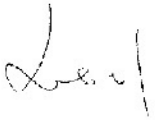


APPROVAL SHEET

Customer Name : _____
Customer P/N : _____
Frequency : 13.000000 MHz
Aker Approved P/N: CXAF-013000-3-AL-01
Aker MPN : CXAF-013000-3-AL-01
Rev. : 1
ISSUE DATE : Oct.24.2022

APPROVED	CHECKED	PREPARED
		Jimmy
APPROVED BY CUSTOMER		

AKER TECHNOLOGY CO., LTD.

ADDRESS : NO 11-3, Jianguo Rd., Tanzi Dist., Taichung City 427, Taiwan.

TEL : 886-4-25335978 FAX : 886-4-25336011

Web: www.aker.com.tw

MSL:Level 1

RoHS compliant

IATF 16949 Certified

AEC-Q200 Qualified



REV. : 1

Confidential

[illegible]

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 : $25 \pm 5^{\circ}\text{C}$

Relative humidity : 40%~70%

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

Ambient temperature : $25 \pm 3^{\circ}\text{C}$

Relative humidity : 40%~70%

■ AKER Model : CXAF-321

■ Oscillation Mode : Fundamental

■ Cutting Mode : AT CUT

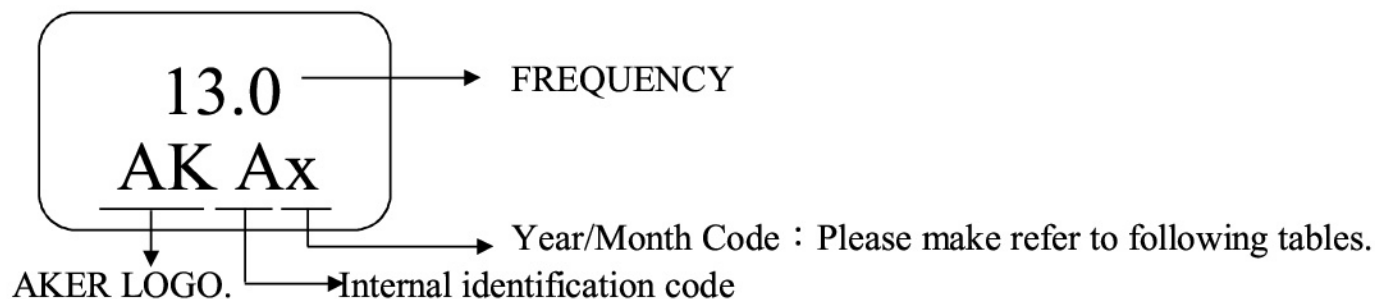
■ Measurement Equipment : 250B(Measured FL)

■ Insulation Resistance : More than 500M ohms at DC 100V

Parameters	Symbol	Electrical Spec				Notes
		Min.	Typ.	Max.	Units.	
Nominal Frequency	FL	13.000000			MHz	
Frequency Tolerance		± 20			ppm	at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
Frequency Stability		± 30			ppm	Operating Temp (Refer 25°C)
Load Capacitance	CL	12			pF	
Aging		± 12			ppm	10 Years
Operating Temperature		-40	~	85	$^{\circ}\text{C}$	
Storage Temperature Range		-55	~	150	$^{\circ}\text{C}$	
Drive Level	DL		10	100	μW	
Equivalent Series Resistance	ESR			60	Ω	@Series
Shunt Capacitance	C0			3	pF	

