

APPROVAL SHEET

Customer Name : _____
 Customer P/N : _____
 Frequency : 48.000000 MHz
 Aker Approved P/N: CXAF-048000-3-D4-05
 Aker MPN : CXAF-048000-3-D4-05
 Rev. : 1
 ISSUE DATE : Apr.7.2023

APPROVED	CHECKED	PREPARED
<i>Lee</i>		<i>Kiku</i>
APPROVED BY CUSTOMER		

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MSL:Level 1

RoHS compliant

IATF 16949 Certified

AEC-Q200 Qualified



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SMD CRYSTAL SPECIFICATION

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

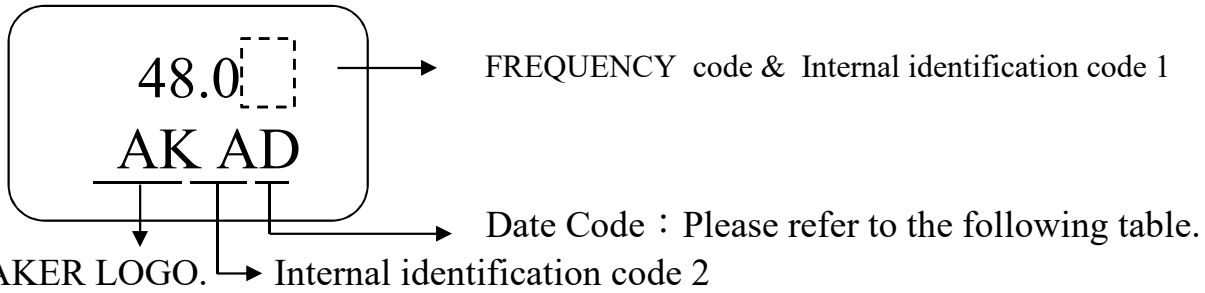
Relative humidity : 40%~70%

- AKER Model : CXAF-321
- Oscillation Mode : Fundamental
- Cutting Mode : AT CUT
- Measurement Equipment : 250B(Measured FL)
- Insulation Resistance : More than 500M ohms at DC 100V

Parameters	Symbol	Electrical Spec				Notes
		Min.	Typ.	Max.	Units.	
Nominal Frequency	FL	48.000000			MHz	
Frequency Tolerance		±10			ppm	at 25°C ± 3°C
Frequency Stability		±20			ppm	Operating Temp (Refer 25°C)
Load Capacitance	CL	10			pF	
Aging		±3			ppm	First Year
Operating Temperature		-40	~	85	°C	
Storage Temperature Range		-55	~	150	°C	
Drive Level	DL			100	uW	
Equivalent Series Resistance	ESR			40	Ω	@Series
Shunt Capacitance	C0		1.09		pF	
Motional Capacitance	C1		3.65		fF	
Motional Inductance	L1		3.01		mH	

Please kindly be noted that AKER DO NOT guarantee parts quality which involves human security application.

2 . MARKING :



Date Code Table

Month / Year			1	2	3	4	5	6	7	8	9	10	11	12
2019	2023	(4N+3)	A	B	C	D	E	F	G	H	J	K	L	M
2020	2024	(4N+0)	N	P	Q	R	S	T	U	V	W	X	Y	Z
2021	2025	(4N+1)	a	b	c	d	e	f	g	h	j	k	l	m
2022	2026	(4N+2)	n	p	q	r	s	t	u	v	w	x	y	z

