



NO:ECAB2601036

# Acknowledgement Book

Customer Name	:	
Customer P/N	:	
Frequency	:	24.000000 MHz
ECEC Type	:	OSC-3225
ECEC P/N	:	TS24000065
Rev.	:	1
ISSUE DATE	:	2026/1/7

Approved By	MFG	QA	PE/RD
			
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APPROVED BY CUSTOMER			

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CUST. P/N	:		
ECEC P/N	:	TS24000065	
DESIGN	:	吕俏笑	SHEET : 1 of 9
INSPECTION	:	王晓东	REV. : 1

[illegible]



CUST. P/N	:	
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DESIGN	:	吕俏笑
INSPECTION	:	王晓东
		SHEET : 2 of 9
		REV. : 1

## SMD 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 :  $25\pm 3^{\circ}\text{C}$   
Relative humidity : 40%~70%

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

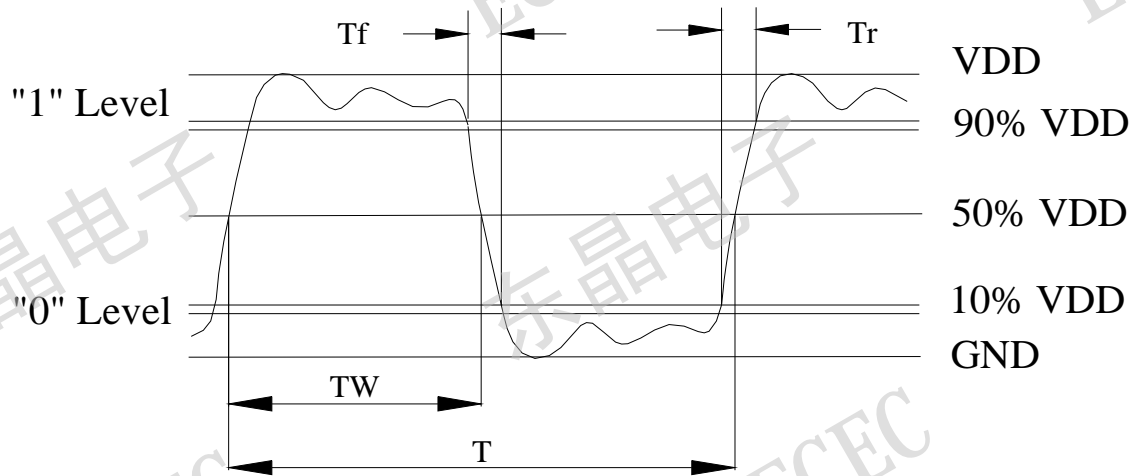
Ambient temperature :  $25\pm 3^{\circ}\text{C}$   
Relative humidity : 40%~70%

