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I. SCOPE

This specification relates to the voltage controlled crystal oscillator to be supplied by CITIZEN WATCH CO., LTD. (following as CITIZEN) .

NOTICE

- 1.If something that is ambiguously defined or undefined in this specification happened, the customer and CITIZEN would discuss and take necessary steps by mutual consent.
- 2.Product test data can't be attached to this specification.
- 3.This product is not authorized for use as critical component in life support devices or systems.

II. SPECIFICATION

1. ABSOLUTE MAXIMUM RATING

Parameter	CSX750VB/CSX750VC
Supply Voltage Vmax	-0.5V to +7.0V
Storage Temperature Tstg	-45°C to +90°C
Output Current Iout	10mA Max.
Input Control Voltage Vc_m	-0.5V to Vdd +0.5V
Solder Heat Resistance Tsol	Max.240°C x Max.10 seconds x 2times
Of The Outer Lead	Max.200°C x Max. 3 minutes

2. OPERATING RANGE

Parameter	CSX750VB	CSX750VC
Supply Voltage Vdd	3.3V±5%	5.0V±10%
Operating Temperature Topr	-10°C to 70°C or -40°C to 85°C	
Input Control Voltage Vc	0.0V to Vdd	
Output Load CL	30pF Max.	

3. FREQUENCY CHARACTERISTICS

Parameter	CSX750VB	CSX750VC
Stability (note1) dF0	±50ppm Max.	
Pullability (note2) Fpull	±90ppm Min.	±100ppm Min.
Linearity Ldev	±15% Max.	±10% Max.
Modulation Band Width Fmod	10kHz Min.	

note1) Frequency Stability includes initial tolerance, temperature characteristics, input voltage characteristics, load characteristics, shock, vibration, reflow and 1st year aging.

note2) Vc=1.65V±1.65V (CSX750VB) Vc=2.5V±2.0V (CSX750VC)

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4. ELECTRICAL CHARACTERISTICS  
(Ta=25°C load=30pF Vc=Vdd/2)

Parameter	Conditions	CSX750VB	CSX750VC
Start Up Time (note)      tosc		4msec Max.	
Power Supply Current      Idd	No Load	11mA Max.	30mA Max.
Disable Current      linh	No Load	5mA Max.	20mA Max.
Rise Time      tr	20% to 80%Vdd	5ns Max.	
Fall Time      tf	80% to 20%Vdd	5ns Max.	
Duty Cycle      duty	50%Vdd	45% to 55%	
Output HIGH Voltage      Voh	Ioh = -0.8mA	Vdd-0.4V Min.	
Output LOW Voltage      Vol	Iol = 3.2mA	0.4V Max.	
OE Input HIGH Voltage      Vih		Vdd x 0.7 Min.	
OE Input LOW Voltage      Vil		Vdd x 0.3 Max.	
Output Disable Time      tpxz	See 5.	100ns Max.	
Output Enable Time      tpzx		100ns Max.	

note) Vc must be kept ground level or left open when starting up.

5. THREE STATE OUTPUT OPERATION

OE Input	Clock Output	
HIGH or OPEN	Active	enable
LOW	High impedance	disable

Propagation delay time between  
tpxz:OE(HIGH to LOW) and  
OUTPUT(active level  
to high impedance)

tpzx:OE(LOW to HIGH) and  
OUTPUT(high impedance  
to active level)

Clock Output

OE input

high impedance

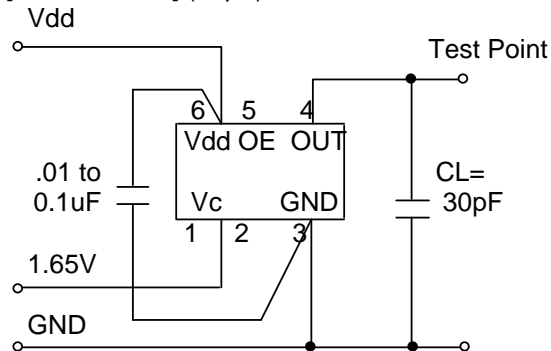
LOW

HIGH or OPEN

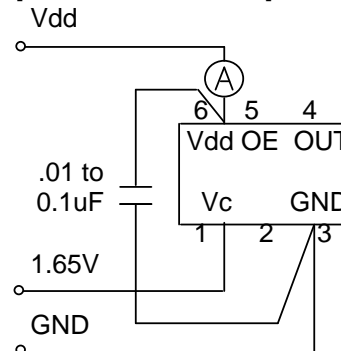
NOTE: A disable clock output does not synchronize with OE,  
because internal quartz oscillator is continuous.

