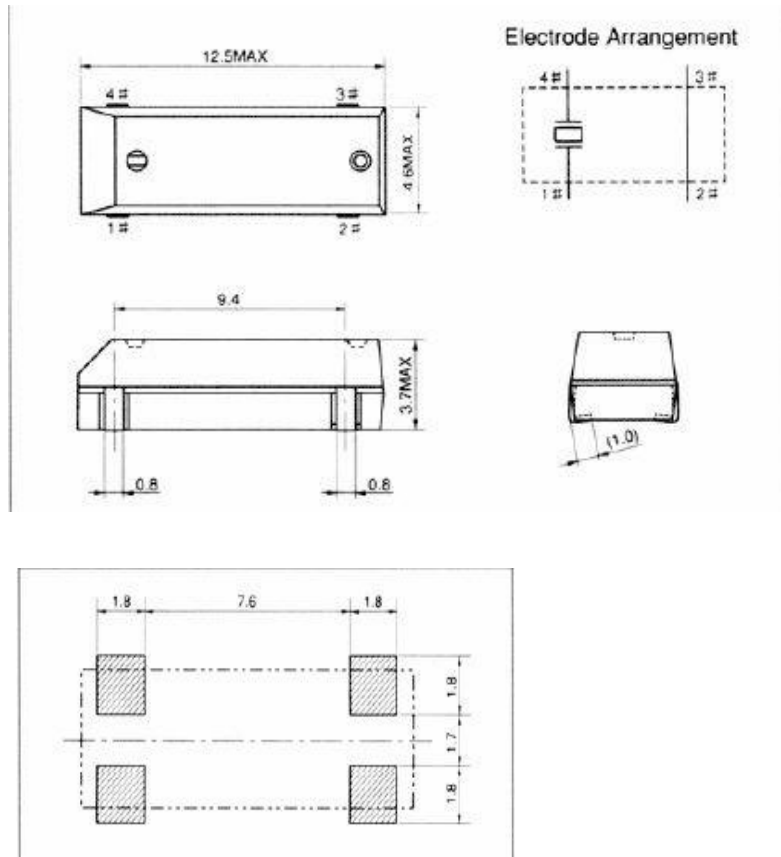


1. QUARTZ CRYSTAL UNIT SPECIFICATION

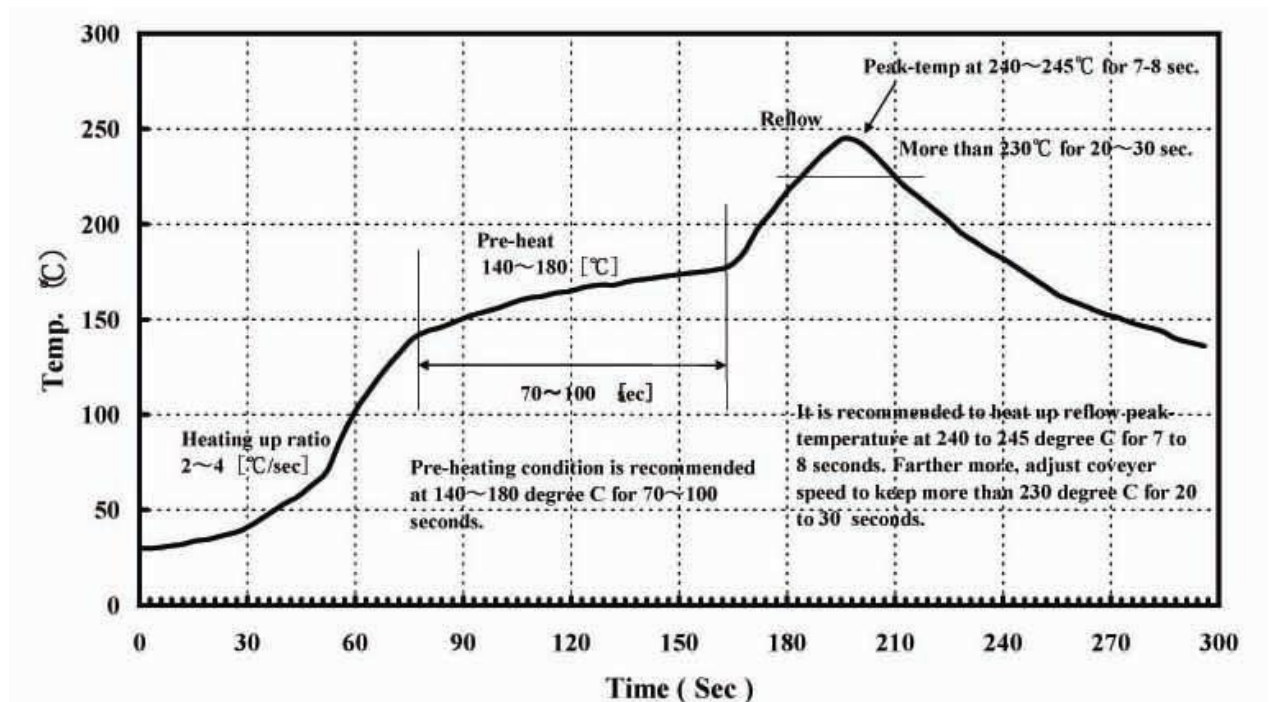
Item	Symbol	Specifications				Remark
		Min	Type	Max	Units	
1. Production type		Quartz Crystal Resonator				
2. Holder		W12				
3. Mode of oscillation		<input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> 3 Overtone <input type="checkbox"/> 5 Overtone				
4. Frequency	FL	16.000		MHz		
5. Load capacitance	CL	10		pF		
6. Frequency tolerance	Tol	+30		ppm	at 25°C ± 3°C	
7. Equivalent resistance	Rs	50		Ω	Max.	
8. Working temperature range	TR	-40~85		°C		
9. Freq. Temp. Characteristics	TC	+30		ppm	working temperature ΔF	
10. Drive level	DL	100		μW	Max.	
11. Shunt Capacitance	C0	5		pF	Max.	
12. Storage temperature range		-55~125		°C		
13. Insulation resistance		500		MΩ	Min.	
14. Measure Circuit		S&A 250B			π network	
15. Aging		5		ppm/Yr	Max.	

※ This product doesn't include harmful substance that stipulated by RoHS

1.2 DIMENSION Unit:mm



1.3 Reflow



2. TEST STANDARD

2.1 GENERAL ELECTRICAL CHARACTERISTICS AND VISUAL TESTING

2.1.1 LOT CLASSIFICATION : If the quantity is 1,000 pcs or more, 1,000 pcs is one lot.

2.1.2 SAMPLING TEST METHOD : MIL-STD-105E G-II

2.1.3 TEST LEVEL

A) HIGH LEVEL DEFECT : AQL 0.065% [200 PCS]

B) MEDIUM LEVEL DEFECT : AQL 0.25% [50 PCS]

C) LOW LEVEL DEFECT : AQL 0.4% [32 PCS]