■ ECEC Model : OSC-3225

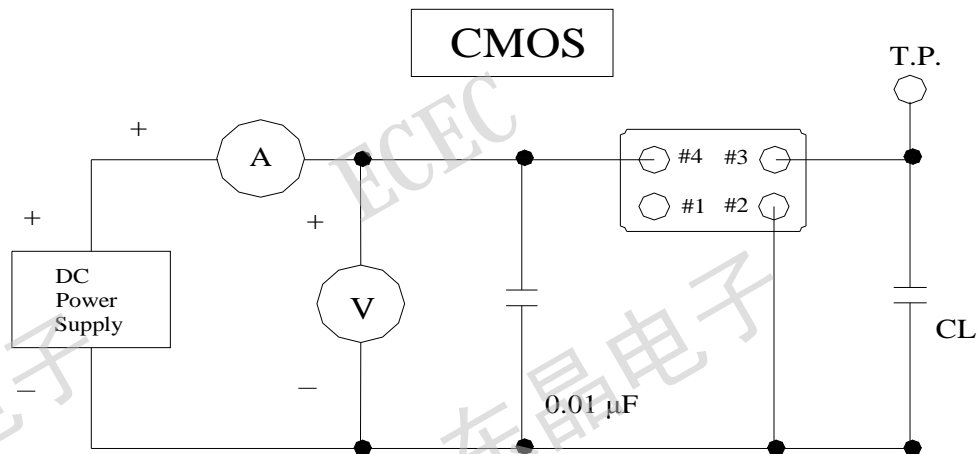
■ Cutting Model : AT CUT

Parameters	Symbol	Electrical Spec				Notes
		Min.	Typ.	Max.	Units.	
Nominal Frequency	F <sub>OUT</sub>	24.000000			MHz	
Frequency Stability		$\pm 10$			ppm	at $25\pm 2^{\circ}\text{C}$
Temperature drift (TC)		$\pm 20$			ppm	
Supply Voltage	V <sub>DD</sub>	1.8	3.3	3.3	V	
Output Load	CL	15			pF	
Output Type (Logic Levels)		CMOS				
Aging	F <sub>A</sub>	$\pm 3$			ppm	1st Year at $25^{\circ}\text{C}$
Operating Temperature	T <sub>OPR</sub>	-40	~	85	$^{\circ}\text{C}$	Overall: $\pm 35\text{ppm}$
Storage Temperature Range	T <sub>STG</sub>	-55	~	125	$^{\circ}\text{C}$	
Current consumption	I <sub>DD</sub>			15	mA	CL@15pF
Standby Current	I <sub>ST</sub>			10	$\mu\text{A}$	
Output Voltage High	V <sub>OH</sub>	2.97			V	
Output Voltage Low	V <sub>OL</sub>			0.33	V	
Output Rise Time	T <sub>r</sub>			8	ns	10%~90% VDD Level
Output Fall Time	T <sub>f</sub>			8	ns	10%~90% VDD Level
Symmetry (Output Duty )	Duty	45	~	55	%	50% VDD level, CL@15pF
Start-up Time	T <sub>OSC</sub>			10	ms	
Tri-state Function	INH <sub>N</sub>	yes				PIN1
Enable Voltage High	V <sub>IH</sub>	2.31			V	
Disable Voltage Low	V <sub>IL</sub>			0.99	V	

## 2. C - MOS LOAD OUTPUT WAVEFORM

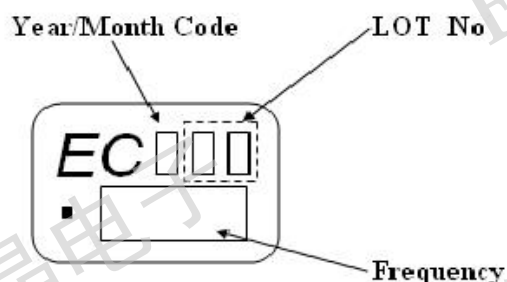


## 3. C - MOS LOAD TEST CIRCUIT



\*\*\*Because SMB series has no by pass capacitor.  
So, we recommend our customer to use capacitor 0.01  $\mu\text{F}$   
in join Vcc and GND.

## 4. MARKING :



Frequency: as shown in the table  
EX)

Frequency	4.000MHz	16.9344MHz	40.000MHz	100. 000MHz
Frequency Code	4000	16934	40000	100. 000

Year/Month code:as shown in the table

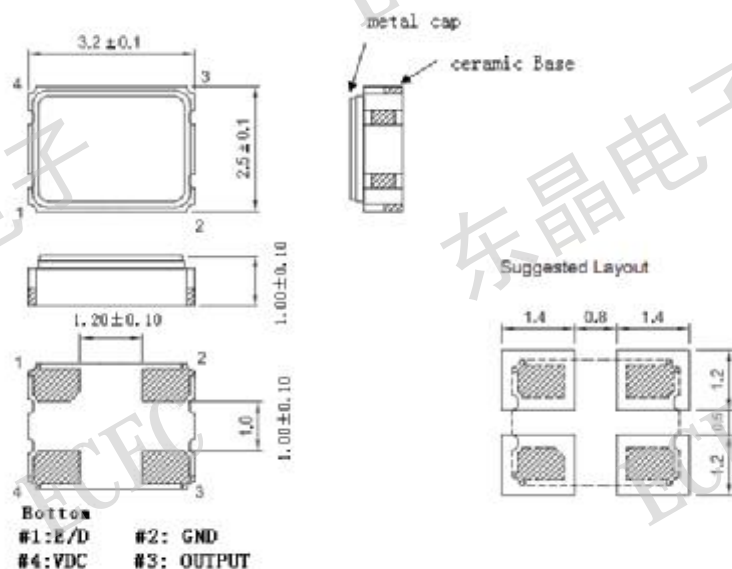
EX) December of 2020 shall be marked as "z"

