PRODUCT SPECIFICATION SHEET



Customer			
Customer P/N	-		
Product Type	Temperature Compensated Crystal Oscillator		
Part Number	9T26000030	Version	S2
Part Description	SMD TCXO 2.0 x 1.6		
Nominal Frequency	26.000000MHz		

Prepared	Li Xiang
Reviewed	Kuro Peng
Approved	Xing Yue
Date	2023/5/8

Customer's Approval & Date：

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RoHS COMPLIANT

Pb Lead-Free

Moisture Sensitivity Level 1

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Attention

If you intend to use products on the controlling equipment that relate to medical, aeronautical, aerospace, military science, space and etc, please make sure to let us know your intentions in advance.

Ultrasonic related process may cause damage to crystal blank by resonance itself. If ultrasonic related process is used, we strongly recommend to assess the damage risk under related ultrasonic conditions before use in production.

1. History of Specification Revision

Ver.	Contents	Date	Reviser	Remark
S0	Initial release	2023/3/17	Li Xiang	
S1	Update electrical specifications	2023/3/24	Li Xiang	
S2	Update electrical specifications	2023/5/8	Li Xiang	

2. Electrical Specifications

2.1 Operation conditions

#	Parameters	Min.	Typ.	Max.	Unit	Remark
1	Nominal frequency		26.000000		MHz	-
2	Supply voltage (V_{DD})	1.68	1.8	3.63	V	-
3	ESD		HBM＞2000V		-	JESD22-A114-B
4	MSL		Level 1		-	IPC/JEDEC J-STD-033C
5	Current consumption	-	-	1.5	mA	-
6	Operating temperature range	-40	-	+85	°C	-
7	Storage temperature range	-40	-	+105	°C	-

2.2 Output characteristics

#	Parameters	Min.	Typ.	Max.	Unit	Remark
1	Output type		Clipped sine wave		-	Decoupling capacitor is required in external circuit
2	Standard output Load		10 KΩ//10 pF		-	-
3	Output level	0.4	-	1.2	V_{pp}	-
4	Output level (high)	0.7	-	1.2	V	without C3 (DC block for output) in page 7
5	Output level (low)	0.0	-	0.2	V	without C3 (DC block for output) in page 7
6	Duty cycle	40	50	60	%	-
7	Harmonics	-	-	-8	dBc	-
8	Start-up time vs. frequency	-	-	2.0	ms	Within ±1.0 ppm of final frequency
9	Start-up time vs. output level	-	-	2.0	ms	Reach 90% of final Vpp output level

2.3 Frequency characteristics

#	Parameters	Min.	Typ.	Max.	Unit	Remark
1	Nominal frequency		26.000000		MHz	
2	Frequency tolerance before reflow	-1.0	-	+1.0	ppm	At 25±2°C, before reflow, refer to nominal frequency
3	Frequency tolerance after reflow	-2.0	-	+2.0	ppm	At 25±2°C, after 2 times of reflow, refer to nominal frequency (See below NOTE 1)
4	Frequency stability vs. temperature	-0.5	-	+0.5	ppm	Refer to frequency at 25°C within operating temperature range
5	Slope of frequency drift over temperature 1	-0.1	-	+0.1	ppm/°C	Within -30 to +85°C
6	Slope of frequency drift over temperature 2	-0.2	-	+0.2	ppm/°C	Within -40 to -30°C
7	Frequency stability vs. supply voltage	-0.1	-	+0.1	ppm	±5% V_{DD} variation

2. Electrical Specifications (Cont.)

2.3 Frequency characteristics

#	Parameters	Min.	Typ.	Max.	Unit	Remark
8	Frequency stability vs. load variation	-0.1	-	+0.1	ppm	±5% load variation
9	Frequency Aging	-1.0	-	+1.0	ppm/First year	-
		-1.5	-	+1.5	ppm/2 years	-
		-3.0	-	+3.0	ppm/5 years	-
10	Frequency drift under quick temperature variation (0.10°C/s) 1	-10	-	+10	ppb/s	From -30 to -10°C
11	Frequency drift under quick temperature variation (0.10°C/s) 2	-5	-	+5	ppb/s	From -10 to +60°C
12	Frequency drift under quick temperature variation (0.10°C/s) 3	-10	-	+10	ppb/s	From +60 to +85°C
13	Frequency drift rate after V_{DD} power applied 1	-0.1	-	+0.1	ppm/s	From 0.1 to 0.5s
14	Frequency drift rate after V_{DD} power applied 2	-0.015	-	+0.015	ppm/s	From 0.5 to 1.5s
15	Frequency drift rate after V_{DD} power applied 3	-0.005	-	+0.005	ppm/s	From 1.5 onwards

NOTE 1: Frequency is measured after 24 hours after reflow cycles.