2.1.4 DEFECT CLASSIFICATION

A) HIGH LEVEL

@NO FREQUENCY

@MIXING

@LEAK DEFECT

B) MEDIUM LEVEL – ELECTRICAL CHARACTERISTIC DEFECT

@FREQUENCY

@OSCILLATION

@ELECTRICAL CURRENT

@OTHER ELECTRICAL CHARACTERISTICS DEFECT

C) VISUAL

@MARKING

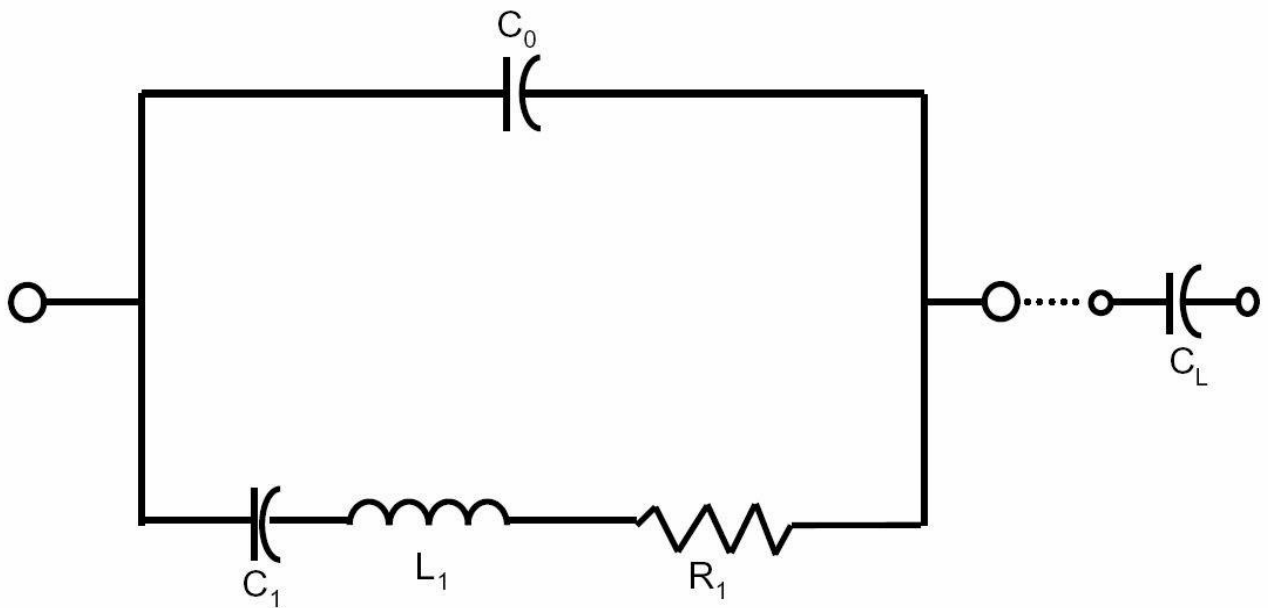
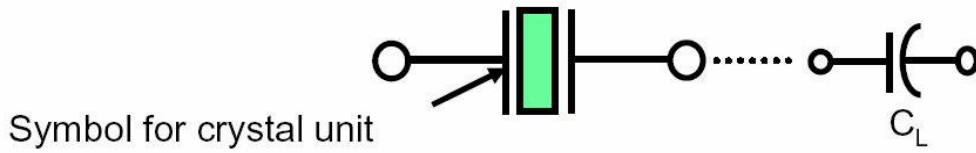
@WELDING

@LEADS

@OTHER VISUAL DEFECT

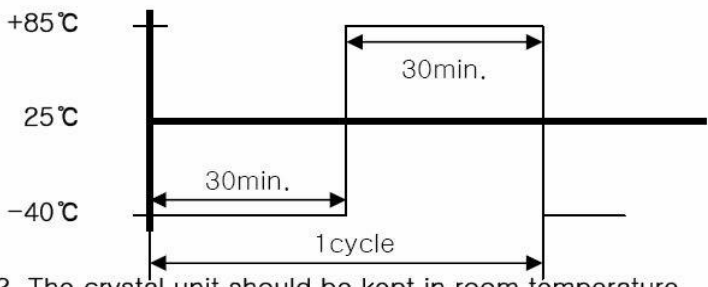
TESTING METHOD AND ITS STANDARD CAN BE MODIFIED DEPENDING ON THE CUSTOMER'S REQUEST.

