

# APPROVAL SHEET

Customer Name : \_\_\_\_\_  
 Customer P/N : \_\_\_\_\_  
 Frequency : 26.000000 MHz  
 Aker Approved P/N : VTOF-026000-2-D4-00  
 Aker MPN : VTOF-026000-2-D4-00  
 Rev. : 1  
 ISSUE DATE : Feb.13.2023

APPROVED	CHECKED	PREPARED
<i>Tin</i>		<i>Hstone</i>
APPROVED BY CUSTOMER		

## AKER TECHNOLOGY CO., LTD.

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**MSL:Level 1**  
**RoHS compliant**



## SMD Temperature compensated crystal oscillator

### 1. ELECTRICAL CHARACTERISTICS

■ Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow :

Ambient temperature : 25±5 °C

Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits :

Ambient temperature : 25±3 °C

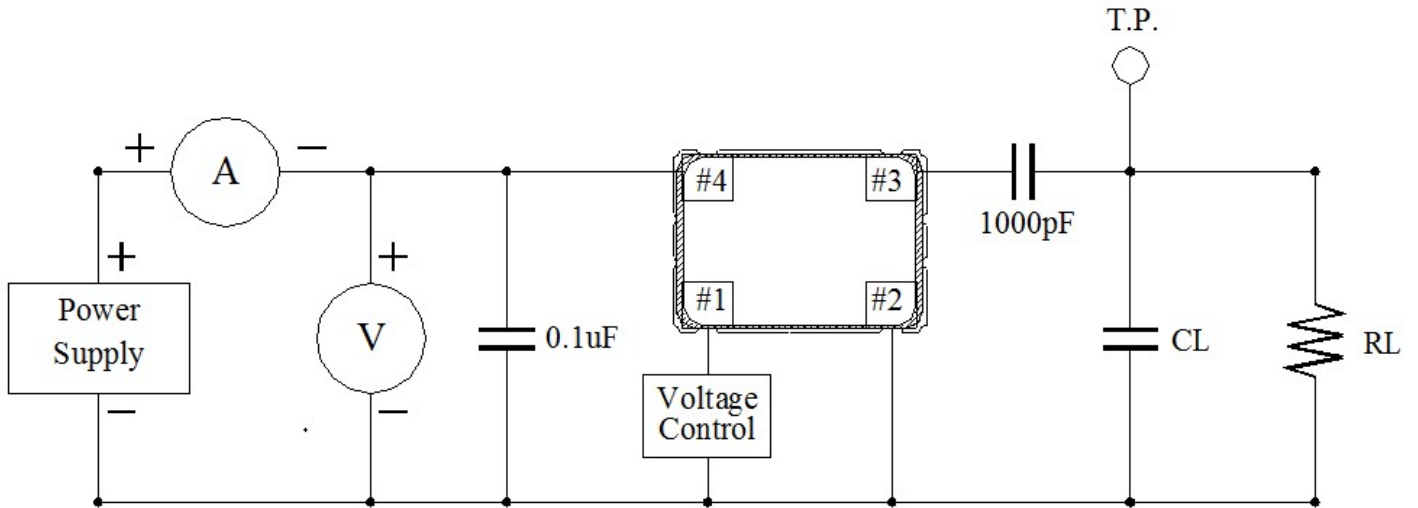
Relative humidity : 40%~70%

■ AKER Model : VTOF-221

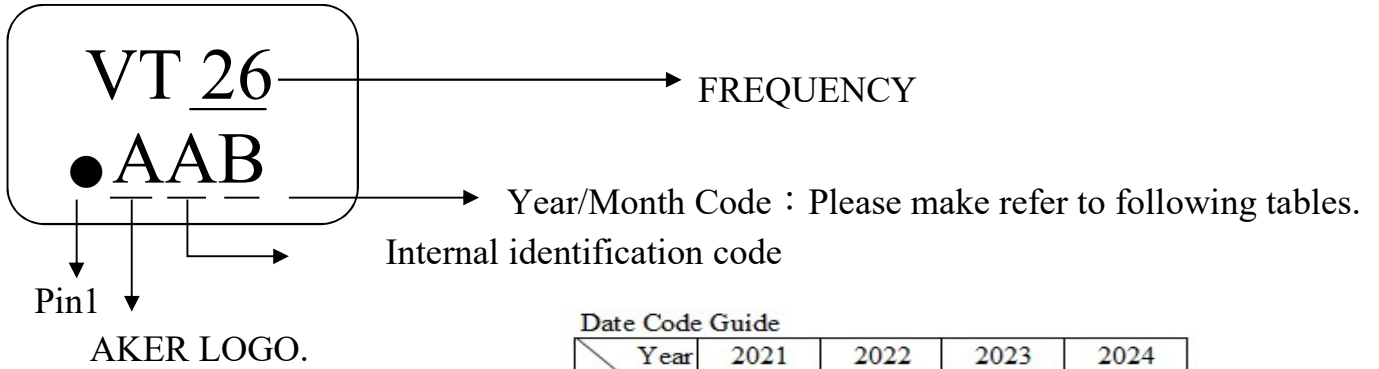
■ Cutting Mode : AT CUT

Parameters	Electrical Spec				Notes
	Min.	Typ.	Max.	Units.	
Nominal Frequency	26.000000			MHz	
Supply voltage	2.66	2.8	2.94	V	
Nominal Frequency Tolerance	-2.0	~	2.0	ppm	After 2 times reflow soldering
Frequency / Temperature characteristic (Based on frequency at +25°C)	-0.5	~	0.5	ppm	T <sub>use</sub> = -30°C to +85°C
