

# APPROVAL SHEET

Customer Name : \_\_\_\_\_  
Customer P/N : \_\_\_\_\_  
Frequency : 13.553125 MHz  
Aker Approved P/N: CXF-013553-3E7X40  
Aker MPN : CXF-013553-3E7X40  
Rev. : 1  
ISSUE DATE : Oct.27.2017

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

**AKER TECHNOLOGY CO., LTD.**

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**RoHS compliant**  
**TS-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

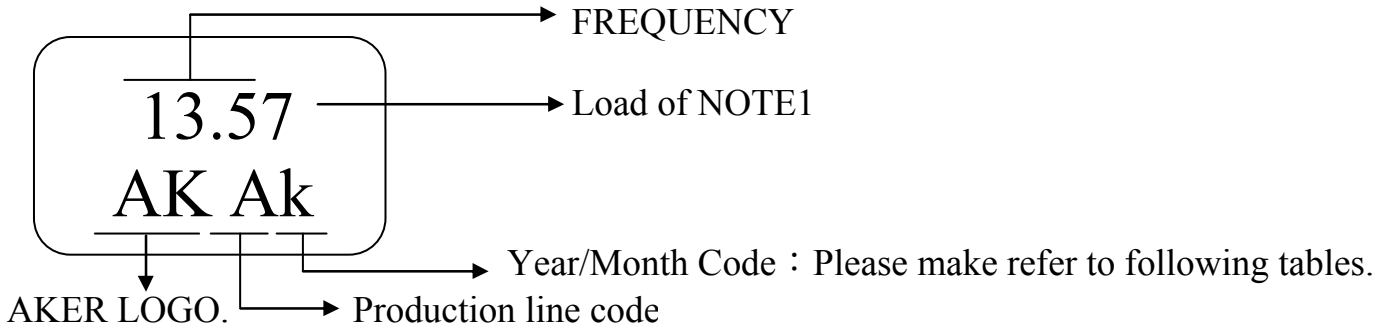
Relative humidity : 40%~70%

- AKER Model : CXF-321
- Oscillation Model : Fundamental
- Cutting Model : AT CUT
- Measurement Equipment : 350A(Measured FL)
- Insulation Resistance : More than 500M ohms at DC 100V

Parameters	Symbol	Electrical Spec				Notes
		Min.	Typ.	Max.	Units.	
Nominal Frequency	FL	13.553125			MHz	
Frequency Tolerance		±15			ppm	at 25°C ± 3°C
Frequency Stability		±30			ppm	Operating Temp (Refer 25°C)
Load Capacitance	CL	12			pF	
Aging		±3			ppm	Year
Operating Temperature		-40	~	85	°C	
Storage Temperature Range		-55	~	125	°C	
Drive Level	DL			100	uW	
Effective Resistance Rr	Rr			100	Ω	
Shunt Capacitance	C0			3	pF	

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

## 2. MARKING :



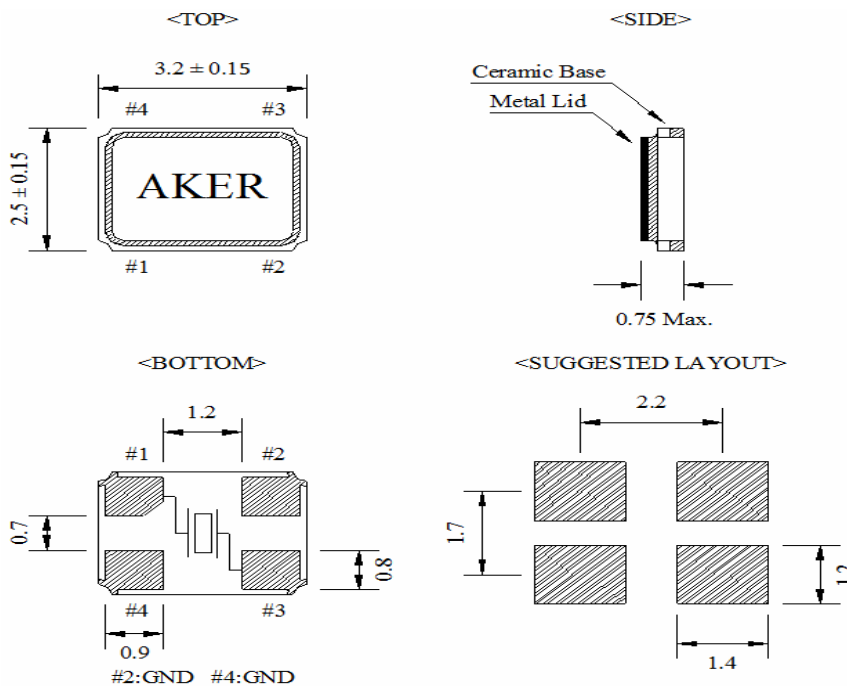
### NOTE 1 :

