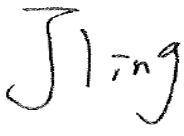


APPROVAL SHEET

Customer Name : _____
Customer P/N : _____
Frequency : 10.000000 MHz
Aker Approved P/N: VTON-010000-3-D4-00
Aker MPN : VTON-010000-3-D4-00
Rev. : 1
ISSUE DATE : Feb.10.2023

APPROVED	CHECKED	PREPARED
		
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



Confidential

[illegible]

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

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%

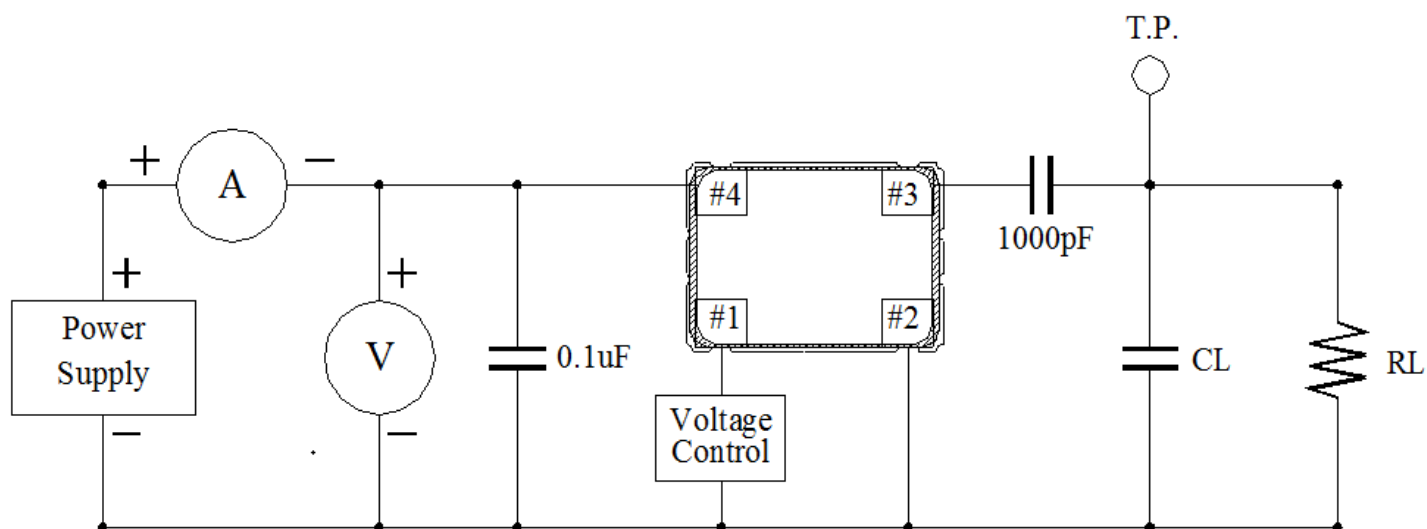
■ AKER Model : VTON-321

■ Cutting Mode : AT CUT

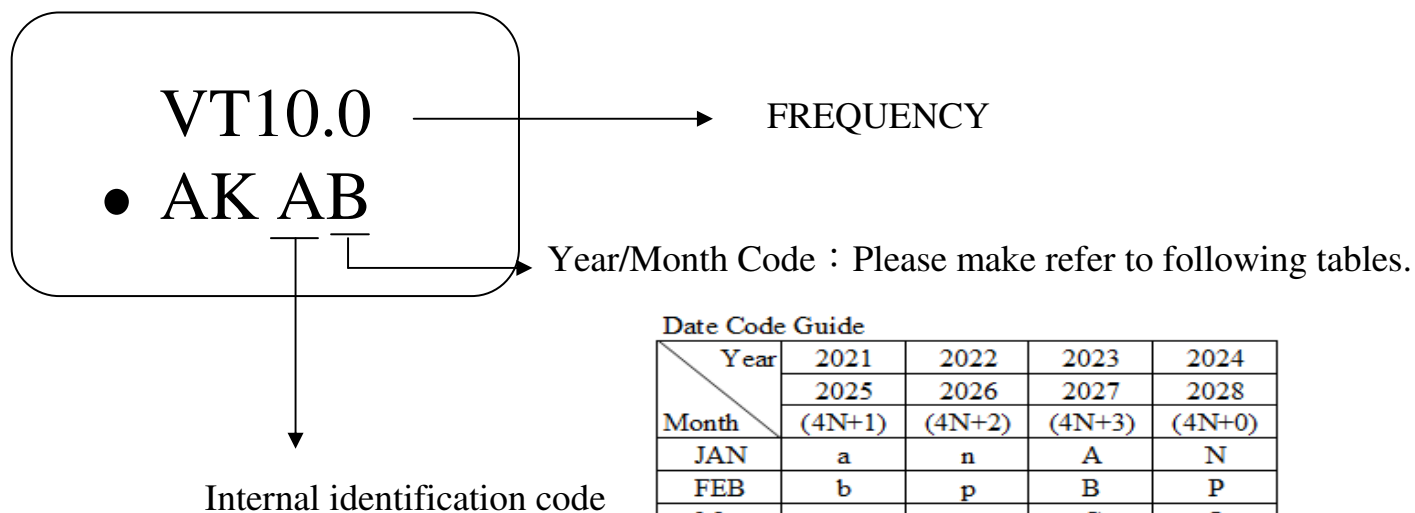
Parameters	Electrical Spec				Notes
	Min.	Typ.	Max.	Unit	
Nominal Frequency	10.000000			MHz	
Supply Voltage	3.135	3.3	3.465	V	
Frequency Tolerance (at 25°C)	-1.5	~	1.5	ppm	After 2 times reflow soldering
Frequency Stability Over Temperature	-2.0	~	2.0	ppm	Between minimum and maximum frequency value over the specified temperature range.