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

2. MARKING :



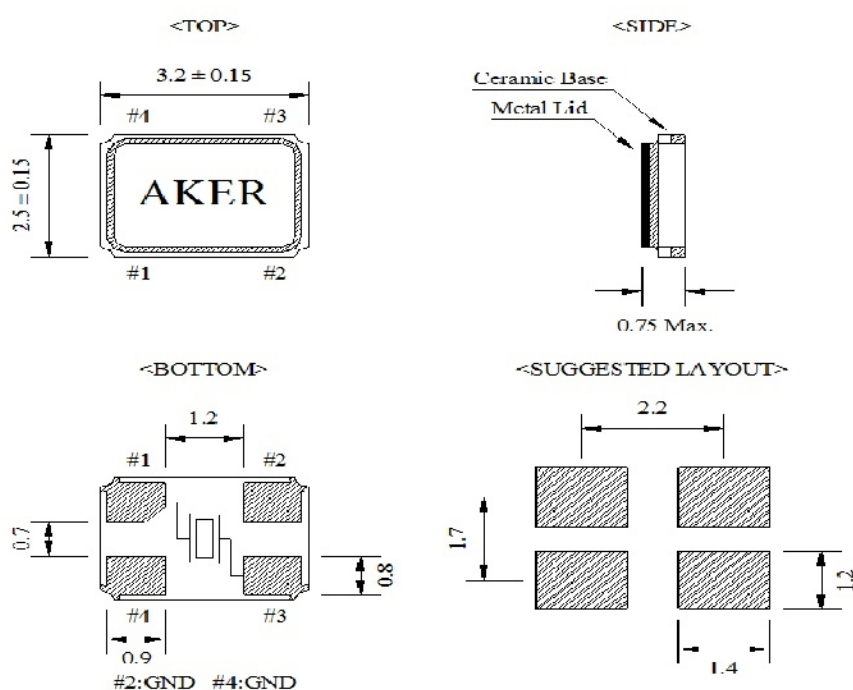
Date Code Guide

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

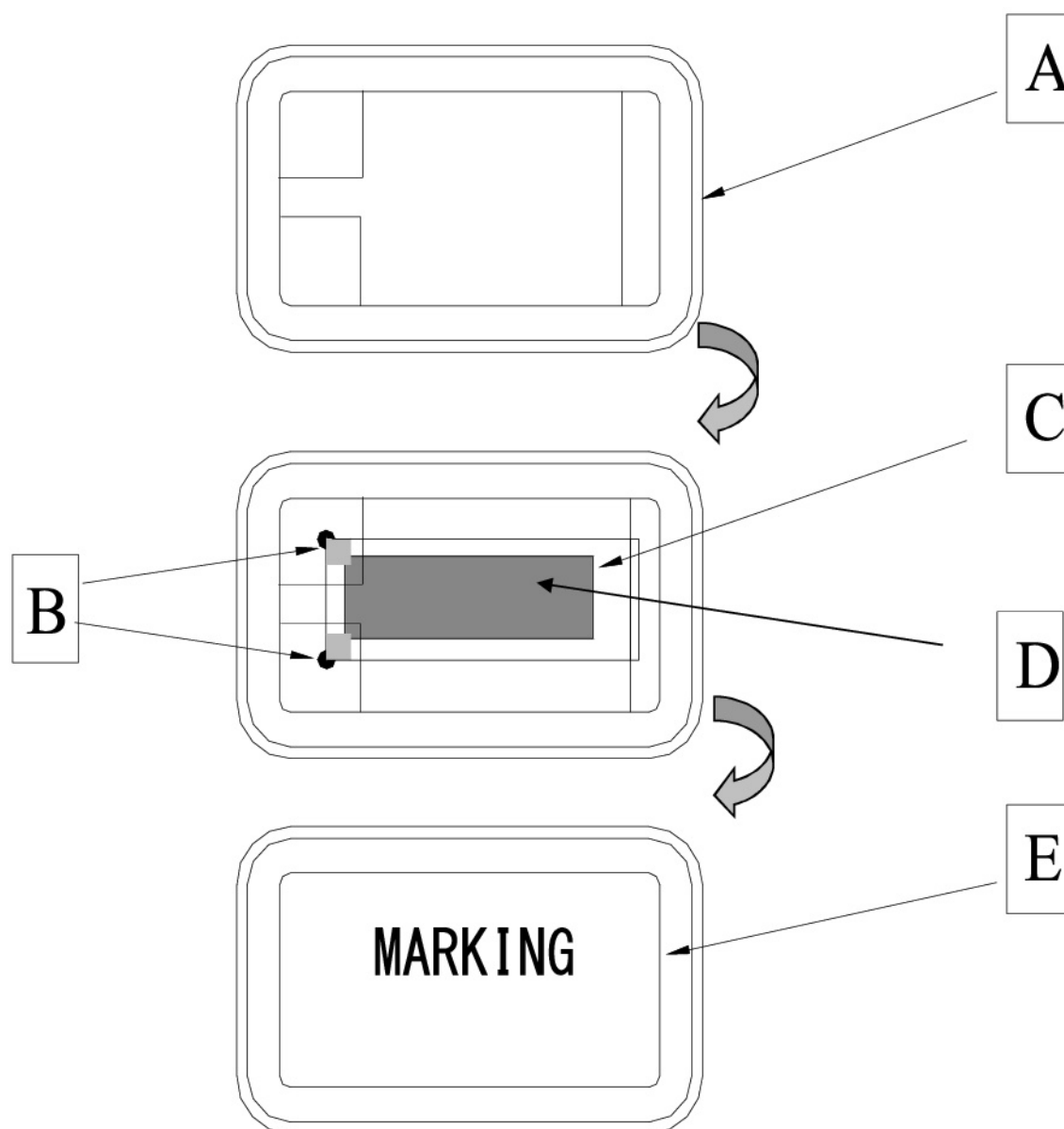
A cycle every four years

3. DIMENSION :

(Unit : mm)