	-3.0	~	3.0	ppm	T <sub>use</sub> = -40°C to -30°C
Load sensitivity	-0.2	~	0.2	ppm	±10% Load change
Load	10//10			KΩ//pF	
Temperature range	-40	~	85	°C	
Storage temperature range	-40	~	85	°C	
Current Consumption			2.0	mA	
Output Waveform	Clipped Sine Wave				
Output voltage level	0.8			V <sub>pp</sub>	
VCTL	0.4	1.4	2.4	V	Positive slope(df/dv)
Pulling Range	±9		±15	ppm	
Vcon input impedance	500			KΩ	
Aging	-1.0	~	1.0	ppm	First Year
Typical SSB phase noise power density		-114		dBc/Hz	100Hz offset.
Typical SSB phase noise power density		-131		dBc/Hz	1KHz offset.
Typical SSB phase noise power density		-148		dBc/Hz	10KHz offset.

## 2 . VCTCXO TESTING CIRCUIT



### 3. MARKING :



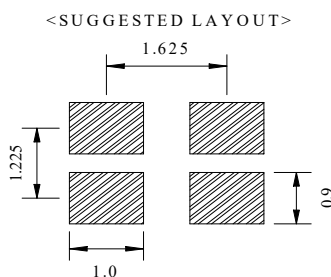
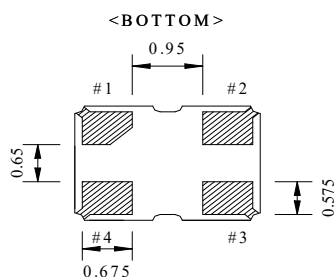
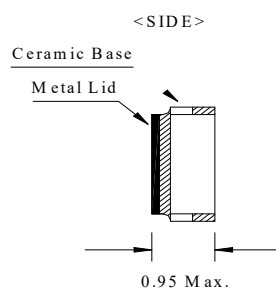
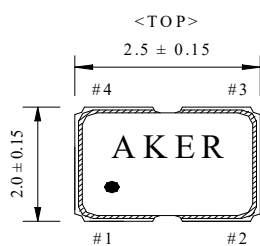
Date Code Guide

Year	2021	2022	2023	2024
	2025	2026	2027	2028
Month	(4N+1)	(4N+2)	(4N+3)	(4N+0)
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

A cycle every four years

### 4. DIMENSION :

( Unit : mm )