Four year 1 cycle

Year										Month										Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2001	2009	2017	2025	2033	2041	2049	2057	2065	2073	A	B	C	D	E	F	G	H	I	J	K	L	M									
2002	2010	2018	2026	2034	2042	2050	2058	2066	2074	N	P	Q	R	S	T	U	V	W	X	Y	Z										
2003	2011	2019	2027	2035	2043	2051	2059	2067	2075	a	b	c	d	e	f	g	h	i	j	k	l	m									
2004	2012	2020	2028	2036	2044	2052	2060	2068	2076	n	p	q	r	s	t	u	v	w	x	y	z										
2005	2013	2021	2029	2037	2045	2053	2061	2069	2077	A	B	C	D	E	F	G	H	I	J	K	L	M									
2006	2014	2022	2030	2038	2046	2054	2062	2070	2078	N	P	Q	R	S	T	U	V	W	X	Y	Z										
2007	2015	2023	2031	2039	2047	2055	2063	2071	2079	a	b	c	d	e	f	g	h	i	j	k	l	m									
2008	2016	2024	2032	2040	2048	2056	2064	2072	2080	n	p	q	r	s	t	u	v	w	x	y	z										

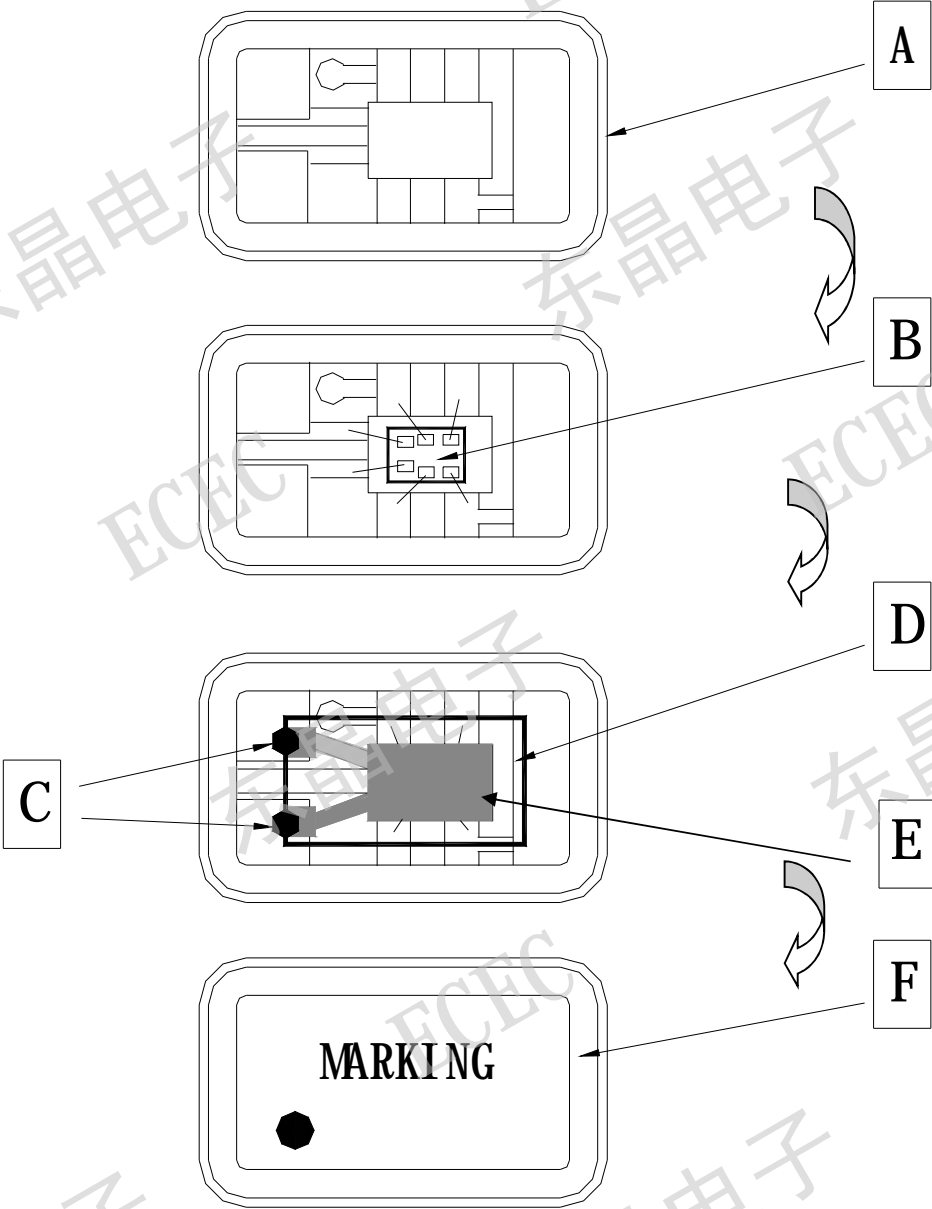
## 5. DIMENSION :