Frequency Stability Over Supply Voltage	-0.2	~	0.2	ppm	
Frequency Stability Vs Load	-0.2	~	0.2	ppm	$\pm 10\%$ Change
Operating Temperature Range	-40	~	85	$^{\circ}\text{C}$	
Storage Temperature Range	-40	~	85	$^{\circ}\text{C}$	
Current Consumption			2.0	mA	
Output Waveform	Clipped Sinewave				
Output Load	10K Ω // 10pF				
Output Voltage Level	0.8			V _{pp}	
VCTL	0.5	1.5	2.5	V	Positive slope(df/dv)
Pulling Range	± 8		± 15	ppm	
Phase Noise @100Hz Offset		-115		dBc/Hz	
Phase Noise @1Khz Offset		-131		dBc/Hz	
Phase Noise @10Khz Offset		-144		dBc/Hz	
Start Up Time			2.0	mSec	
Aging	-1.0	~	1.0	ppm	First Year

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

2 . VCTCXO TESTING CIRCUIT



3 .MARKING :



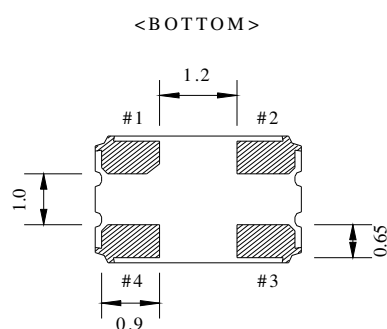
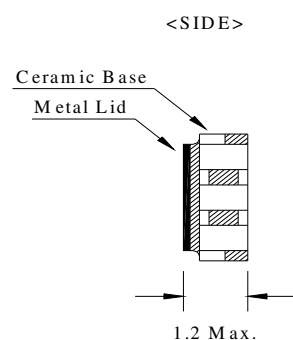
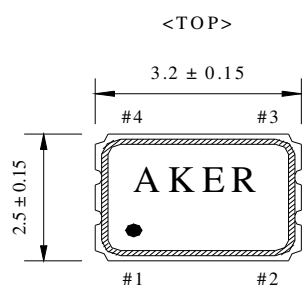
Date Code Guide