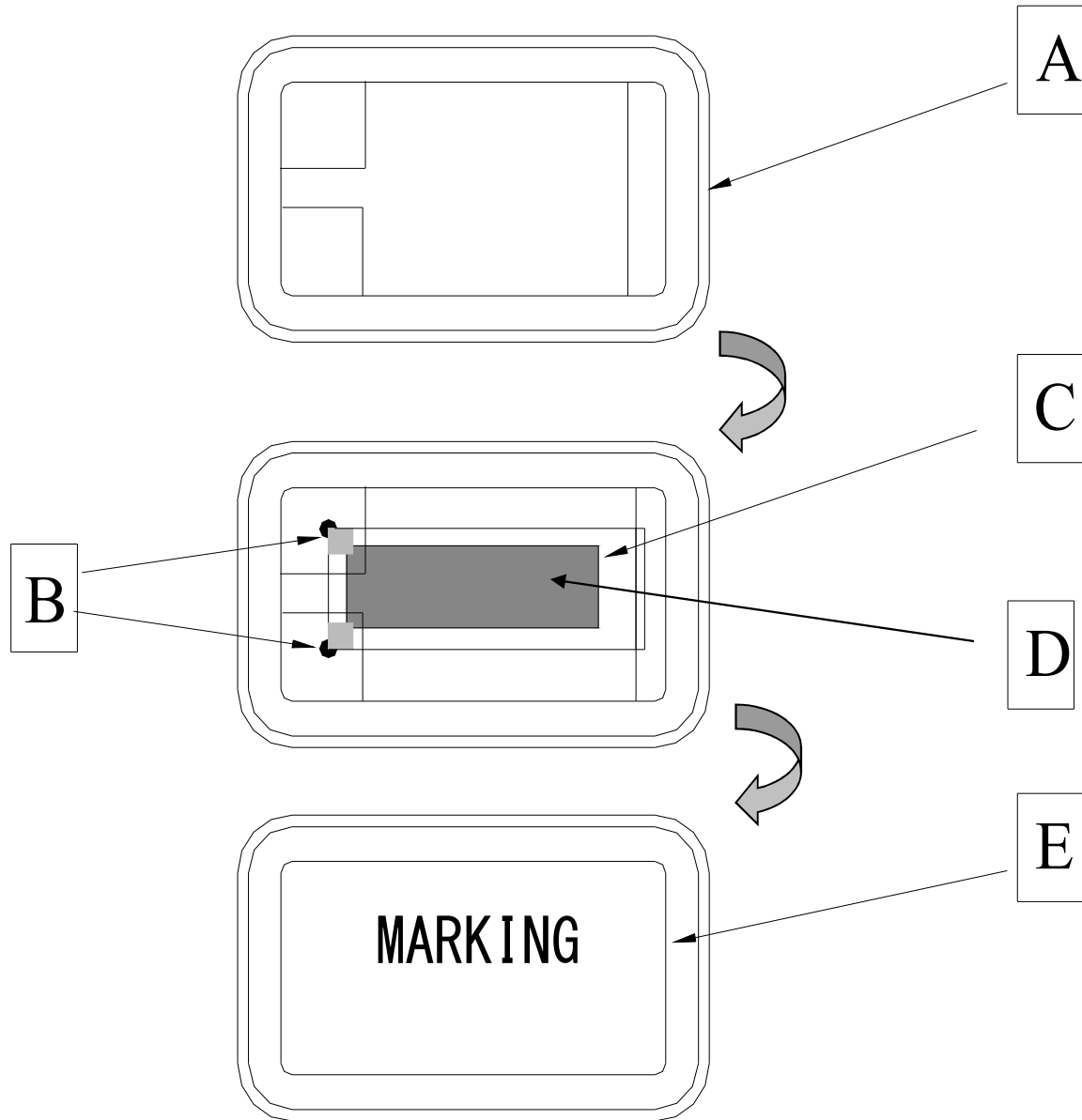
A cycle every four years

3 . DIMENSION :

(Unit : mm)



4. STRUCTURE ILLUSTRATION

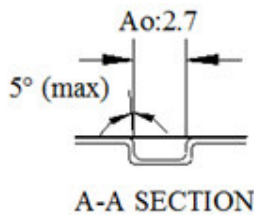
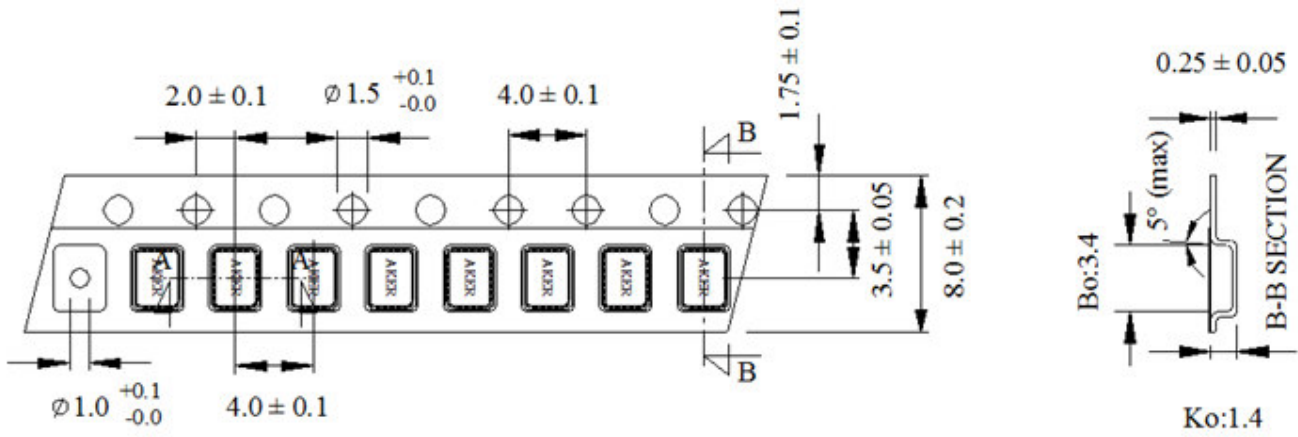