( UNIT : mm )





## 6. STRUCTURE ILLUSTRATION

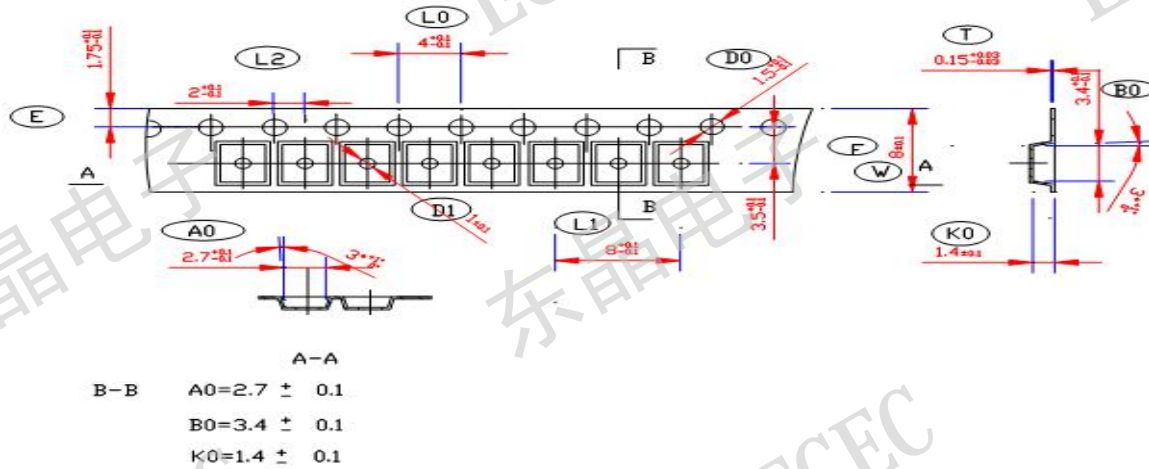


PART NAME		MATERIAL	PART NAME		MATERIAL
A	BASE	PACKAGE	D	BLANK	QUARTZ
B	DICE	IC	E	ELECTRODE	SILVER
C	FIXED GLUE	SILVER GLUE	F	LEAD	KOVAR