CODE	CL	CODE	CL	CODE	CL	CODE	CL
0	0pF	9	14pF	K	9.5pF	U	8.5pF
1	16pF	A	32pF	L	19.5pF	V	24pF
2	22pF	B	27pF	M	21.5pF	W	4pF
3	15pF	C	8pF	N	33pF	X	39pF
4	20pF	D	37pF	P	7pF	Y	26pF
5	30pF	E	25pF	Q	15.5pF	Z	7.2pF
6	18pF	F	35pF	R	12.5pF	a	17pF
7	12pF	G	13pF	S	11pF	b	9.85pF
8	10pF	H	9pF	T	6pF	d	5pF

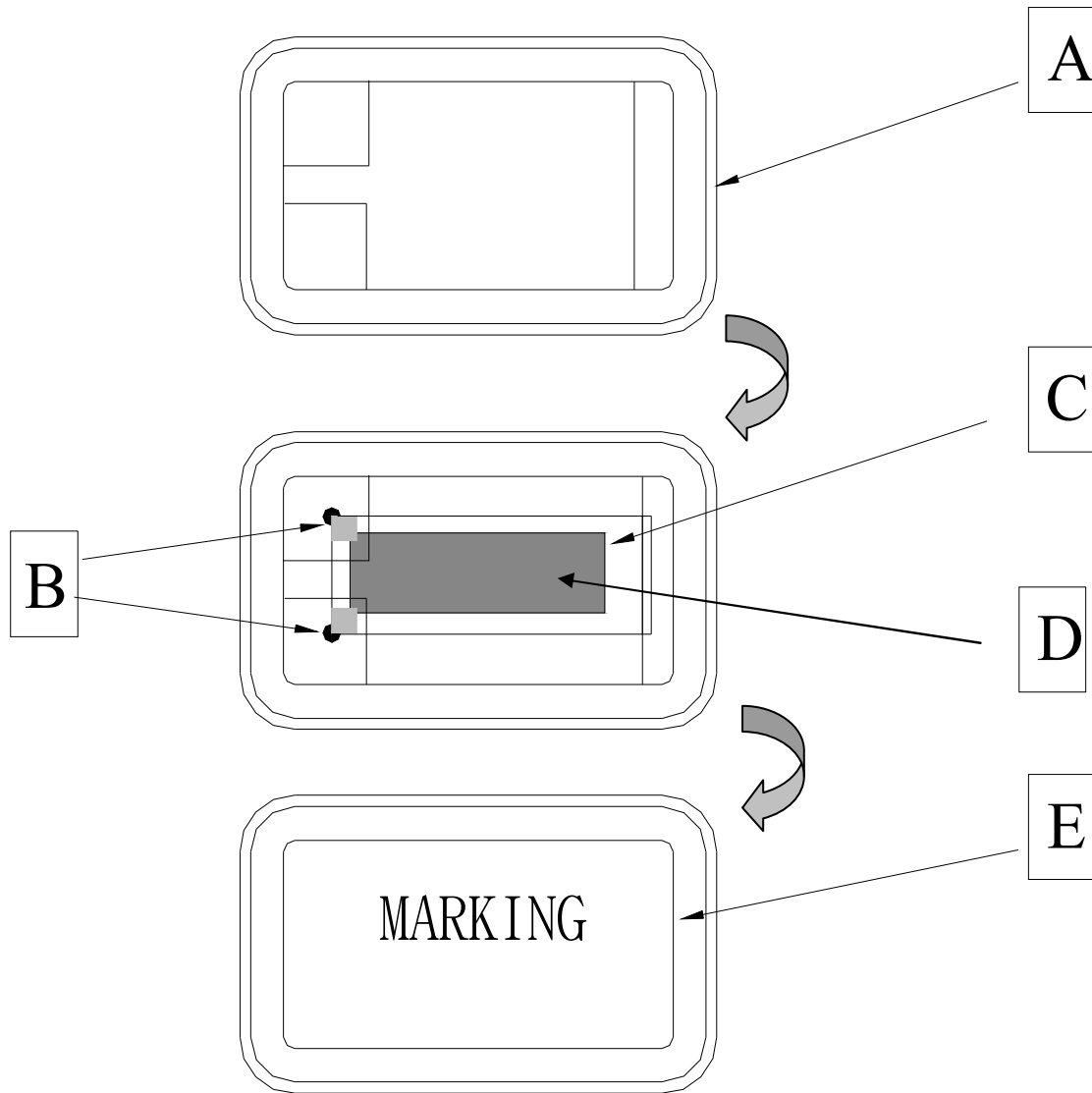
Year	2007	2008	2009	2010
	2011	2012	2013	2014
2015	2016	2017	2018	
2019	2020	2021	2022	
2023	2024	2025	2026	
Month	JAN	FEB	MAR	APR
MAY	JUN	JUL	AUG	SEP
OCT	NOV	DEC		
	A	B	C	D
	E	F	G	H
	J	K	L	M
	N	P	Q	R
	S	T	U	V
	W	X	Y	Z
	a	b	c	d
	e	f	g	h
	i	j	k	l
	m	n	o	p
	q	r	s	t
	u	v	w	x
	y	z		