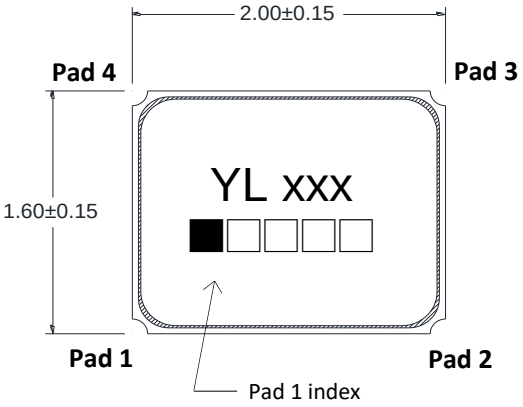
2.4 Phase noise characteristics

#	Parameters	Min.	Typ.	Max.	Unit	Remark
1	Phase noise at 10Hz offset	-	-	-83	dBc/Hz	-
2	Phase noise at 100Hz offset	-	-	-108	dBc/Hz	-
3	Phase noise at 1kHz offset	-	-	-135	dBc/Hz	-
4	Phase noise at 10kHz offset	-	-	-148	dBc/Hz	-
5	Phase noise at 100kHz offset	-	-	-148	dBc/Hz	-
6	Phase noise at 1MHz offset	-	-	-148	dBc/Hz	-

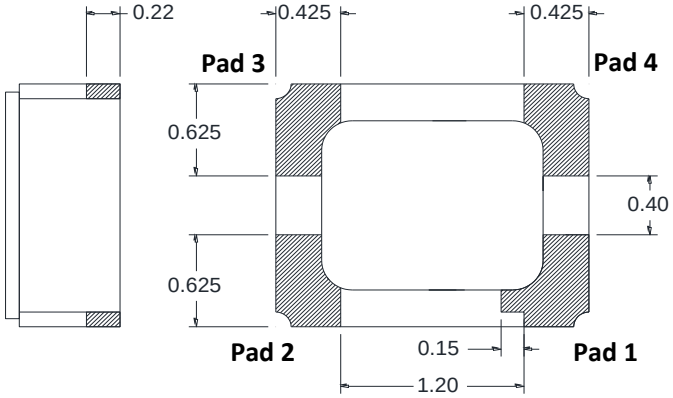
3. Product Design

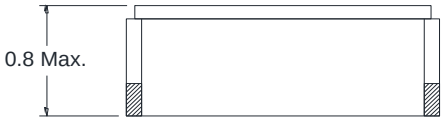
3.1 Package dimensions and pad functions