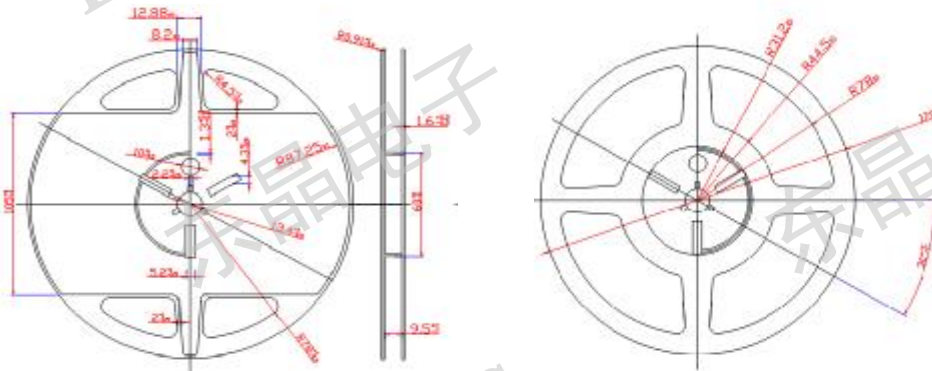
## 7. PACKING :

### 7-1.Dimensions of the tape

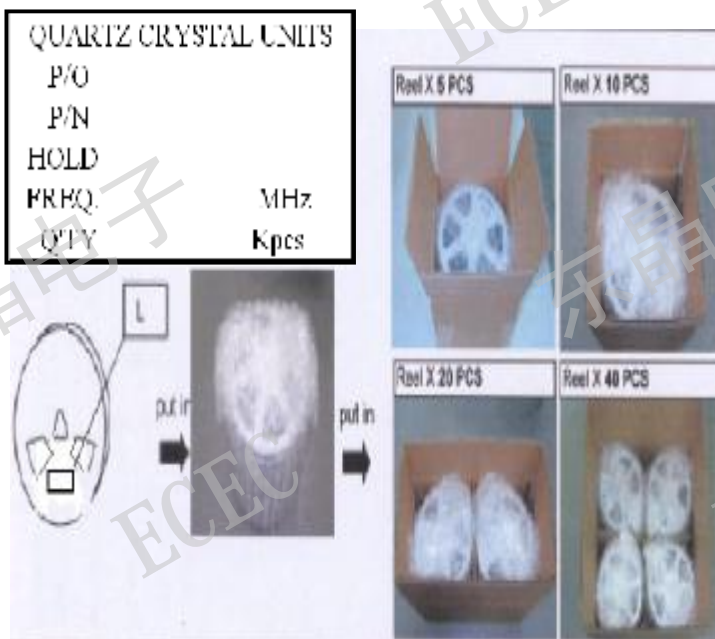
( Unit : mm )



### 7-2.Dimensions of the reel



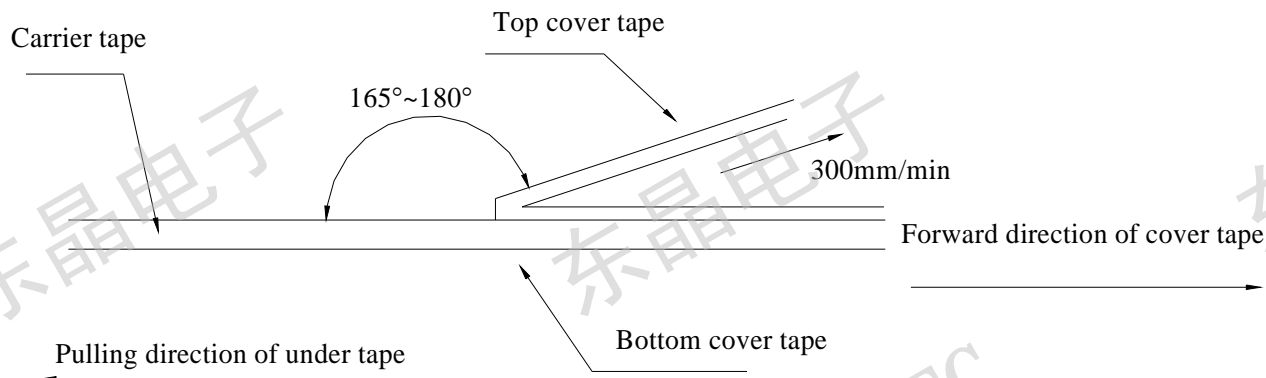
### 7-3.Packing and Label



1 Reel=3000pcs

Box type(Reel quantity)	Box size(L×W×H) mm
Atype (Reel x 5pcs max)	200×200×140
Btype (Reel x 6~15pcs)	200×200×255
Ctype (Reel x 16~30pcs)	395×200×255
Dtype (Reel x 31~60pcs)	395×400×255