COMPONENTS		MATERIALS	COMPONENTS		MATERIALS
A	Base (Package)	Ceramic(Al_2O_3)+Kovar(Fe/Co/Ni)	D	Electrode	Cr / Ag
B	Conductive adhesive	Ag / Silicon resin	E	Lid	Fe/Co/Ni
C	Crystal blank	SiO_2			

5. PACKING :

TAPE SPECIFICATION

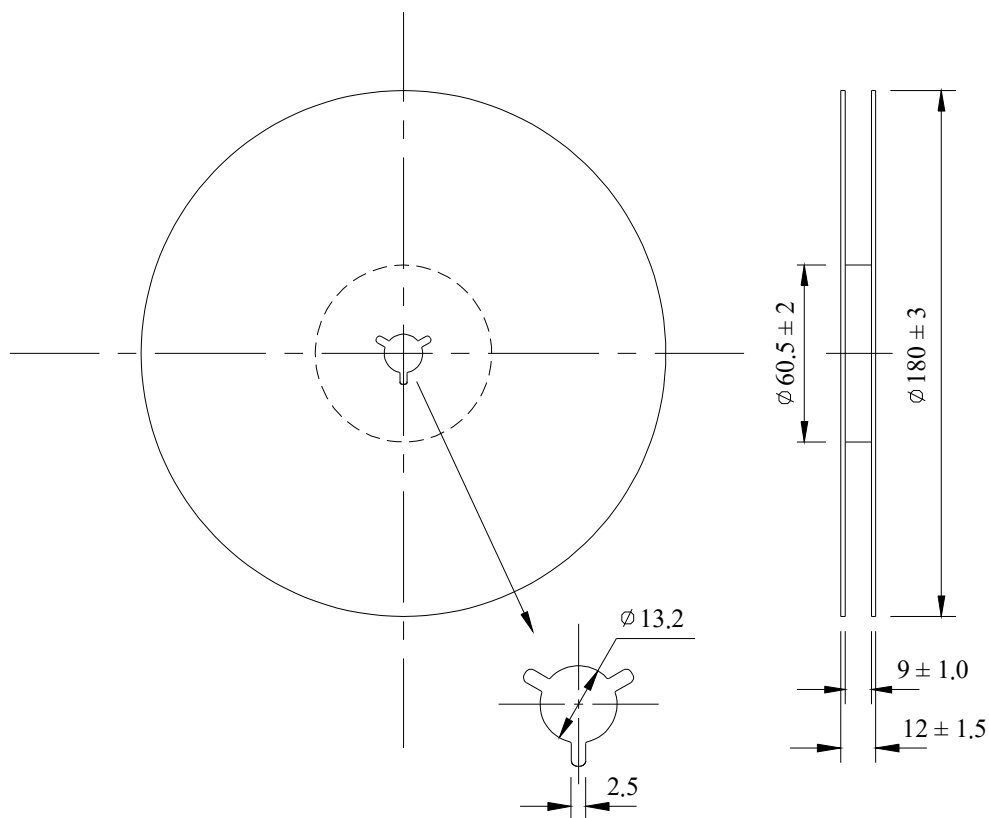
(Unit : mm)



