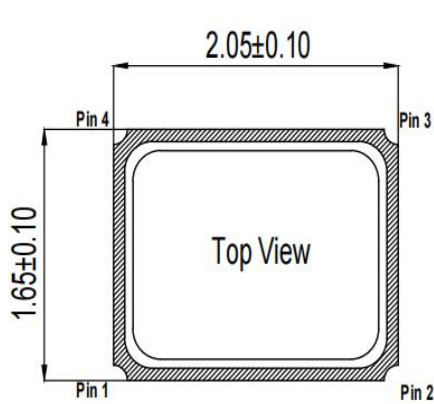
#### 5. Recommended Reflow Profile



Reflow Profile		
Temperature MIN Preheat	$T_{SMIN}$	150°C
Temperature MAX Preheat	$T_{SMAX}$	200°C
Time ( $T_{SMIN} - T_{SMAX}$ )	$t_s$	60-180s
Temperature	$T_L$	217°C
Peak Temperature	$T_P$	260°C
Ramp-up Rate	$R_{UP}$	3°C/s max
Ramp-Down Rate	$R_{DOWN}$	6°C/s max
Time within 5°C of Peak Temperature	$t_p$	10s
Time t ( 25°C ) to Peak Temperature	t ( 25°C ) to Peak	480s
Time	$t_L$	60-150s



## 6.Product Dimensions



## Pin Connection

Name	Connection
Pin 1	Vcon
Pin 2	GND
Pin 3	Fout
Pin 4	Vcc



### 7.Product Identification (Marking)

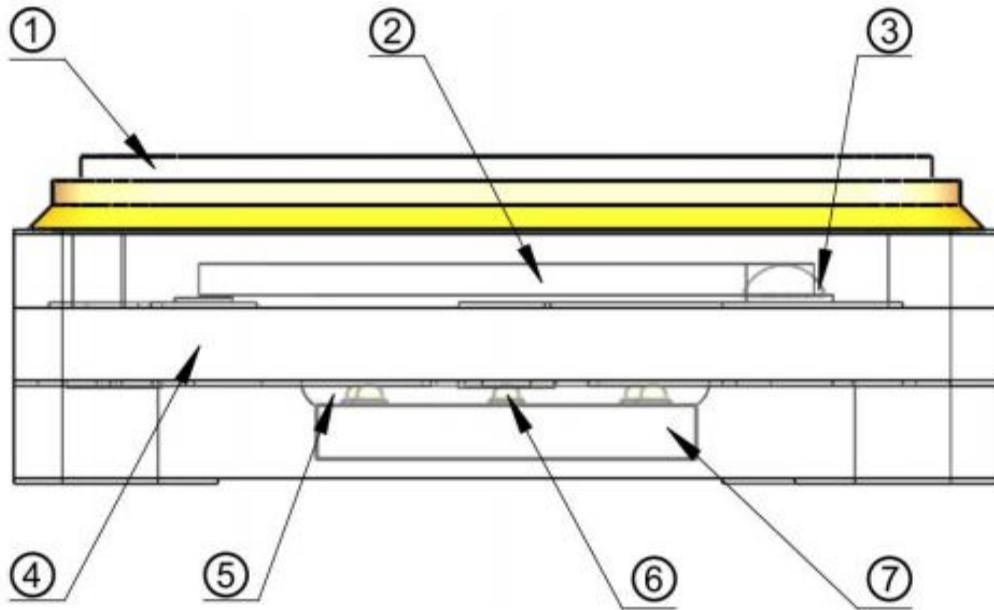
T: TKD Logo	
260: Frequency Code	
A: Frequency Discrimination Code	
●: Pin1 Index	
D: Date Code	
####: TCXO Lot Code	

#### 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.

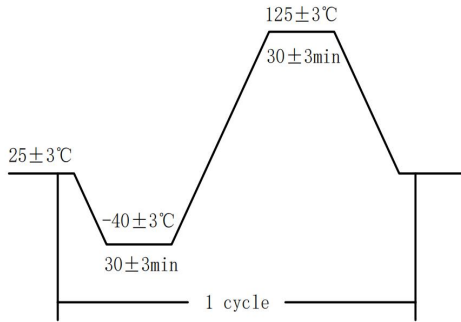
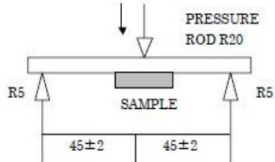
### 8. Structure Diagram