## 3. DIMENSION :

( Unit : mm )



#### 4. STRUCTURE ILLUSTRATION



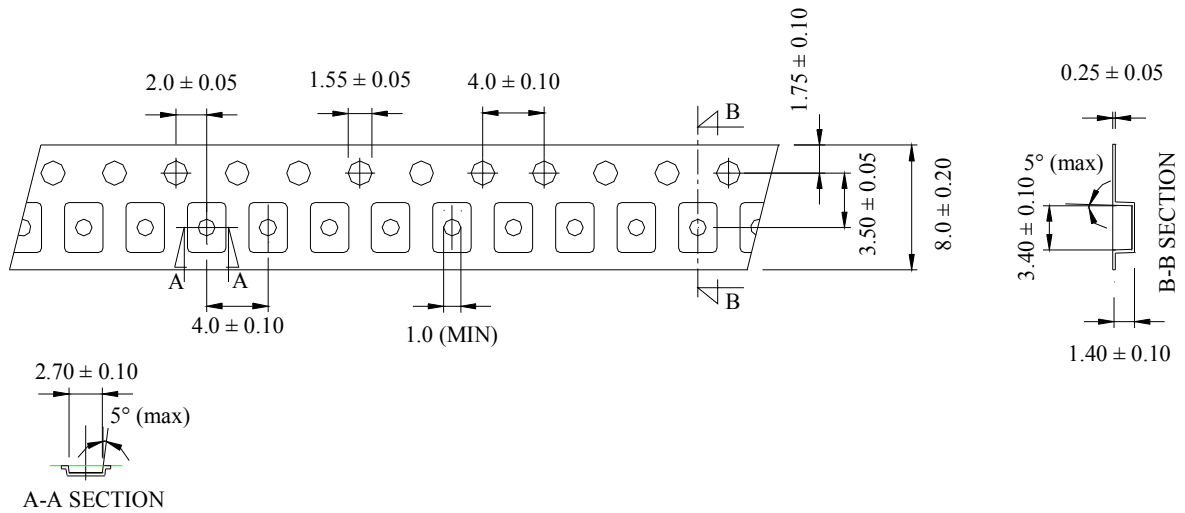
COMPONENTS		MATERIALS	COMPONENTS		MATERIALS
A	Base (Package)	Ceramic( $Al_2O_3$ )+Kovar(Fe/Co/Ni)	D	Electrode	Cr / Ag
B	Conductive adhesive	Ag / Silicon resin	E	Lid	Fe/Co/Ni
C	Crystal blank	$SiO_2$			