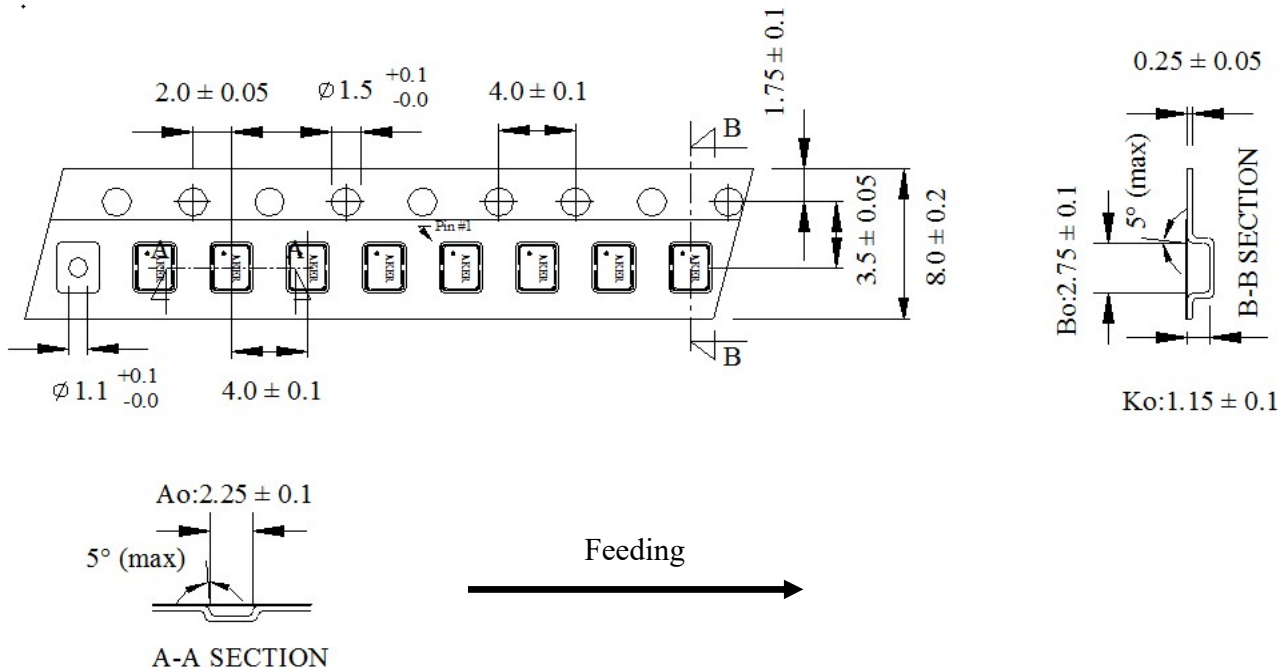


Pad	Function
#1	VCON
#2	GND
#3	Output
#4	Vdd

## 5. PACKING :

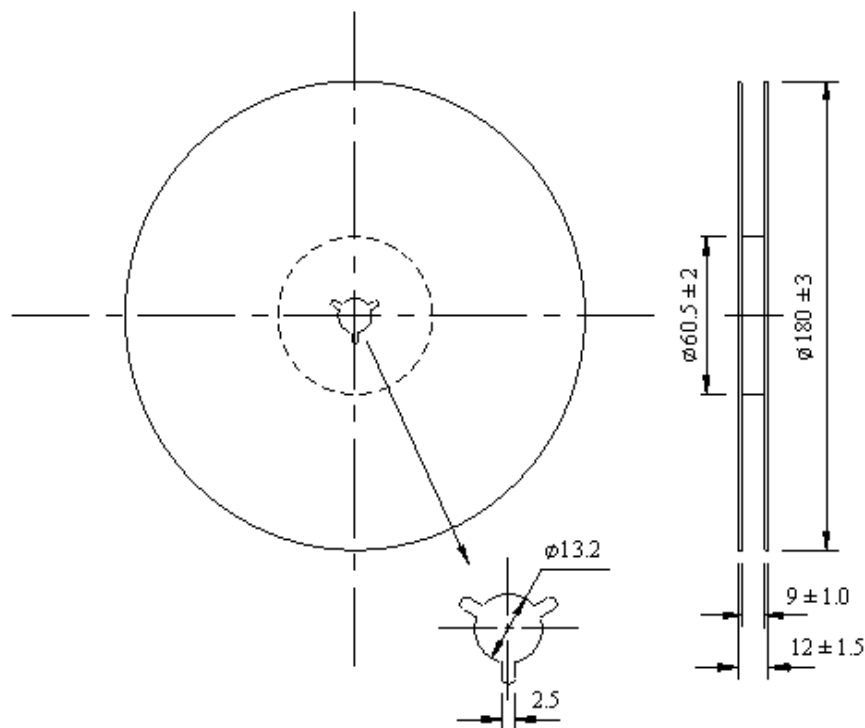
### TAPE SPECIFICATION

( Unit : mm )