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

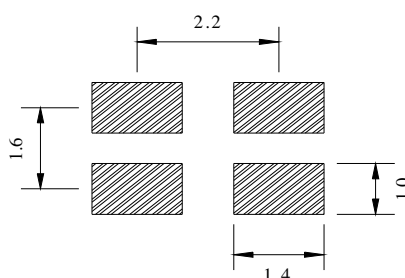
A cycle every four years

4 . DIMENSION :

(Unit : mm)



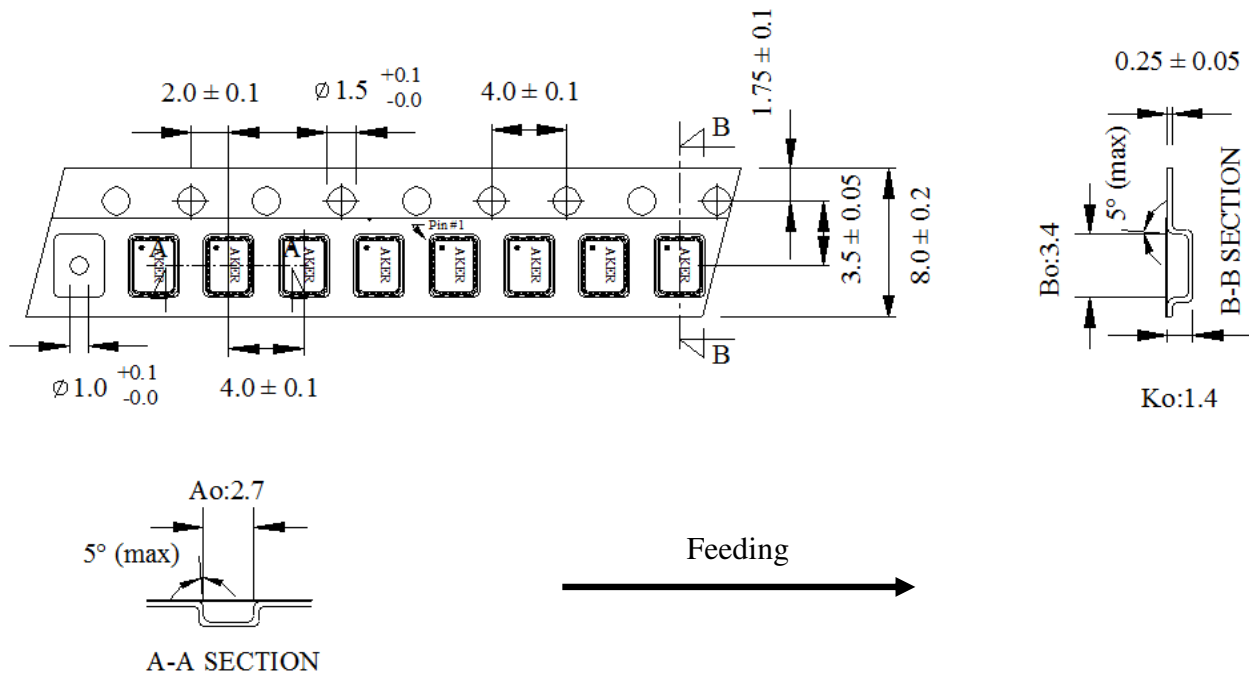
<SUGGESTED LAYOUT>