## 6. TEST CIRCUIT

[CMOS LOAD] (30pF)



[SUPPLY CURRENT]



## [MEASUREMENT CONDITION]

## 1. Oscilloscope

Impedance: No less than 1Mohm

Capacitance: No more than 5pF

Band width: No less than 500MHz

The length of GND lead of the probe should be as short as possible.

## 2. The CL includes the probe capacitance.

## 3. Grounding should be single point grounding.

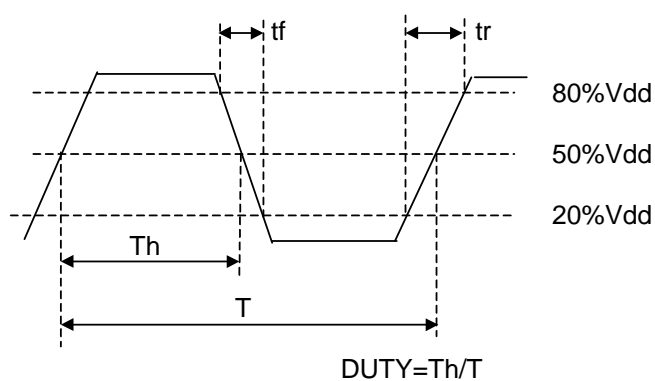
## 4. Supply impedance should be as low as possible.

0V to 90%Vdd rise time is no less than 150us

## 5. Use the ammeter that internal impedance is small.

## 7. OUTPUT WAVEFORM

[CMOS LOAD] (30pF)



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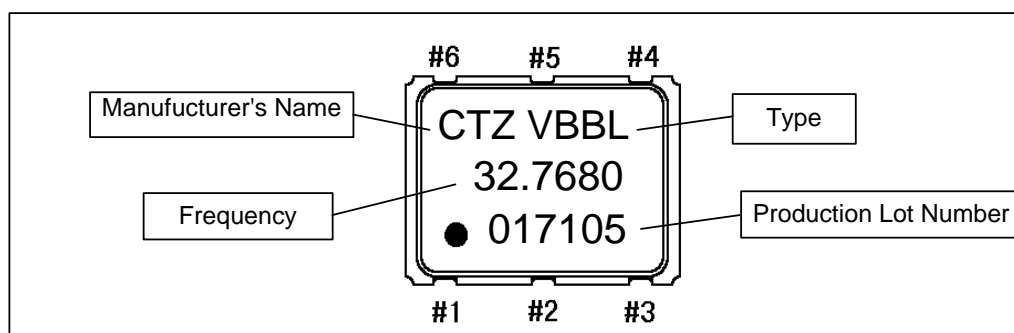
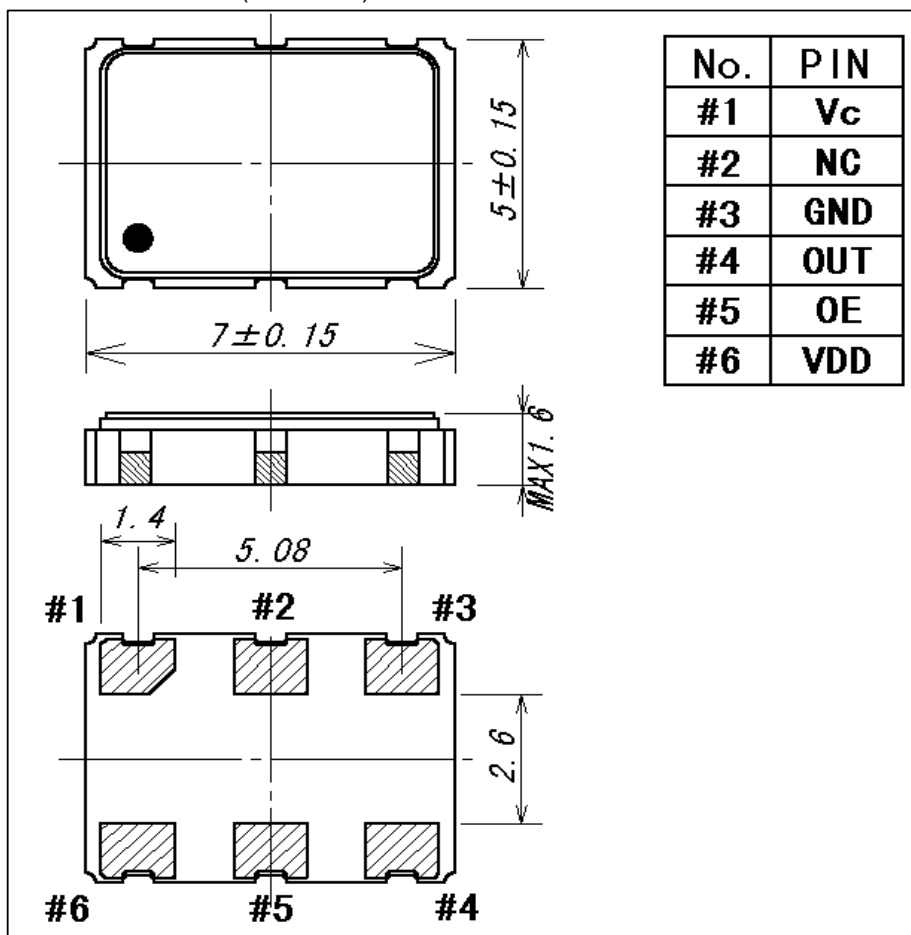
8. ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS