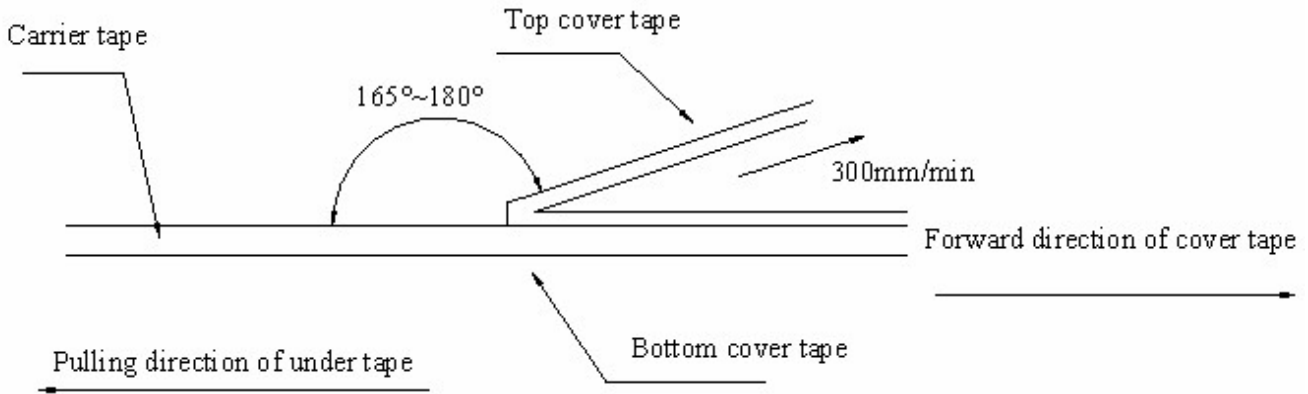


### OUTLINE DIMENSION

( Unit : mm )



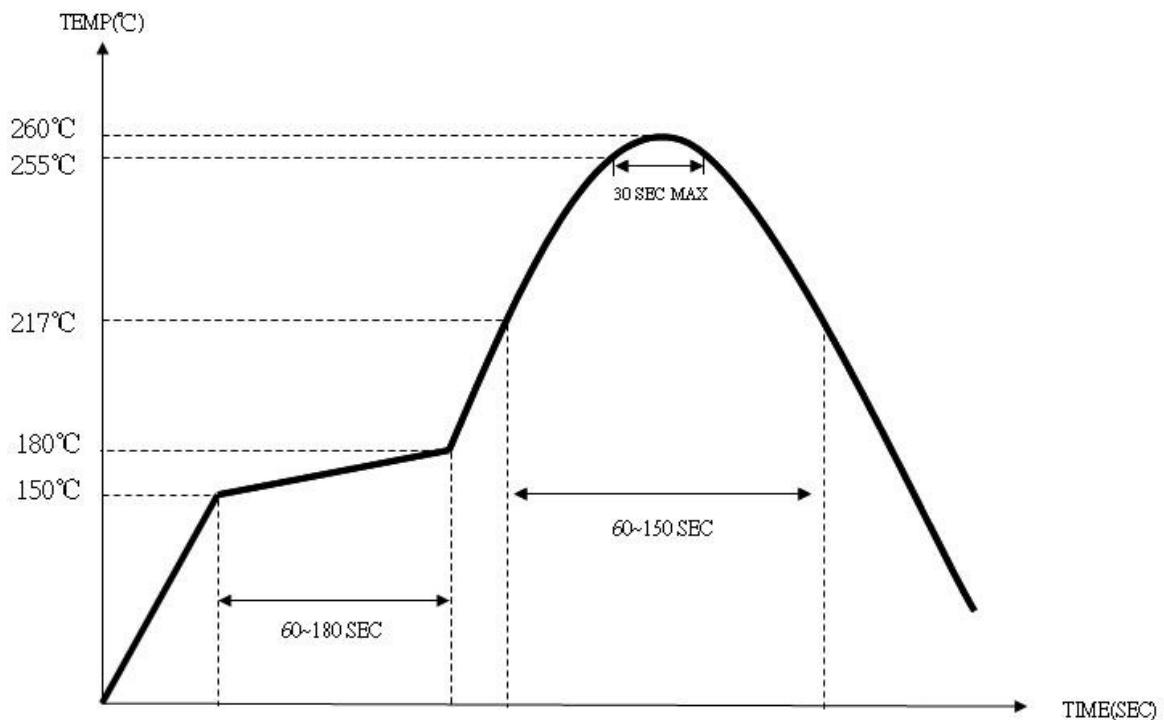
## 6. COVER TAPE ADHESION STRENGTH :



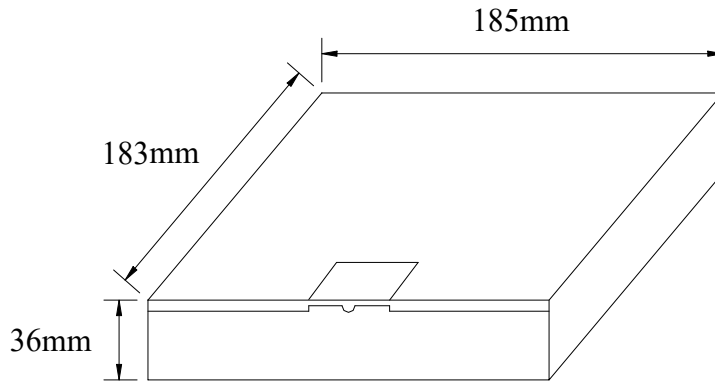
\*\*\* In the case, the cover tape is pulled off under the above conditions, the cover tape adhesion strength should be 10.2g~71.4g Plastic tape: 10.2g~71.4g