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### 5. PACKING :

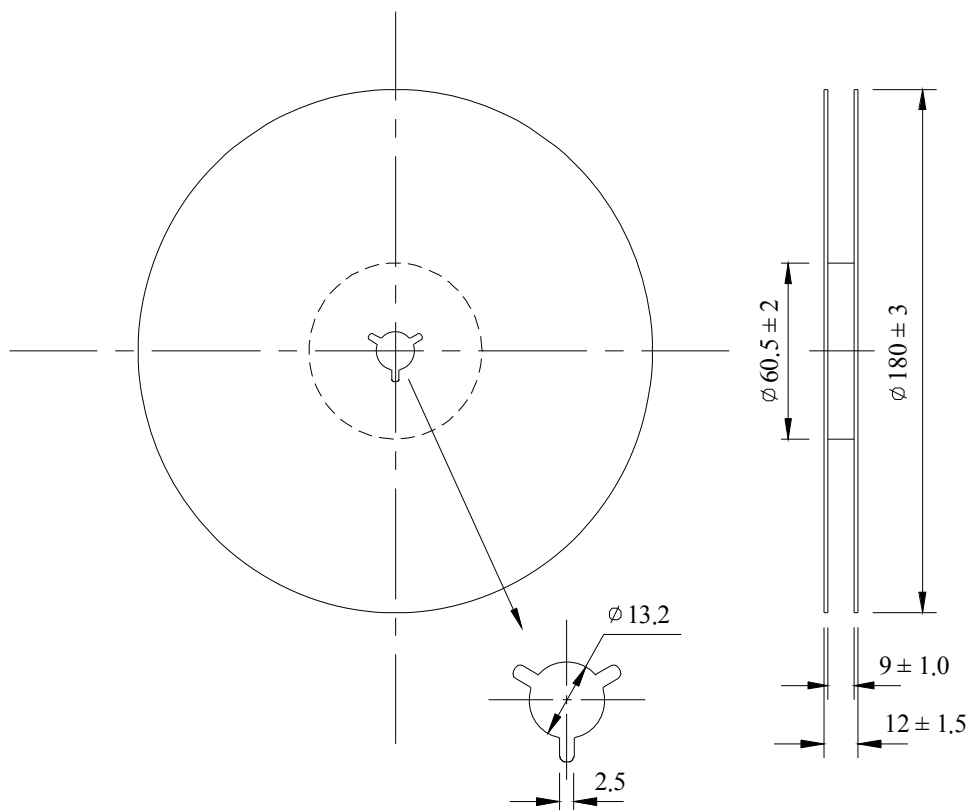
#### TAPE SPECIFICATION

( Unit : mm )