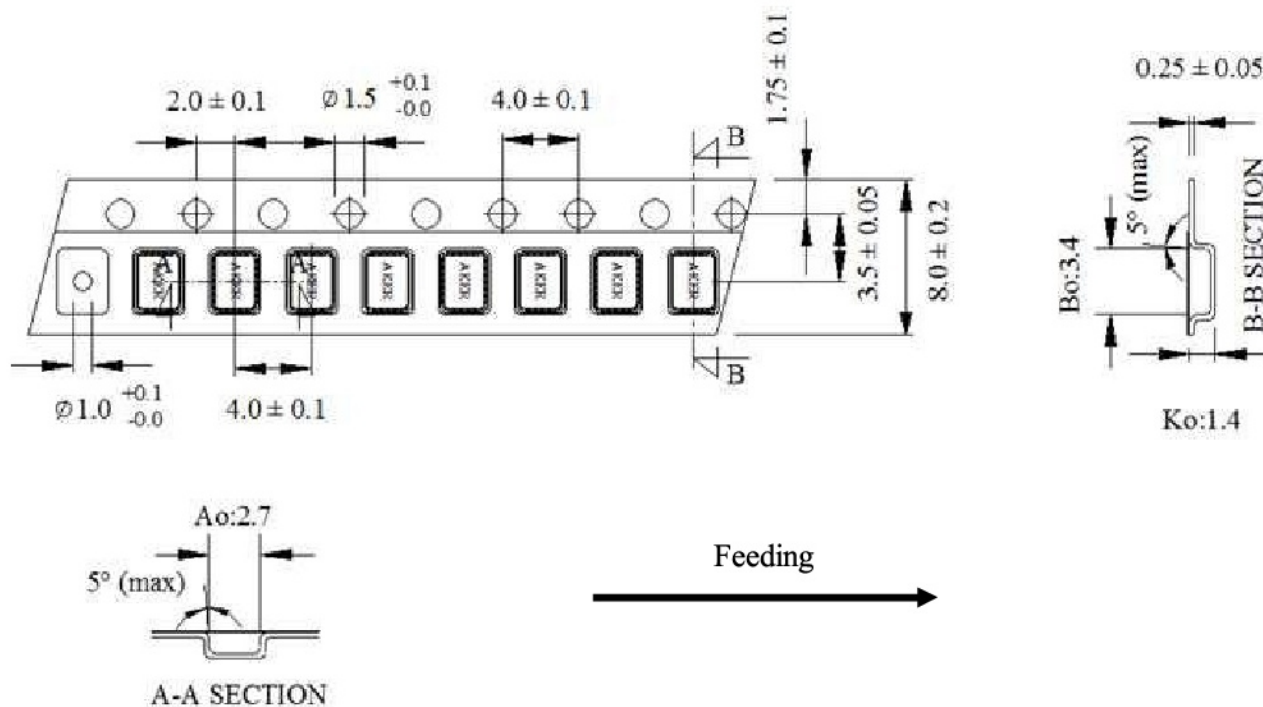


4. STRUCTURE ILLUSTRATION

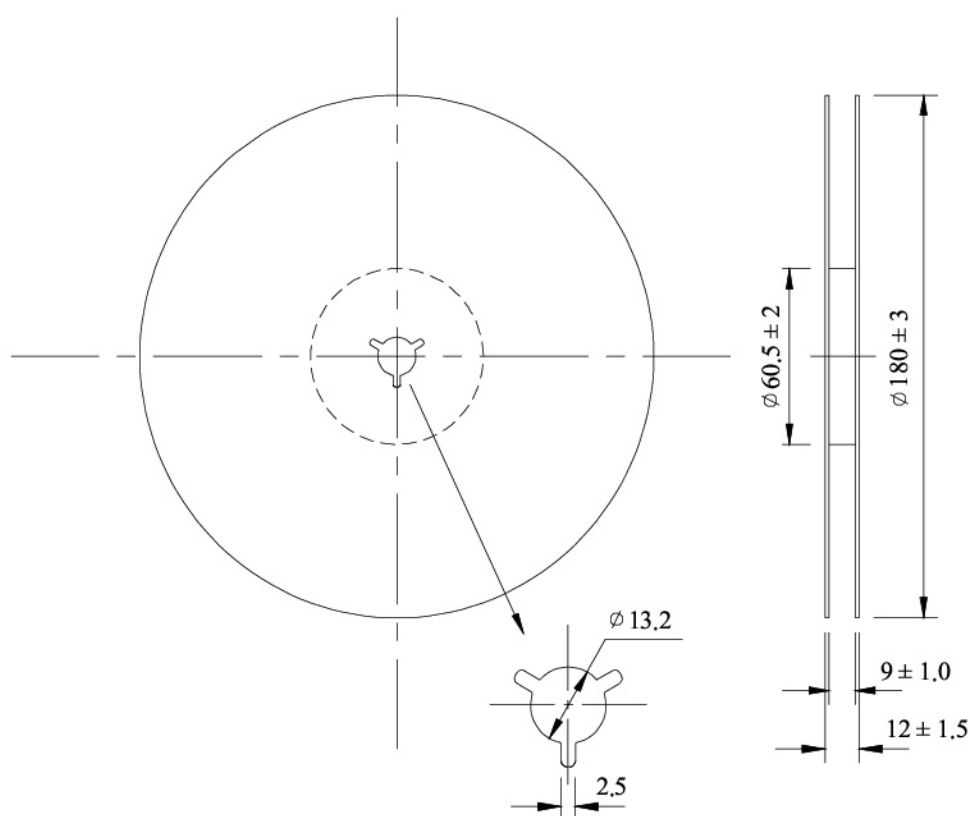


COMPONENTS		MATERIALS	COMPONENTS		MATERIALS
A	Base (Package)	Ceramic(Al_2O_3)+Kovar($\text{Fe}/\text{Co}/\text{Ni}$)	D	Electrode	Cr / Ag
B	Conductive adhesive	Ag / Silicon resin	E	Lid	Fe/Co/Ni
C	Crystal blank	SiO_2			