2.2 EQUIVALENT CIRCUITS



3. RELIABILITY TEST STANDARD

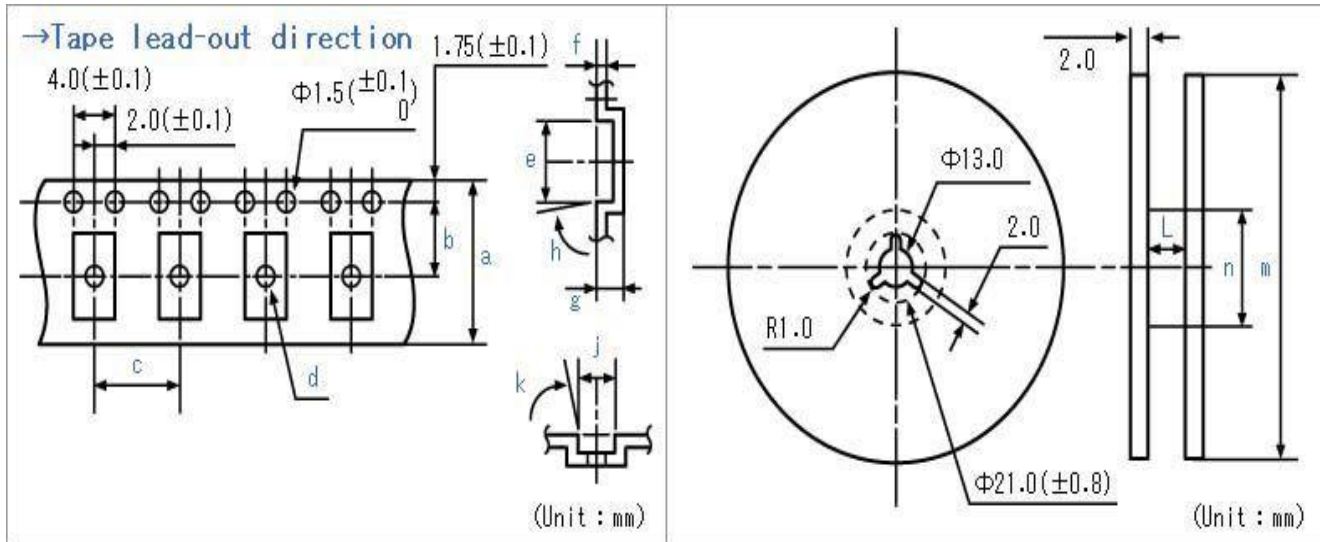
3.1 ENVIRONMENTAL

TEST ITEM	TESTING PROCEDURE & CONDITIONS	EVALUATION
<p>1. THERMAL SHOCK TEST</p>	<p>1. The test should be performed in accordance with the following condition for 10 cycle.</p>  <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	<p>The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.</p>
<p>2. HUMIDITY</p>	<p>1.temperature : +40°C±2°C RELATIVE HUMIDITY : 90~95% TEST PERIOD : 48 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	<p>The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.</p>
<p>3. COLD TEMPERATURE TEST</p>	<p>1. TEMPERATURE : -40°C±2°C TEST PERIOD : 2 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	<p>The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.</p>
<p>4. THERMAL TEST</p>	<p>1. TEMPERATURE : +85°C±2°C TEST PERIOD : 24 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	<p>The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.</p>
<p>5. RAPID CHANGE IN TEMPERATURE</p>	<p>1. TEMPERATURE : +85°C±2°C TEST PERIOD : 120 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	<p>The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.</p>