Pad	Connection
#1	VCON
#2	GND
#3	OUTPUT
#4	VDD

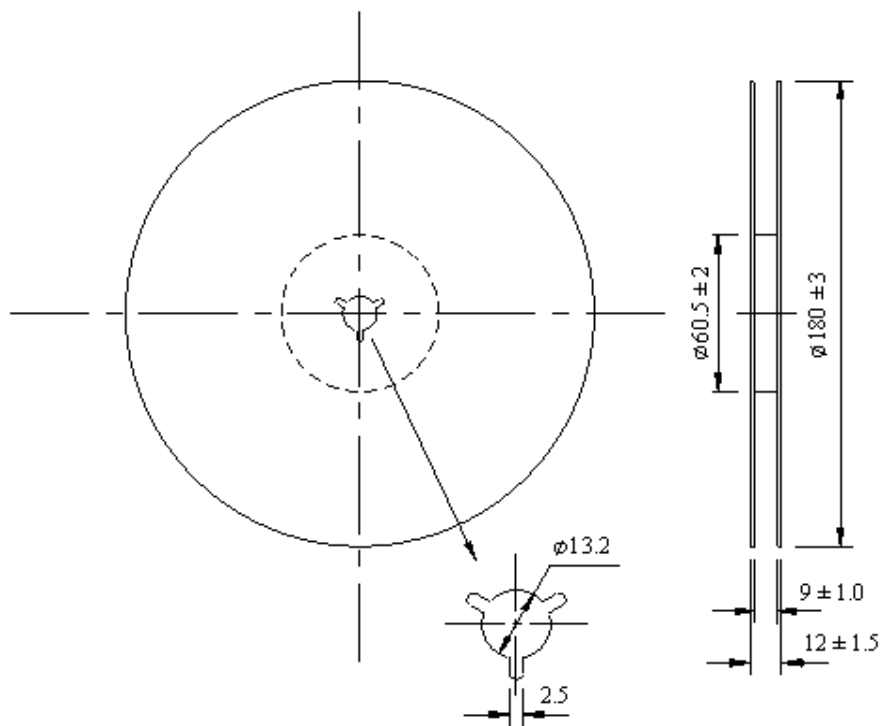
5. PACKING : TAPE SPECIFICATION

(Unit : mm)

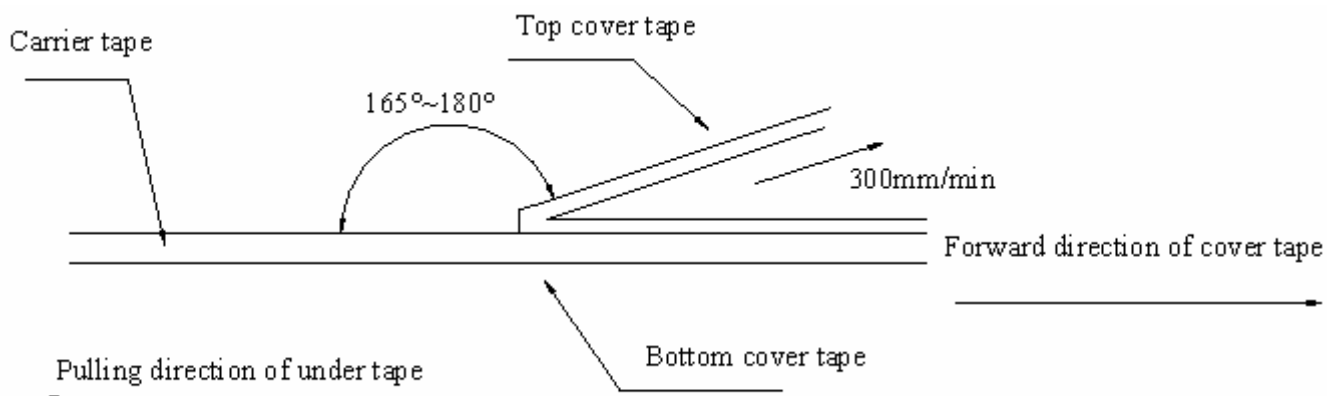


OUTLINE DIMENSION

(Unit : mm)



