

深圳市维拓精电科技有限公司
 WTL International Limited

APPROVAL SHEET

DESCRIPTION :	12.5*4.6mm Quartz Crystal			
NOMINAL FREQ.:	4.000MHz			
WTL P/N:	WTL2W21945			
VERSION:	1			
DATE:	2016.12.26			
Customer	Customer P/N			
MICROS sp.j. W.Kedra i J.Lic	/			
Customer Signature	WTL			
	Approved by: <i>Xo Xo Lee</i>			
	Checked by: <i>Susan He</i>			
	Issued by: <i>Shengbiao</i>			
REVISION HISTORY				
Revised Page	Revision Content	Date	Ref. No.	Reviser

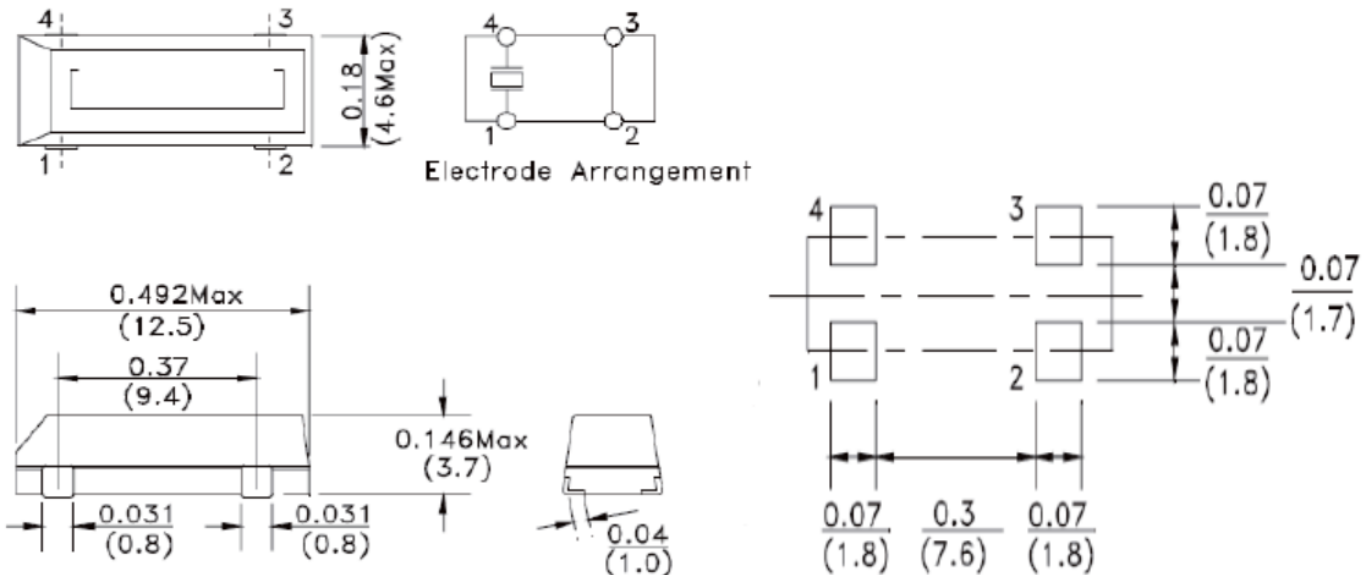


ELECTRICAL SPECIFICATIONS

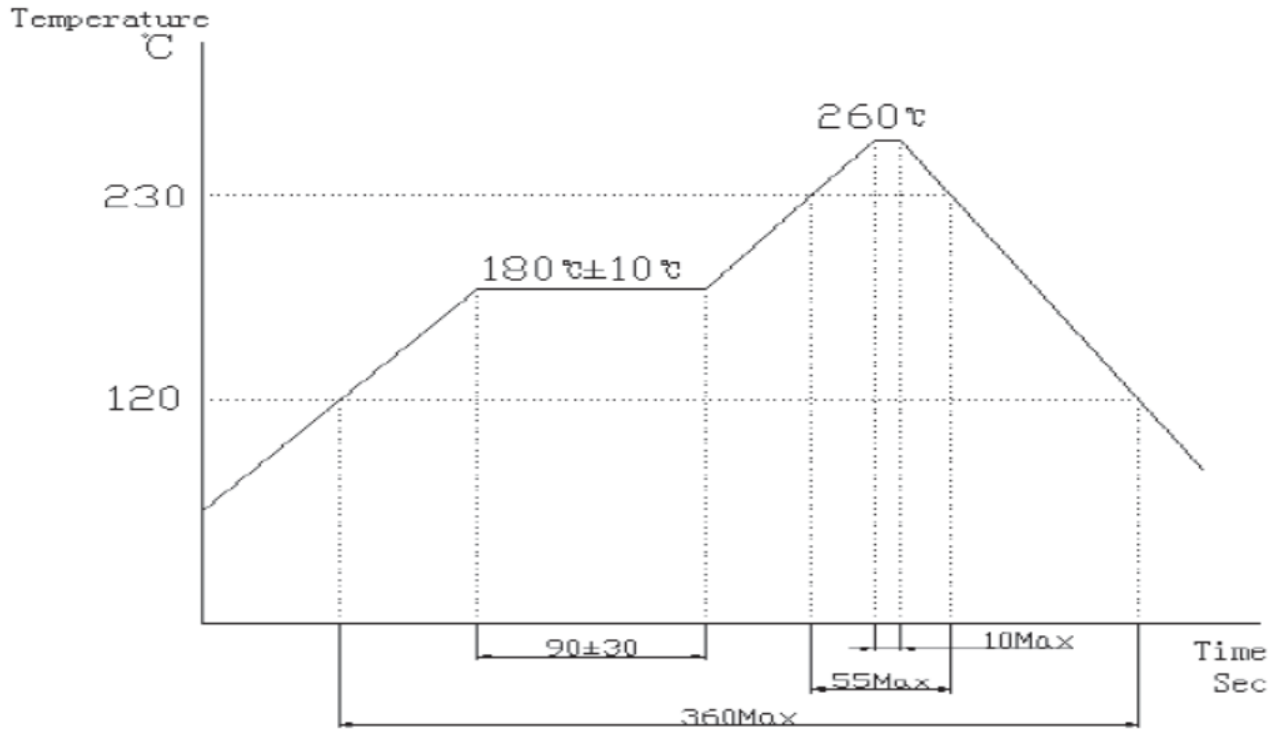
Output Frequency Range	4.000MHz
Mode	Fundamental
Frequency Tolerance (at 25°C)	±30ppm
Frequency Stability Over Operating Temperature Characteristics	±30ppm
Operating Temperature Range	-20°C to +70°C
Storage Temperature Range	-40°C to +85°C
Equivalent Series Resistance (ESR)	150Ω Max
Shunt Capacitance (C ₀)	5.0pF Max
Drive Level (Typical)	100μW Max
Load Capacitance(C _L)	20pF
Aging @25°C 1 st year (Max)	±5ppm/year
Shock Resistance	Drop test of 3 times on 2mm stainless plate from 75cm height

REMARK: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE CONFIRM WITH OUR SALES ENGINEER.

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.

3. CHARACTERISTICS

Units and values indicated with { } in this specification are the former units and the specified values.

Standard atmospheric conditions:

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests is as follows:

Ambient temperature: 15°C to 35°C

Relative humidity : 25% to 85%

Air pressure : 86 to 106 kPa

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

Ambient temperature : 25°C±1°C

Relative humidity : 63% to 67%

Air pressure : 86 to 106 kPa

Operating temperature range:

The operating temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

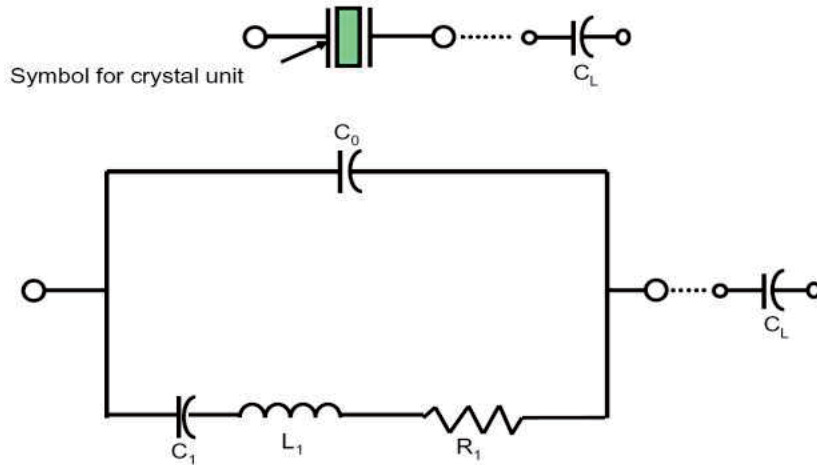
Operating temperature range: -20°C to +70°C

Storage temperature range:

The storage temperature range is the range of ambient temperatures at which the quartz crystal oscillator can be stored without damage. Conditions are as specified elsewhere on these specifications.

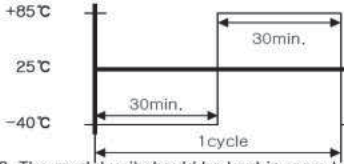
Storage temperature range: -40°C to +85°C

2.2 EQUIVALENT CIRCUITS



3. RELIABILITY TEST STANDARD

3.1 ENVIRONMENTAL

TEST ITEM	TESTING PROCEDURE & CONDITIONS	EVALUATION
1. THERMAL SHOCK TEST	<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>	The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.
2. HUMIDITY	<p>1. temperature : $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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>	The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.
3. COLD TEMPERATURE TEST	<p>1. TEMPERATURE : $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ TEST PERIOD : 2 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.
4. THERMAL TEST	<p>1. TEMPERATURE : $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ TEST PERIOD : 24 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.
5. RAPID CHANGE IN TEMPERATURE	<p>1. TEMPERATURE : $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ TEST PERIOD : 120 HOURS</p> <p>2. The crystal unit should be kept in room temperature for 1 hour then tested.</p>	The crystal unit should fulfill the specified requirements of the electrical characteristics and appearance.

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 ELECTRICAL 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.