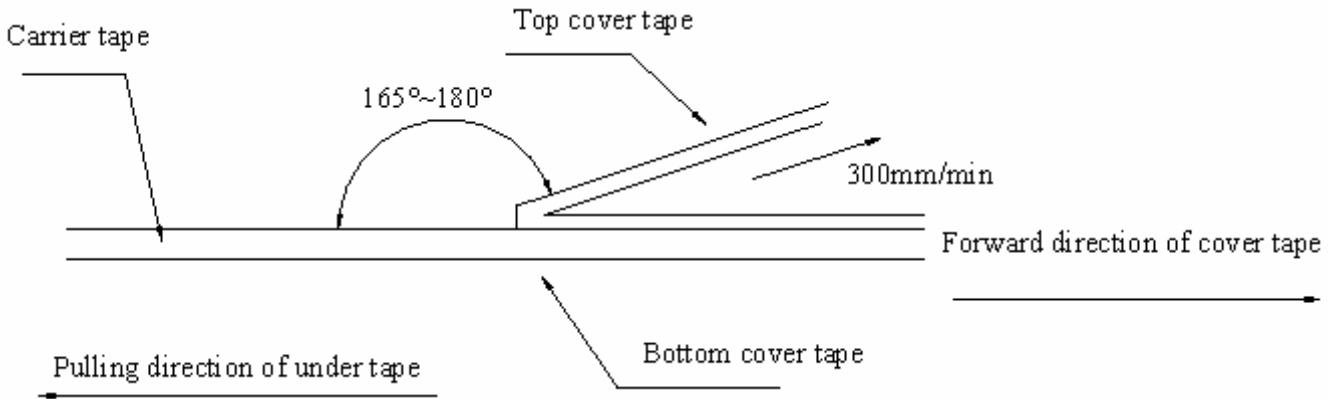
Feeding →

OUTLINE DIMENSION

(Unit : mm)



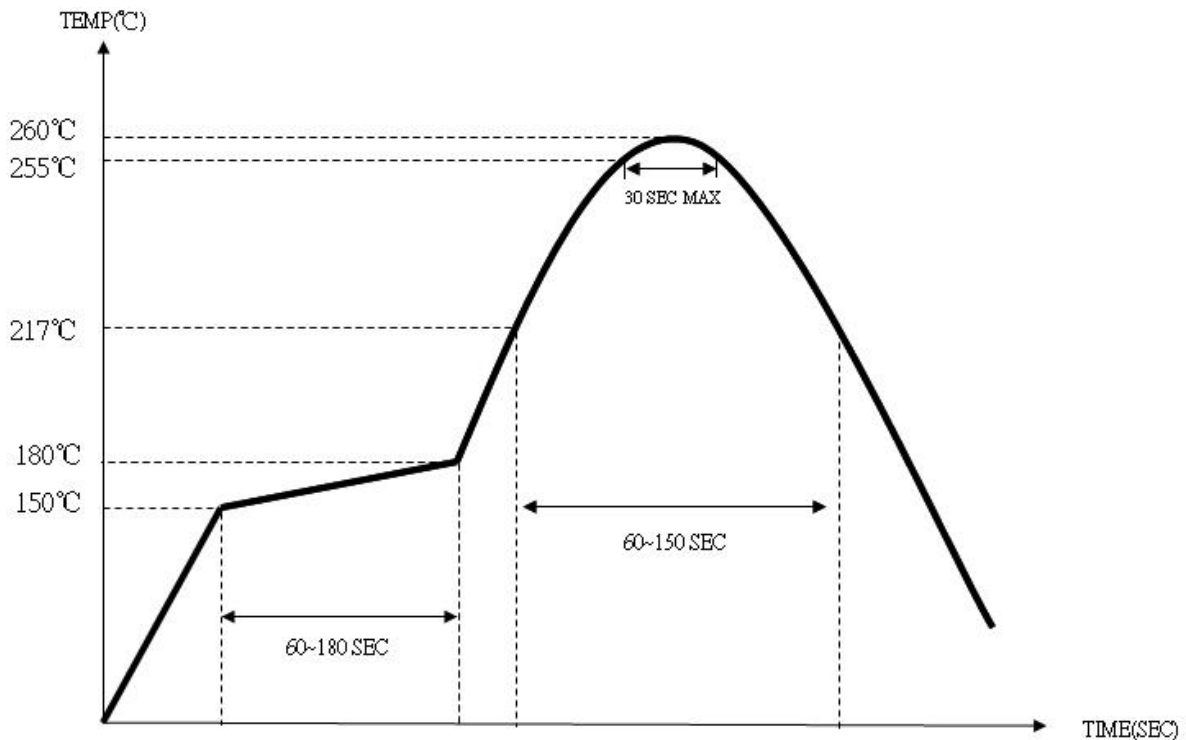
6. COVER TAPE ADHESION STRENGTH :