Top view



Unit : mm

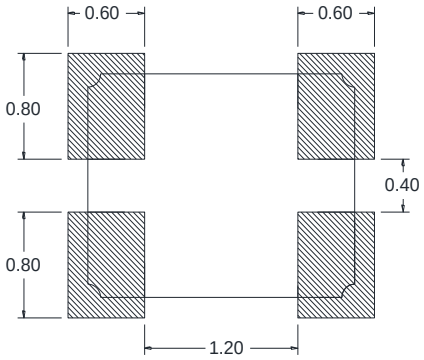




Lateral view

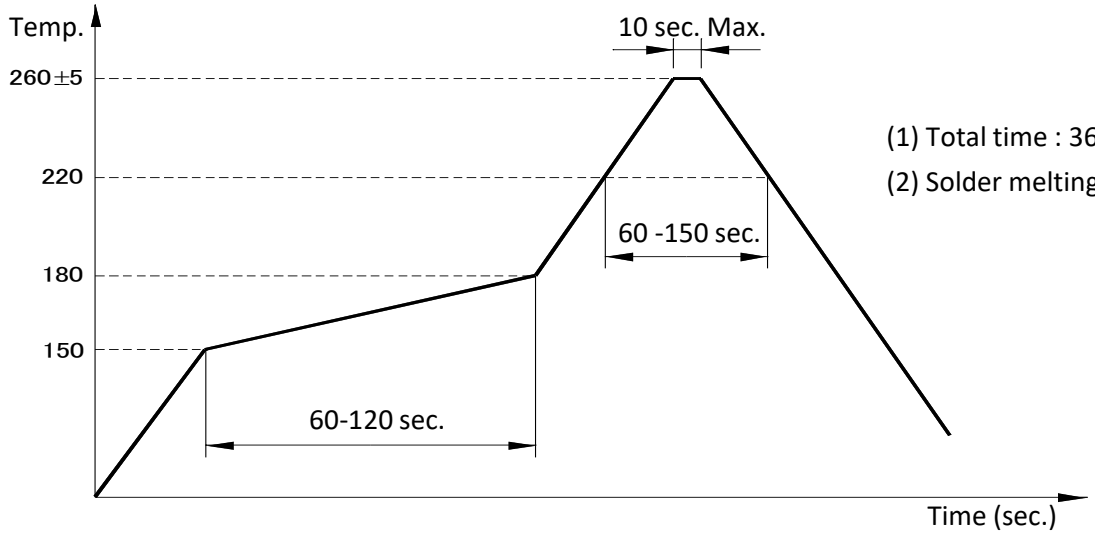
Pad	Function	Symbol
1	NC or GND (Ground recommended)	NC
2	Ground	GND
3	Output	OUT
4	Supply voltage	V_{DD}

3.2 Recommended land pattern



Unit : mm

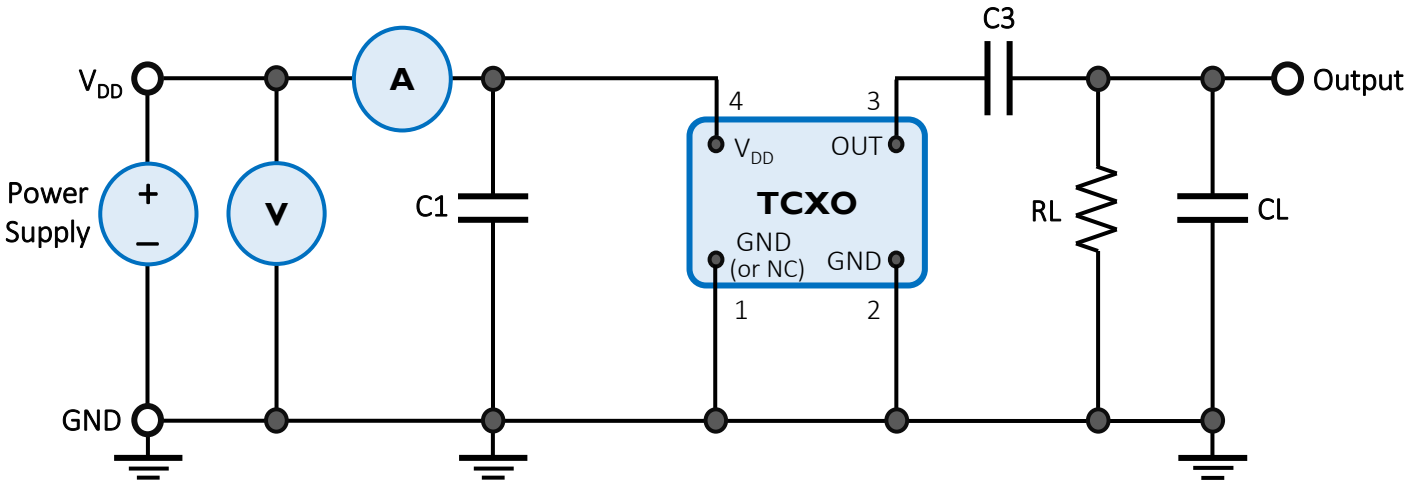
3.3 Recommended reflow profile



(1) Total time : 360 sec. Max.

(2) Solder melting point : 225℃

4. Testing Circuit



External Components:

Parts	Function	Recommended
C1	AC noise bypass for V_{DD}	10nF
C3	DC block for output	10nF
RL	Load resistance	10KΩ
CL	Load capacitance	10pF