(Cover tape adhesion strength)

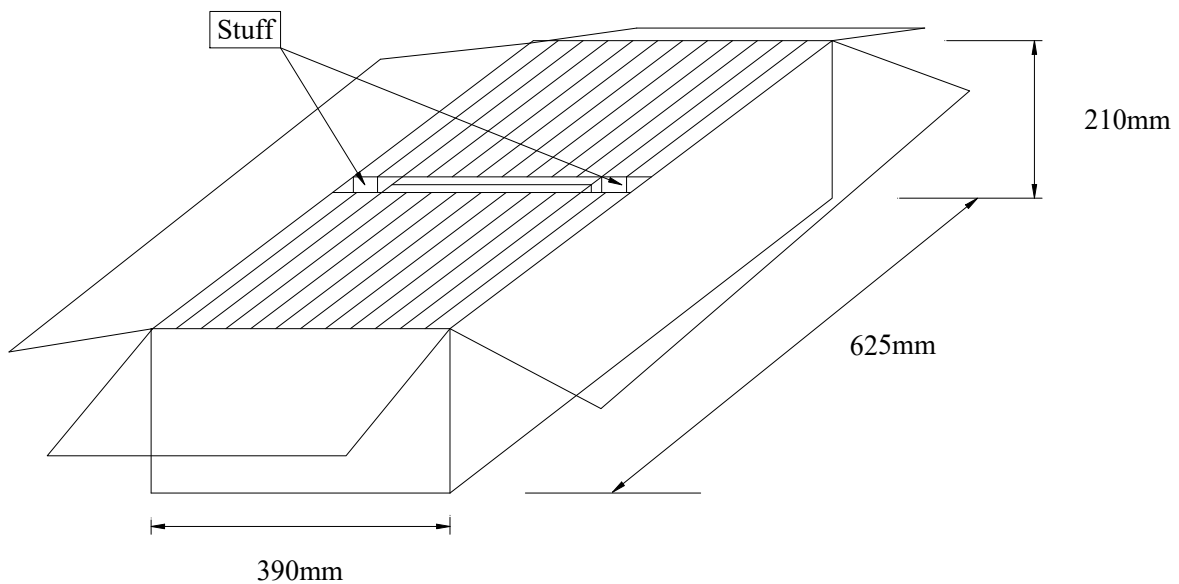
## 7. SOLDERING REFLOW PROFILE



## 8 . PACKING



BOX = 3000 PCS / REEL(MAX)



SMD product packs 32 BOX=The outside box packs (3000 PCS \* 32 BOX = 96000 PCS)(MAX)





Aker Approved P/N :	VTOF-026000-2-D4-00		
APPROVED :	Tin	SHEET : 8 of 8	
PREPARED :	Hitome	REV. : 1	
Confidential			

## 9 .RELIABILITY SPECIFICATION

### Mechanical Endurance

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
9.1 Temperature Cycling	-40±3°C/30min maximum~+85±3°C/30min maximum , 1000cycles	ΔF≤±2ppm
9.2 Operational Life	85°C±3°C , 1000hrs±12hrs Rated VDD applied.	ΔF≤±2ppm
9.3 Biased Humidity	85°C±5°C&85%±5%R.H. , 1000±12hrs Rated VDD applied.	ΔF≤±2ppm
9.4 Resistance To Soldering Heat Test	Reflow test 2 times.	ΔF≤±2ppm
9.5 High Temperature Exposure	85°C±3°C , 1000hrs±12hrs	ΔF≤±2ppm
9.6 Vibration Test	Freq.range: 10~2000Hz , Peak to peak amplitude:1.52mm Peak acceleration:5G (49m/s <sup>2</sup> ) , 3 direction(X, Y,Z) , 20min 12cycles each of 3 orientations.	ΔF≤±2ppm
9.7 Mechanical Shock	100G , 6mS , 3 times for each direction(X, Y, Z) , 3 cycles	ΔF≤±2ppm
9.8 Physical Dimension	Verify physical dimensions to the applicable device detail specification.	
9.9 Solderability	260°C , Coated > 95%	
9.10 Board Flex	PCB=100*40(mm) , Bending=2 mm (min) , Duration=60+5/-0 sec	ΔF≤±2ppm
9.11 External Visual	Inspect device construction and marking.	
9.12 Terminal Strength	A force of 17.7N for 60 seconds.	ΔF≤±2ppm