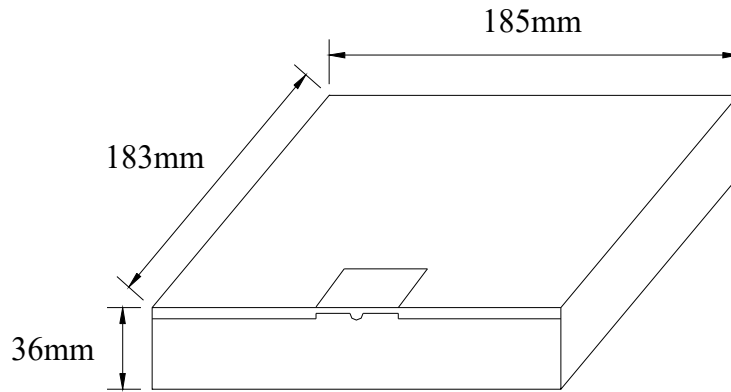
*** In the case, the cover tape is pulled off under the above conditions, the cover tape adhesion strength should be 10.2g~71.4g Plastic tape: 10.2g~71.4g

(Cover tape adhesion strength)

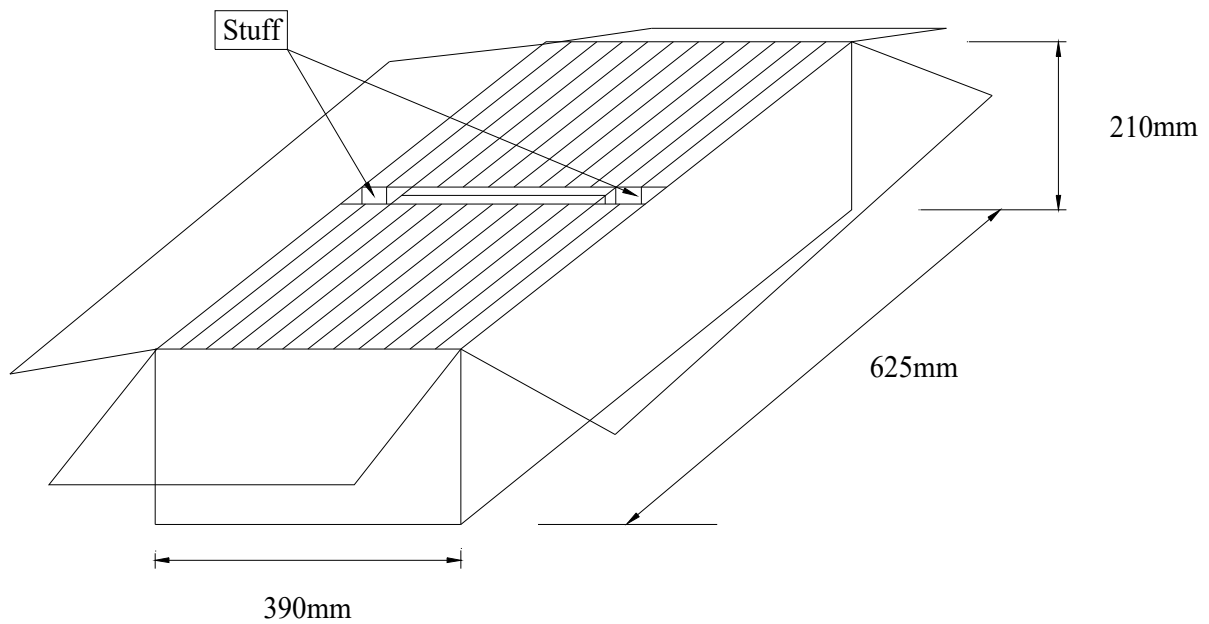
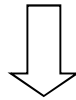
7. SOLDERING REFLOW PROFILE



8. PACKING :



BOX = 3000 PCS / REEL(MAX)



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



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9 . MECHANICAL PERFORMANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
9.1 Temperature Cycling	-55±3°C/30min maximum~+125±3°C/30min maximum , 1000cycles	To satisfy the electrical performance .
9.2 Operational Life	125°C±3°C , 1000hrs±12hrs	
9.3 Biased Humidity	85°C±5°C&85%±5%R.H. , 1000±12hrs	
9.4 Resistance To Soldering Heat Test	Reflow test 2 times.	
9.5 High Temperature Exposure	150°C±3°C , 1000hrs±12hrs	
9.6 Vibration Test	Freq.range: 10~2000Hz , Peak to peak amplitude:1.52mm Peak acceleration:5G (49m/s ²) , 3 direction(X, Y,Z) , 20min 12cycles each of 3 orientations.	
9.7 Mechanical Shock	100G , 6mS , 3 times for each direction(X, Y, Z) , 3 cycles	
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	
9.11 External Visual	Inspect device construction and marking.	
9.12 Terminal Strength	A force of 17.7N for 60 seconds.	