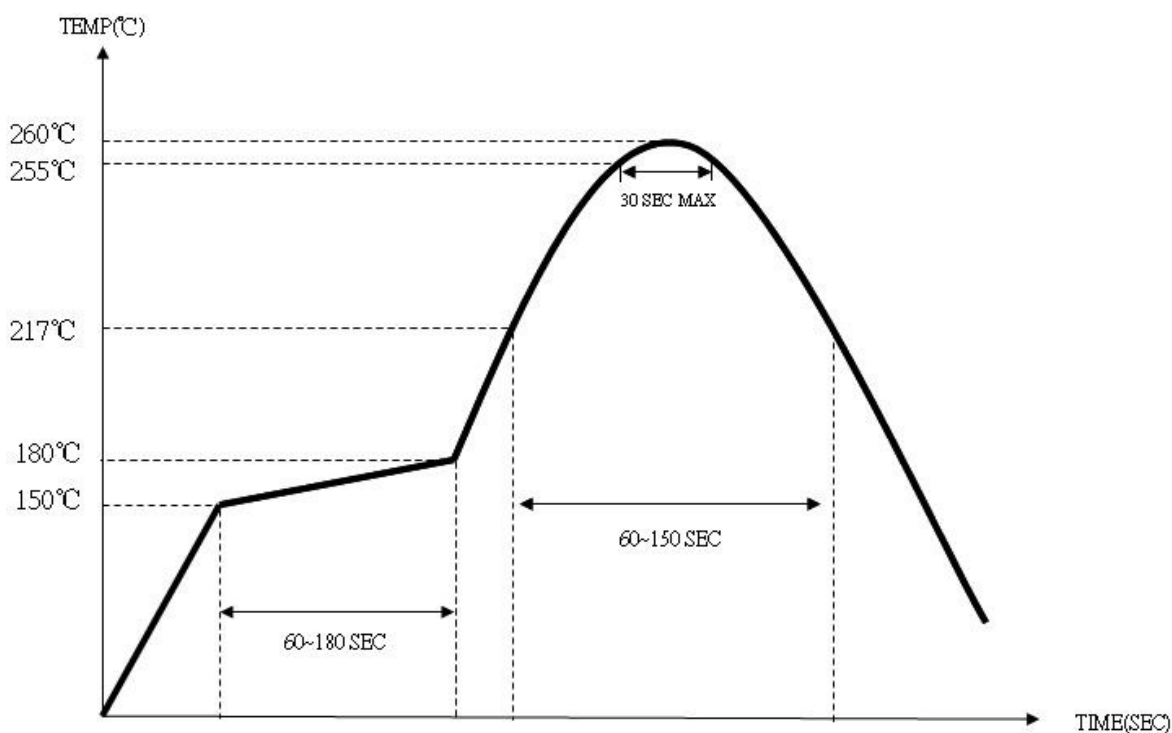
6. COVER TAPE ADHESION STRENGTH :



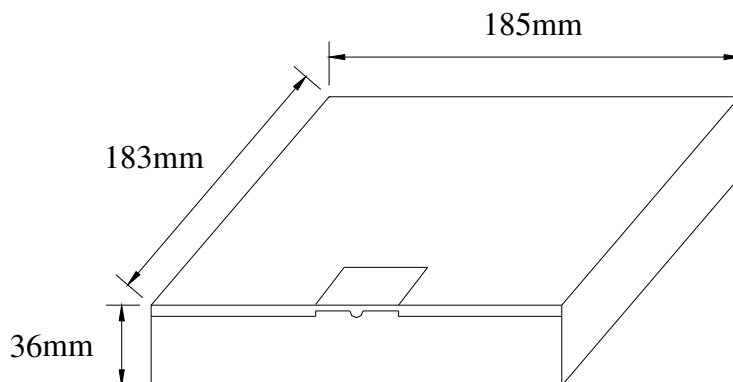
*** In the case, the cover tape is pulled off under the above conditions, the cover tape adhesion strength should be 10.2g~71.4g Plastic tape: 10.2g~71.4g

(Cover tape adhesion strength)