## 8. COVER TAPE ADHESION STRENGTH :

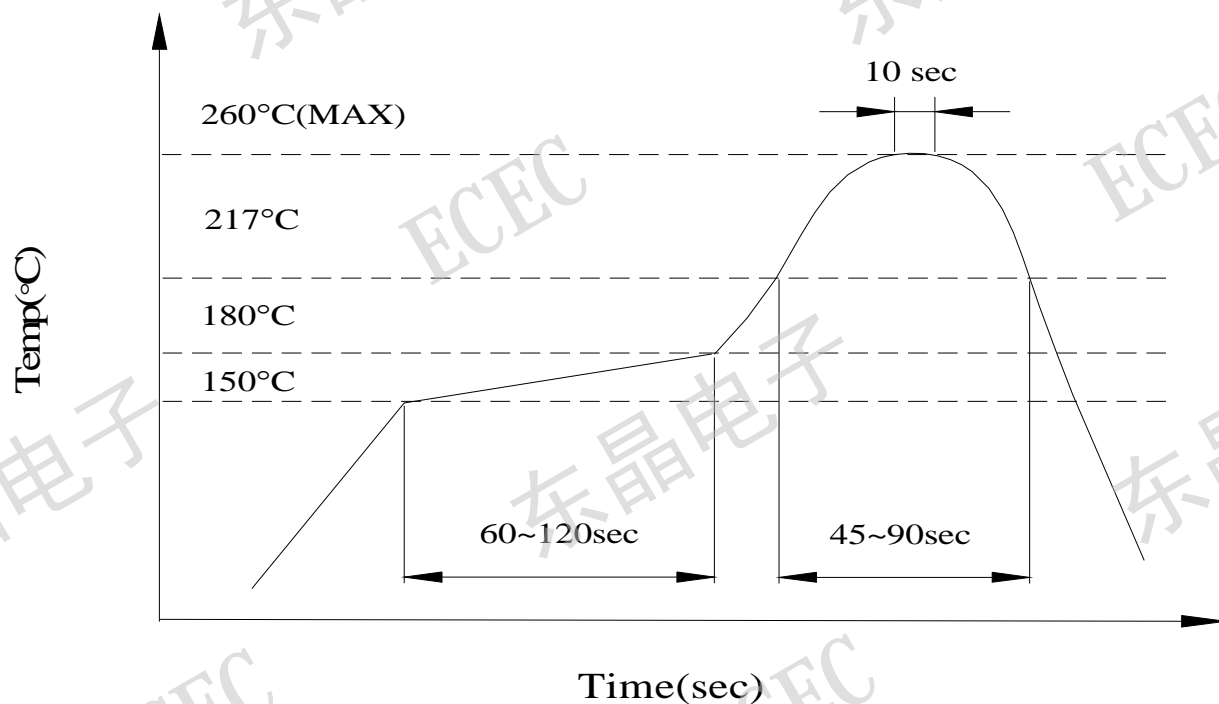


\*\*\* In the case, the cover tape is pulled off under the above conditions the cover tape adhesion strength should be as follows. \*\*\*

Plastic tape:10.2g~71.4g

(Cover tape adhesion strength)