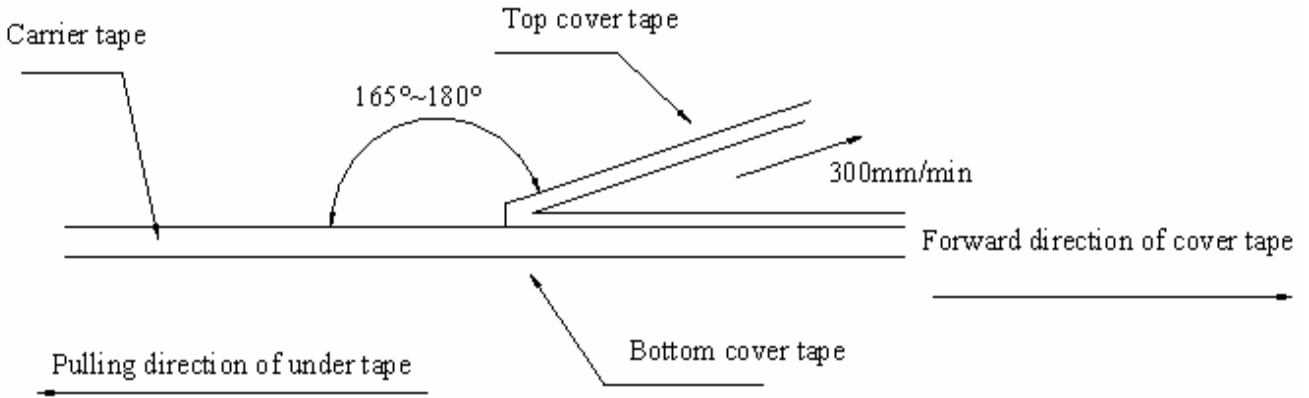
#### OUTLINE DIMENSION

( Unit : mm )



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## 6. COVER TAPE ADHESION STRENGTH :

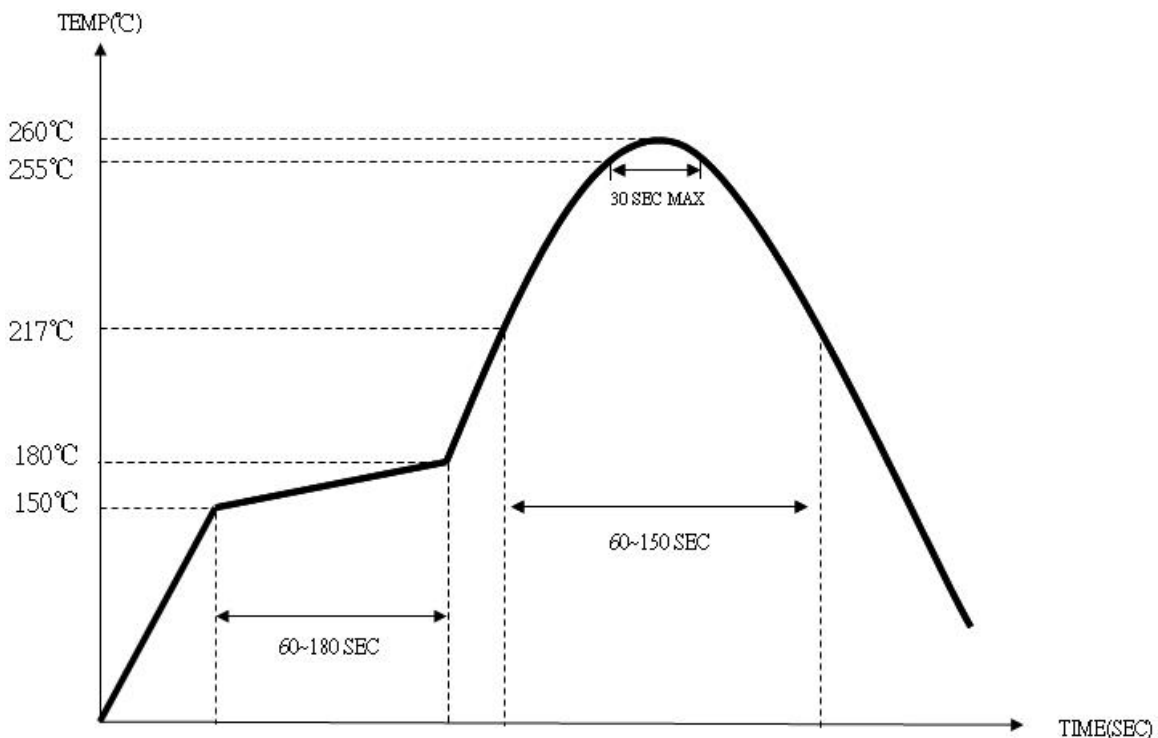


\*\*\* In the case, the cover tape is pulled off under the above conditions, the cover tape adhesion strength should be 10.2g~71.4g