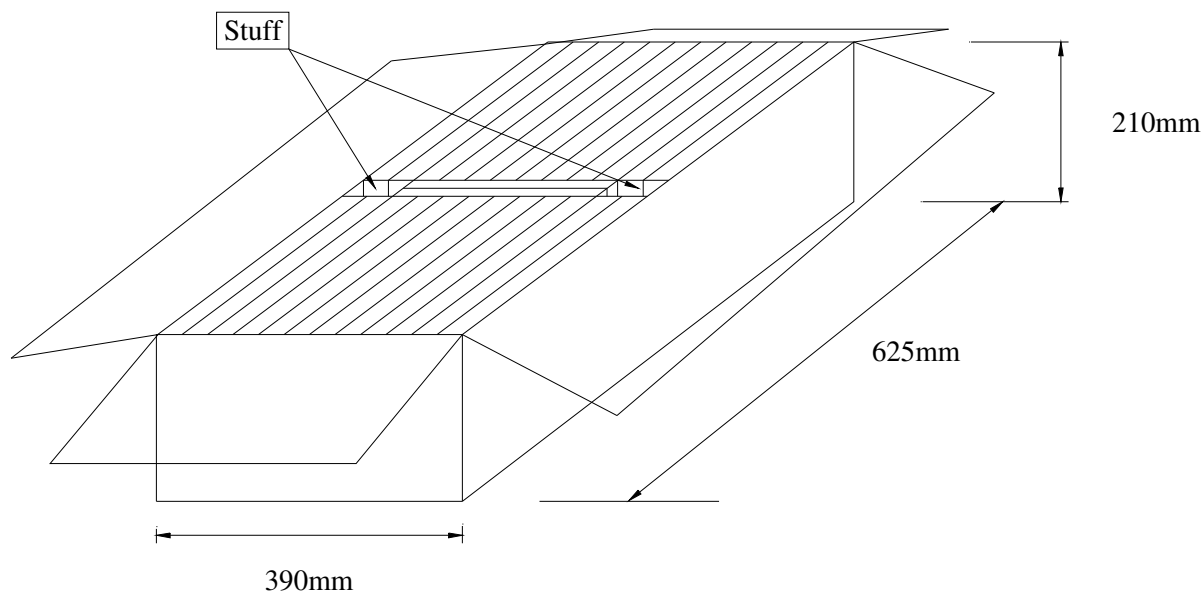
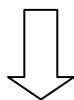
7. SOLDERING REFLOW PROFILE



8. PACKING :



PIZZA BOX = 3000 PCS / REEL(MAX)



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

9 .RELIABILITY SPECIFICATION

Mechanical Endurance

TEST ITEMS	TEST METHODS AND TEST CONDITION	CRITERIA
Fine Leak Test	4.5 kg/cm ² Helium bombing for 1 Hour	$\leq 1 \times 10^{-8}$ atm.cc/sec Helium
Drop Test	Free drop from 100 cm height on a hard wooden board for 3 times(board is thickness more than 30 mm)	$\Delta F \leq \pm 2$ ppm
Vibration Test	Freq. range: 20~2000Hz Peak to peak amplitude:1.52mm Peak acceleration:20 G(196m/s ²) 3 direction(X, Y,Z) , each 20min , 4cycles	$\Delta F \leq \pm 2$ ppm
Solderability	Soldering temperature : 260 $\pm$ 5 $^{\circ}$ C Soldering duration : 2 $\pm$ 0.5s Solder bath	90% coated
Mechanical Shock Test	1500G, 0.5ms, 6 sides, impact each side 3 times.	$\Delta F \leq \pm 2$ ppm

Environmental Endurance

TEST ITEMS	TEST METHODS AND TEST CONDITION	CRITERIA
Temperature Cycling	-55 $\pm$ 3 $^{\circ}$ C /15 $\pm$ 3min ~ +125 $\pm$ 3 $^{\circ}$ C /15 $\pm$ 3min 100cycles	$\Delta F \leq \pm 2$ ppm
Low Temp. Exposure	-40 $\pm$ 3 $^{\circ}$ C ,500 $\pm$ 6 hrs	$\Delta F \leq \pm 2$ ppm
High Temp. & Humidity	+85 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C & 85% $\pm$ 5% R.H. , 168 $\pm$ 6 hrs	$\Delta F \leq \pm 2$ ppm
Resistance To Soldering Heat Test	IR Reflow furnace with the condition 2 times Peak temp.260 $\pm$ 3 $^{\circ}$ C , 10sec(Min.)	$\Delta F \leq \pm 2$ ppm
Aging Test	85 $\pm$ 3 $^{\circ}$ C , 500 $\pm$ 12hrs	$\Delta F \leq \pm 2$ ppm