## 9 . SOLDERING REFLOW PROFILE







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## 10 . MECHANICAL PERFORMANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
<b>10-1. Drop Test</b>	The specimen is measured for its frequency and resistance before the test. It is then dropped from a height of 100 cm or more as a free fall object onto a hard wooden plate of 30mm or more in thickness. ( in accordance with JIS-C0044 )	To satisfy the electrical performance .
<b>10-2 . Vibration Test</b>	The specimen is measured for its frequency and resistance before the test. Most them into X,Y and Z axes, respectively, for the vibration test. Vibration condition: Frequency range ; 20 ~ 2000HZ Peak to peak amplitude : 1.52 mm Peak acceleration : 20G Sweep time : 20 minute / axis Pendicular total test time : 4 hours ( in accordance with MIL-STD-883F : 2007.3 )	
<b>10-3. Resistance to Soldering Test</b>	The specimen is measured for its frequency and resistance before the test. Place the specimen on the belt of the conveyance and let it pass through the reflow with the presetted temperature condition. After passing twice the reflow place,the specimen under the referee condition for ~2 hours and then measure its electrical performance. Temperature Condition of IR Simulation: The temperature range of the preheated section is setted at 150 ~ 180℃ for 60~120 sec. For the next section the temperature range is setted at 217~260℃ for 45~90 sec. and within this time range the specimen should be able to sustain at the peak temperature, 260+/-3℃ , for 10 sec long. ( in accordance with JESD22-B106-B )	
<b>10-4. Fine Leak Test</b>	Place the specimen in a pressurized container and pressurize it with the detection gas ( mixed gas consisting of 95% or more helium ) for at least 2 hours. Complete the measurement of the concentration of helium within 30 min after taking it out from the pressurized container. ( in accordance with MIL-STD-883F : 1014.11 )	Less than $1.0 * 10^{-8}$ atm .c.c. / sec, Helium

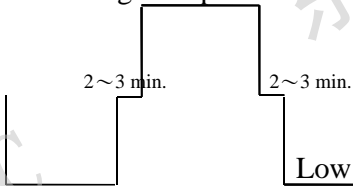
The referee condition: ( In accordance with MIL-STD-883E : 1014. 9 )

Temperature : 25 ± 2 °C      Humidity : 44 ~ 55 %      Pressure: 86 ~ 106 kPa



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## 11 . CLIMATIC RESISTANCE

TEST ITEMS	TEST METHODS AND TEST CONDITION	PERFORMANCE
<b>11-1. Low Temp Exposure Test</b>	The specimen is measured for its frequency and resistance before the test . Place the specimen in the chamber and kept it at the temperature of $-40 \pm 3^{\circ}\text{C}$ for $168 \pm 6$ hours . Take the specimen out of the chamber and measure its electrical performance after leaving 1 ~ 2 hours under the referee condition. ( in accordance with JIS-C0020 )	To satisfy the electrical performance .
<b>11-2. Aging Test</b>	The specimen is measured for its frequency and resistance before the test . Place the specimen in the testing chamber and keep it at the temperature of $+125 \pm 3^{\circ}\text{C}$ for $720 \pm 48$ hours. And then take the specimen out of the chamber and measure its electrical performance after leaving for 1 ~ 2 hours under the referee condition . ( in accordance with JIS-C0021 )	
<b>11-3. High Temperature &amp; High Humidity</b>	The specimen is measured for its frequency and resistance before the test . Place the specimen in the testing chamber and kept it at the temperature of $+85 \pm 5^{\circ}\text{C}$ and humidity of $85 \pm 5\%$ for $168 \pm 6$ hours.and then take the specimen out and measure its electrical performance after leaving for 1 ~ 2 hours under the referee condition. ( in accordance with MIL-STD-883F : 1004.7 )	
<b>11-4. Temperature Cycle Test</b>	The specimen is measured for its frequency and resistance before the test . Subject the specimen to the 100 cycles of temperature ranges stated below . <div style="text-align: center;"><p>High temp . <math>+125 \pm 3^{\circ}\text{C}</math> (15± 3 min).</p><p>Low temp. <math>-55 \pm 3^{\circ}\text{C}</math> (15±3 min).</p></div> Measure its electrical performance after leaving it for 1 ~ 2 hours under the referee condition . ( in accordance with MIL-STD-883F : 1010.8 )	