The following are our reliability test conditions.

Item	Conditions
Shock	MIL-STD-883E 2002.3B
Vibration	MIL-STD-883E 2007.2A
Gross Leak	Leak rate less than 50ppm atm cc /sec of Air
Fine Leak	Leak rate less than 0.01ppm atm cc /sec of Herium

## III. DIMENSIONS AND MARKING

&lt;&lt;Dimensions&gt;&gt; (UNIT mm)



## IV. TAPE AND REEL PACKAGING

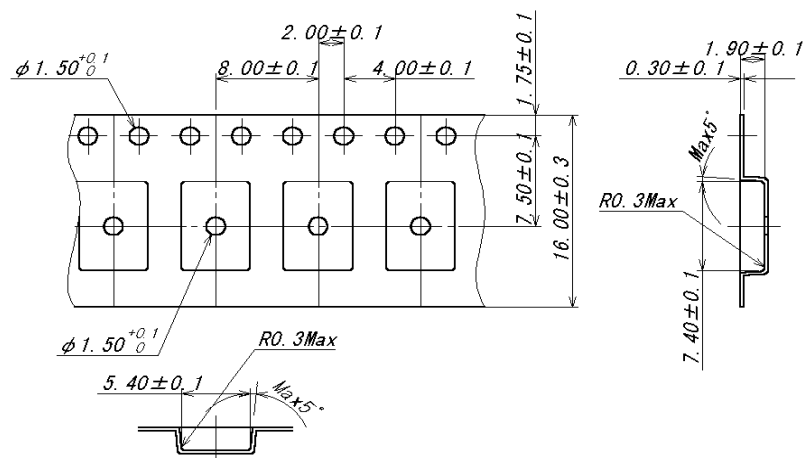
## 1. TAPING SPECIFICATION

Subject to EIA 481A &amp; JIS C 0806

## (1) Tape Dimensions

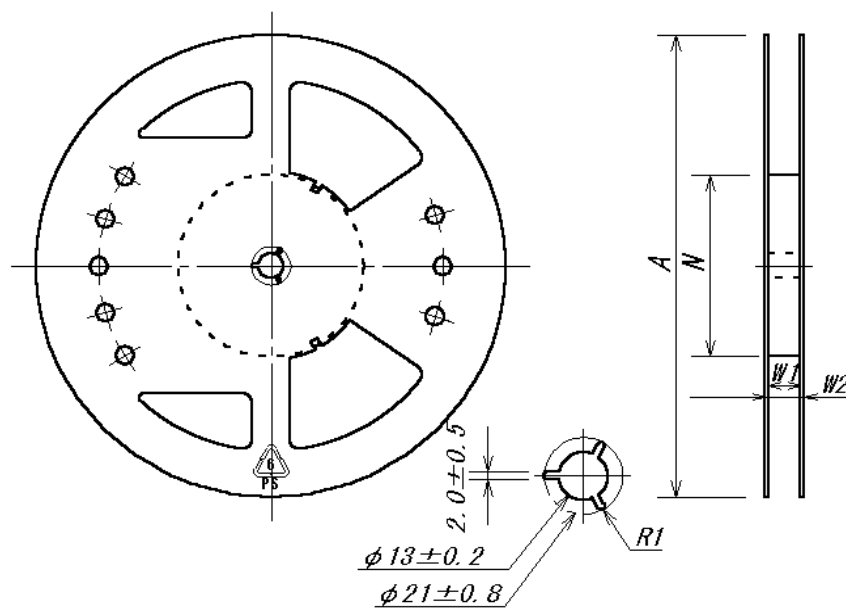
Material of the Carrier Tape : PA-PET conductive coat