No.	Components	Materials
①	Lid	Fe-Ni-Co Alloy
②	Crystal Blank	SiO <sub>2</sub>
③	Conductive Adhesive	Ag+Silicone resin
④	Base	Ceramic+Noble Metal
⑤	Underfill	Epoxy
⑥	Bump	Au
⑦	IC	Si



9.Reliability

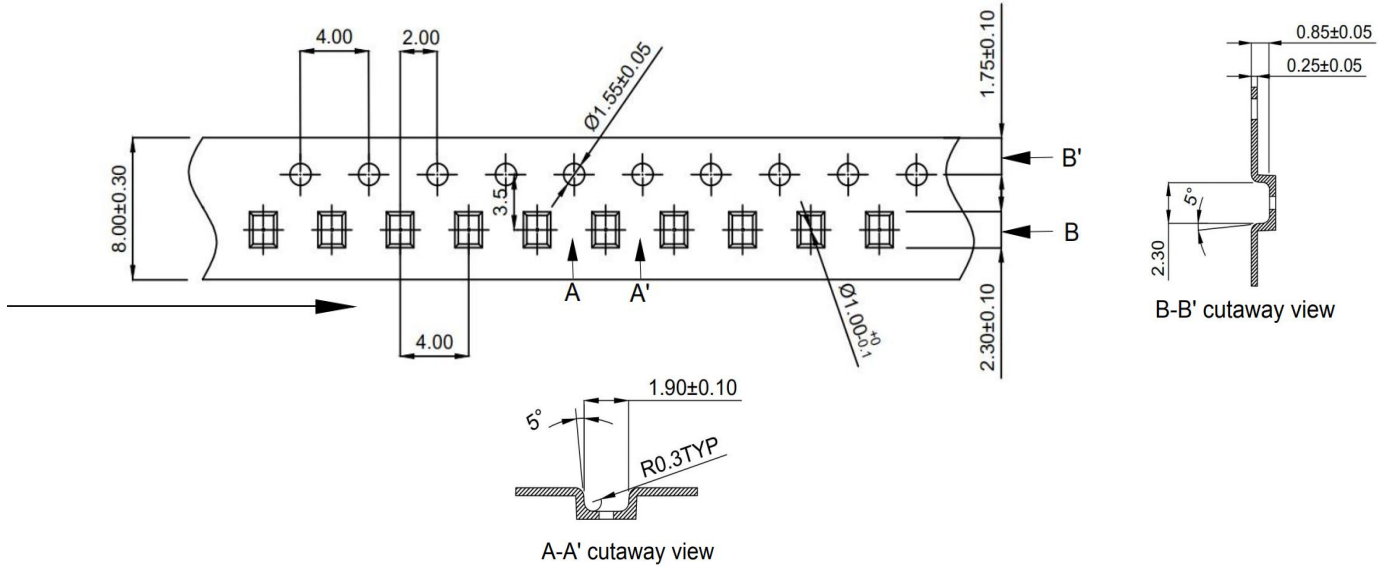
No.	Item	Test Methods	Criteria
1	Low Temperature Storage	Temperature: $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ (or the specification shall prevail) Duration: 500 hours	$\pm 5.0$ ppm
2	High temperature and humidity	Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Humidity: RH 85% Duration: 500 hours	$\pm 5.0$ ppm
3	Thermal Shock	 <p>Temperature: <math>-40^{\circ}\text{C} \sim 125^{\circ}\text{C}</math> (or the specification shall prevail) Duration: 100 cycles</p>	$\pm 5.0$ ppm
4	High Temperature Operating Life	Temperature : $85^{\circ}\text{C}$ (or the specification shall prevail) Duration : 1000 hours Vdd Applied	$\pm 5.0$ ppm
5	Vibration	Duration : 2 hours/each direction Frequency range: 10 ~ 55 Hz Direction: 3 axis	$\pm 5.0$ ppm
6	Mechanical Shock	Acceleration: 100 g Duration: 6.0 ms Test cycles: 3 times for all 6 axis , half sina	$\pm 5.0$ ppm
7	Drop Test	Height: 100 cm Test cycles: 3 times	$\pm 5.0$ ppm
8	Solderability	Soldering bath temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Duration: $2 \pm 0.6$ second	95% Coated
9	Resistance to Soldering Heat	Soldering temperature : $260^{\circ}\text{C} \pm 10^{\circ}\text{C}$ Duration : $15 \pm 5$ second	$\pm 5.0$ ppm
10	Board Flex	Height: 3.0 mm Duration: 5 second Speed: 0.5mm/sec 	$\pm 5.0$ ppm