Plastic tape: 10.2g~71.4g

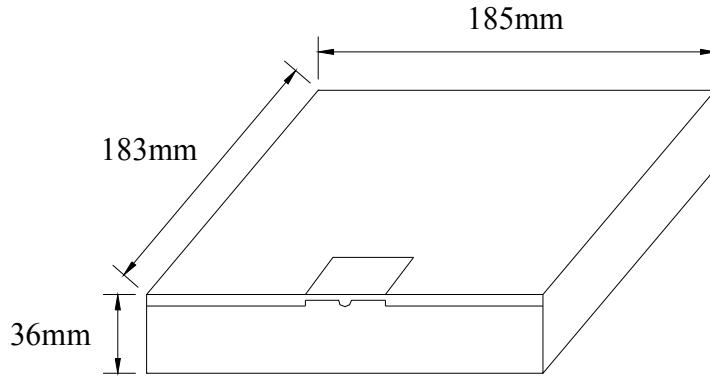
(Cover tape adhesion strength)

## 7. SOLDERING REFLOW PROFILE

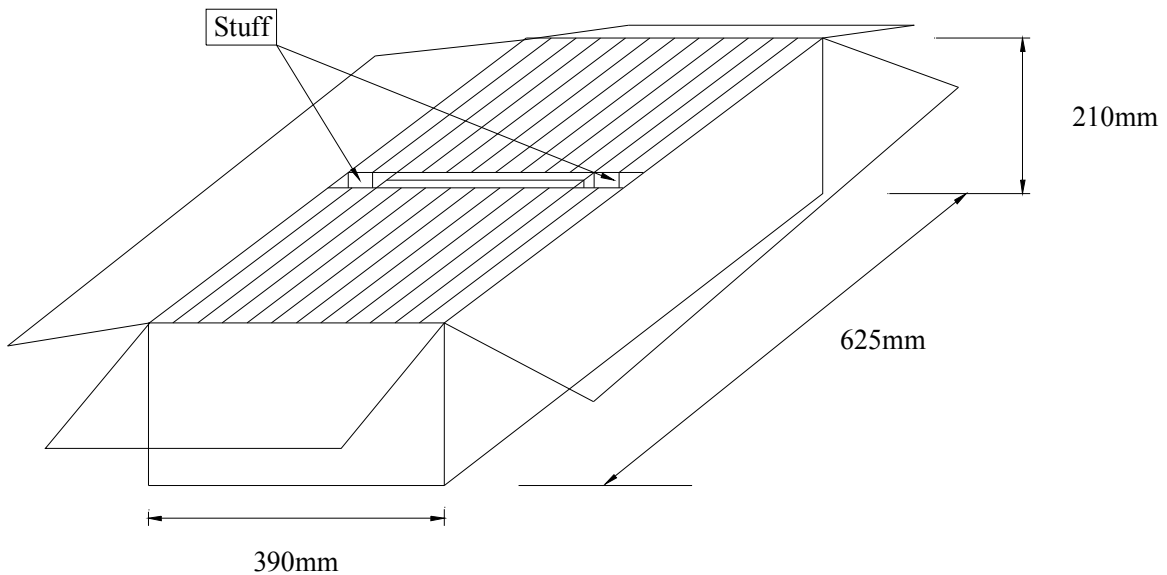
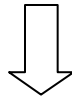


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## 8. PACKING :



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	-40±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	125°C±3°C , 1000hrs±12hrs	
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.	
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.	