3.2 MECHANICAL

TEST ITEM	TESTING PROCEDURE & CONDITIONS	EVALUATION
1.LEAD TENSILITY	1. FIX THE UNIT. 2. APPLY 2LB OF WEIGHT AXIS TO THE LEADS. 3. TIME : 5 SECONDS	SHOULD PASS SEALING AND VISUAL TEST
2. LEAD BENDING	1. ATTACH 1 LB OF WEIGHT TO EACH OF THE LEADS. 2. BENDING ANGLE : 90° (FROM THE NORMAL POSITION TO 45° OPPOSITE DIRECTION) 3. BENDING TIME : 3 SECONDS(EACH DIRECTION) 4. NUMBER OF BENDING : 2 TIMES	SHOULD PASS SEALING AND VISUAL TEST
3. LEADS SOLDERABILITY	1. DIP THE LEADS INTO FLUX(ROJIN METHANOL) FOR 5 SECONDS 2. DIP THE LEADS INTO 250±5°C 99% Sn DIPPING SOLUTION FOR 5 SECONDS.	THE DIPPED PART OF THE LEADS SHOULD HAVE 90~95% Sn COATING.
4. SOLDERING HEAT RESISTANCE TEST	1. PERFORM ELECTRICAL CHARACTERISTICS TEST BEFORE STARTING THIS PROCEDURE. 2. DIP THE LEADS INTO FLUX(ROJIN METHANOL) FOR 5 SECONDS. 3. DIP THE LEADS INTO 260±5°C 99% Sn DIPPING SOLUTION FOR 5 SECONDS. 4. TAKE THE UNIT OUT, STORE AT ROOM TEMPERATURE FOR 30 SECONDS THEN MEASURE THE ELCTRICAL CHARACTERISTICS.	SHOULD PASS SEALING AND VISUAL TEST
5. VIBRATION	1. PERFORM ELECTRICAL CHARACTERISTICS TEST BEFORE STARTING THIS PROCEDURE. 2. THE UNIT SHOULD BE FIXED ONTO A VIBRATING MACHINE AND THEN SHAKEN X.Y.Z DIRECTIONS. VIBRATING FREQUENCY : 10 ~ 55 Hz AMPLITUDE : 0.03 Inch FACTOR TIME : 1 MINUTES TESTING TIME : 30 MINUTES EACH FOR X, Y, Z DIRECTIONS	SHOULD PASS SEALING AND VISUAL TEST
6. DROP TEST	1. PERFORM ELECTRICAL CHARACTERISTICS TEST BEFORE STARTING THIS PROCEDURE. 2. FROM THE HEIGHT OF 500mm DROP THE UNIT 3 TIMES ONTO A HARD RUBBER SURFACE.	SHOULD PASS SEALING AND VISUAL TEST
7. LEAK TEST	USE Helium Leak Detector. Bombing PRESSURE : 5kg/cm ² Bombing TIME : 2 HOURS LEAK SHOULD BE LESS THAN 1E-8 atm.cc/sec.	GAS OR AIR SHOULD NOT BE DETECTED.
8. MARKING ERASE	SUBMERGE THE UNIT INTO IPA[ISOPROPYL ALCOHOL] SOLUTION FOR 10 MINUTES AND BRUSH THE MARKING 10 TIMES WITH A TOOTH BRUSH.	MARKING SHOULD NOT BE ERASED.

4. Packing



Quantity (pcs / reel)	a	b	c	d (Φ)	e	f	g	h (Max.)	j	k (Max.)	L	m (Φ)	n (Φ)
1,000	24.0	11.5	12.0	2.2	12.8	0.4	3.9	3°	4.8	3°	25.5	330	100

PACKAGING METHOD

TAPE & REEL AS SHOWN IN ABOVE DIMENSION,

INSERT 1,000 PCS OF TAPE & REEL COVERED WITH SHOCK ABSORBANT PAD INTO THE INNER BOX(INNER BOX SHOULD HAVE DESCRIPTION OF THE PART CONTAINED) AS SHOWN IN PICTURE1.

INNER-BOX CAN ACCOMODATE UPTO 1,000PCS.[PICTURE2]

INSERT SHOCK-ABSORBANT PAD ON ALL SIDES(INCLUDING TOP), AND THEN INSERT UPTO 5 INNER BOXES INTO THE OUTER BOX. [PICTURE3]

ON THE INNER-BOX COVER, LABEL CONTENTS OF THE BOX(FREQUENCY, LOAD CAPACITANCE, AND QUANTITY).

TO PREVENT INNER-BOX COVER OPENING DUE TO SHOCK, FASTEN THE COVER WITH A CLEAR TAPE AS SHOWN IN PICTURE4.



PICTURE1



PICTURE2



PICTURE3



PICTURE4