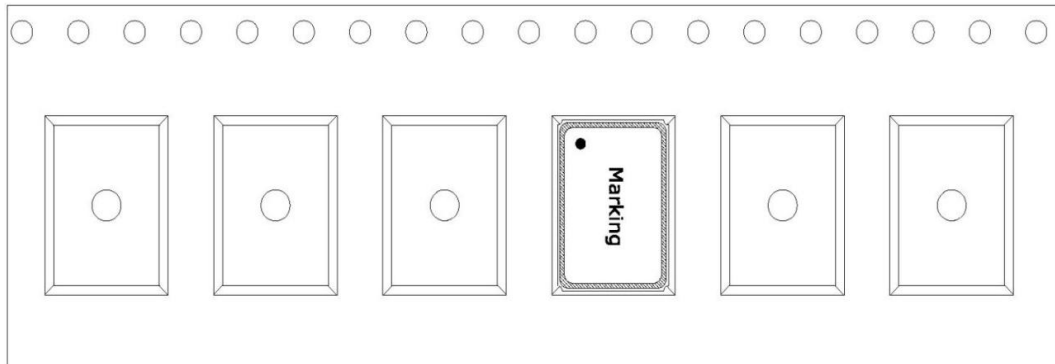


### 10.Package Information

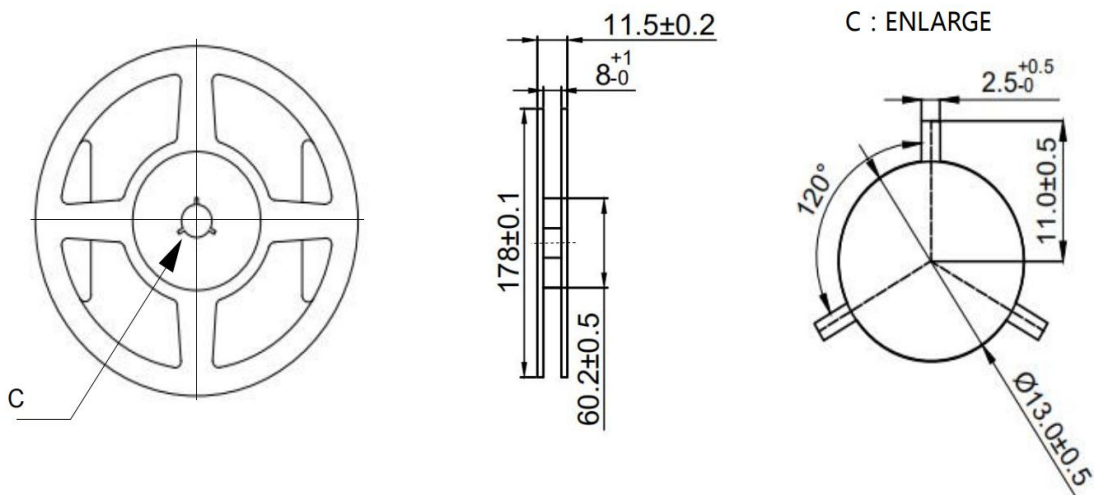
#### Tape (Carrier) Dimensions



#### The Direction of Packing



#### Reel Dimensions





## 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 hock and vibration exceeding the specification is put on, there is risk hat the built-in crystal blank is broken.

When undue shock and vibration exceeding the specification is 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 keep it with desiccator etc. when you exceed 168 hours after the bag 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.

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