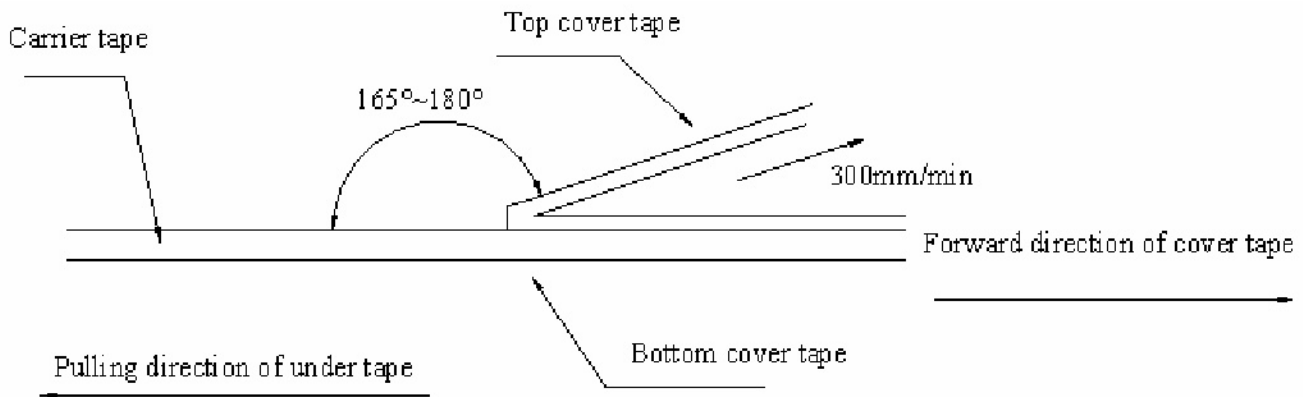
(Unit : mm)



(Unit : mm)



6. COVER TAPE ADHESION STRENGTH :

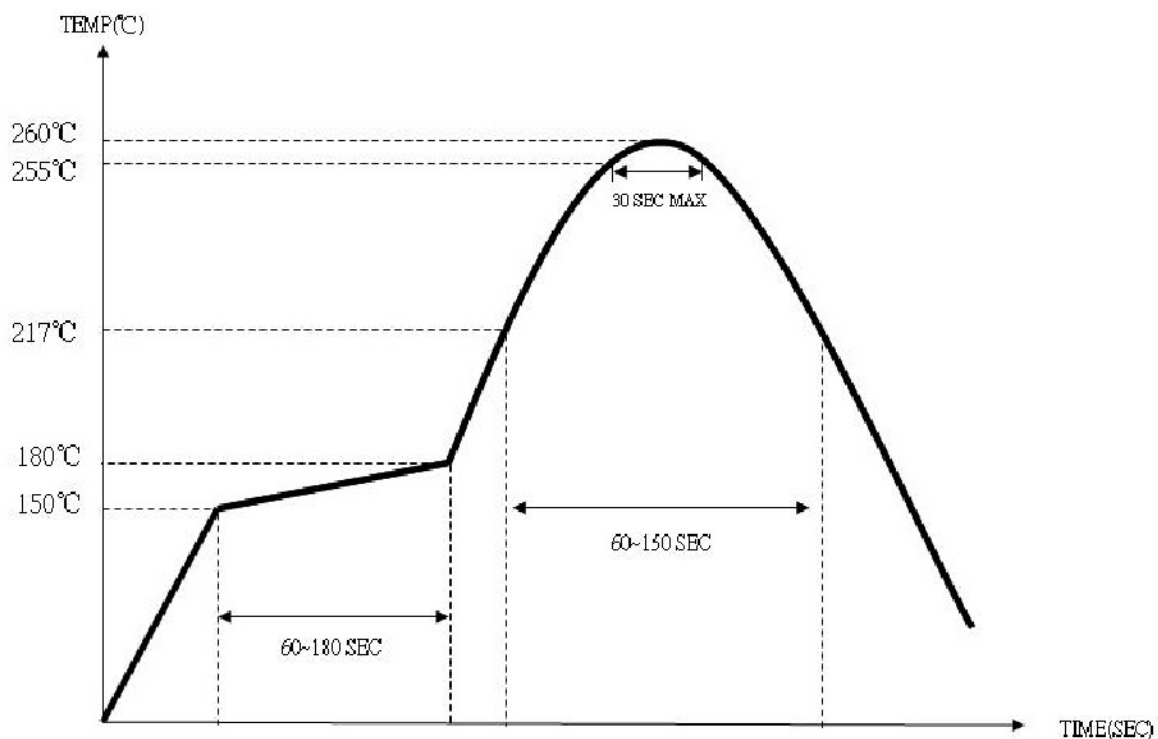


*** In the case, the cover tape is pulled off under the above conditions, the cover tape adhesion strength should be $10.2\text{g} \sim 71.4\text{g}$

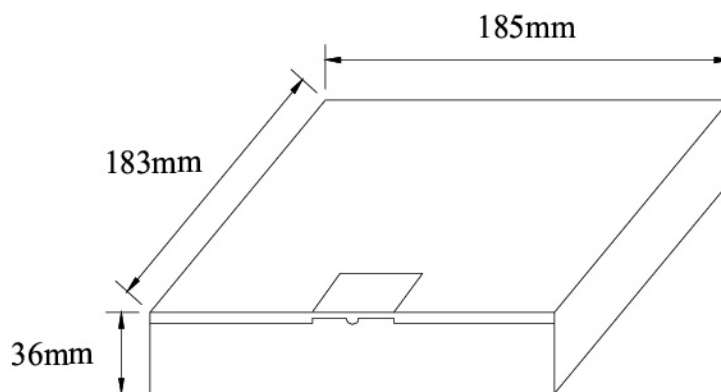
Plastic tape: $10.2\text{g} \sim 71.4\text{g}$

(Cover tape adhesion strength)

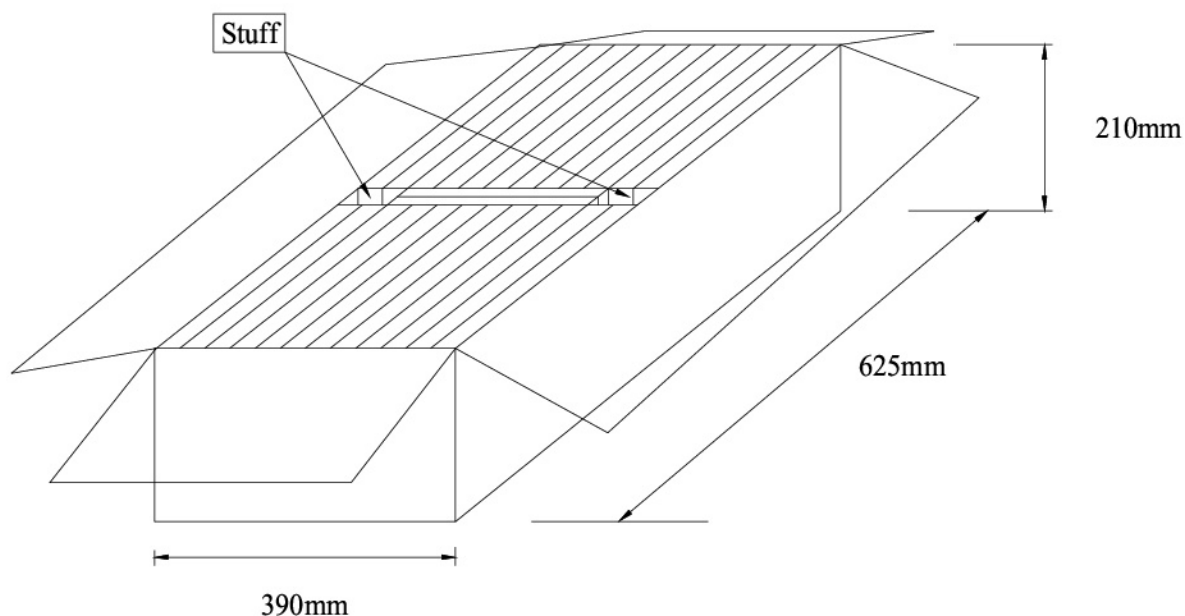
7. SOLDERING REFLOW PROFILE



8. PACKING :



BOX = 3000 PCS / REEL(MAX)



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

9. MECHANICAL PERFORMANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
9.1 Temperature Cycling	-55±3℃/30min maximum~+125±3℃/30min maximum , 1000cycles	To satisfy the electrical performance .
9.2 Operational Life	125℃±3℃ , 1000hrs±12hrs	
9.3 Biased Humidity	85℃±5℃&85%±5%R.H. , 1000±12hrs	
9.4 Resistance To Soldering Heat Test	Reflow test 2 times.	
9.5 High Temperature Exposure	150℃±3℃ , 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℃ , 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.	