Material of the Cover Tape : PE A-PET conductive coat



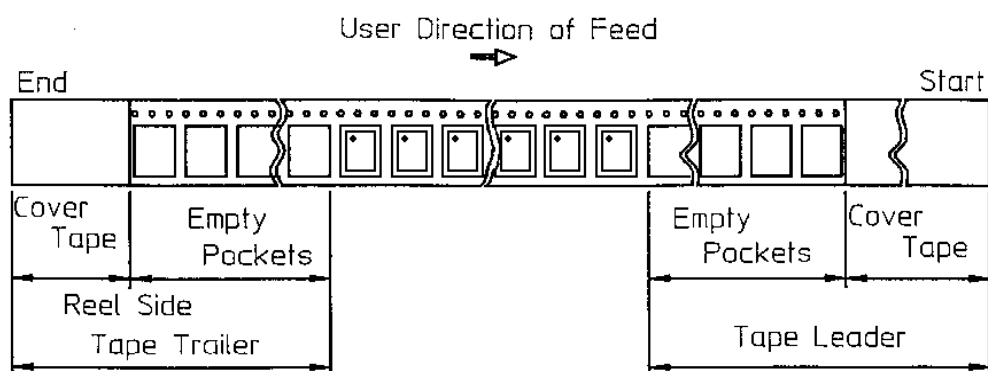
## (2) Reel Dimensions

Material of the Reel : PS



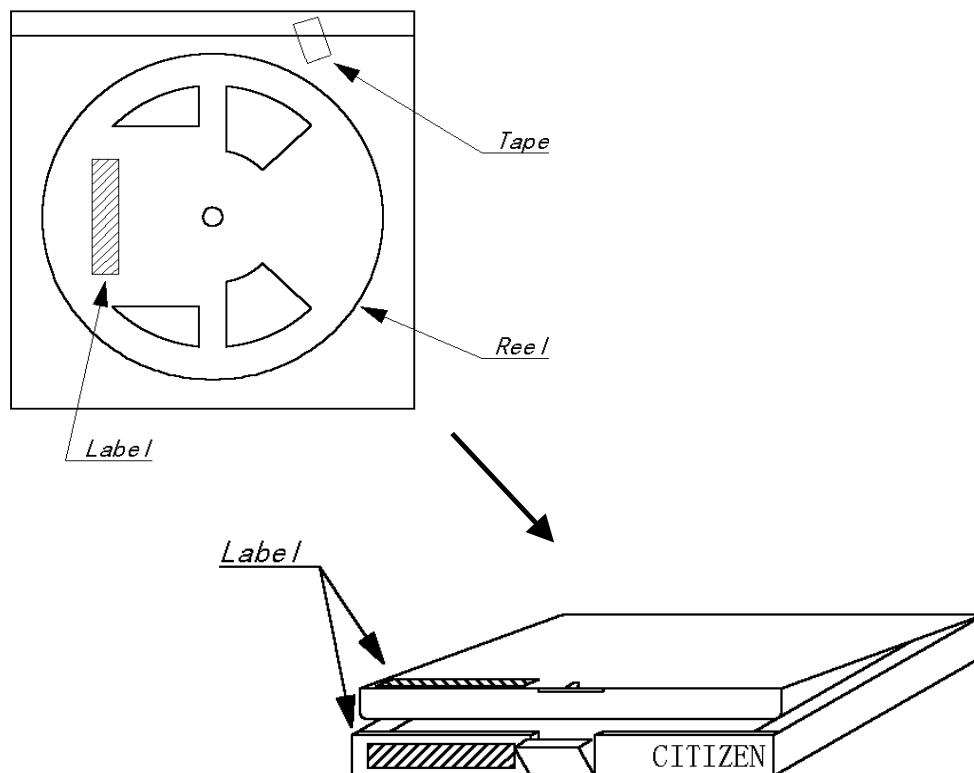
Symbol	A	N	W1	W2
Dimension(mm)	254+/-2	100+/-1	17.5+/-1.0	21.5+/-1.0

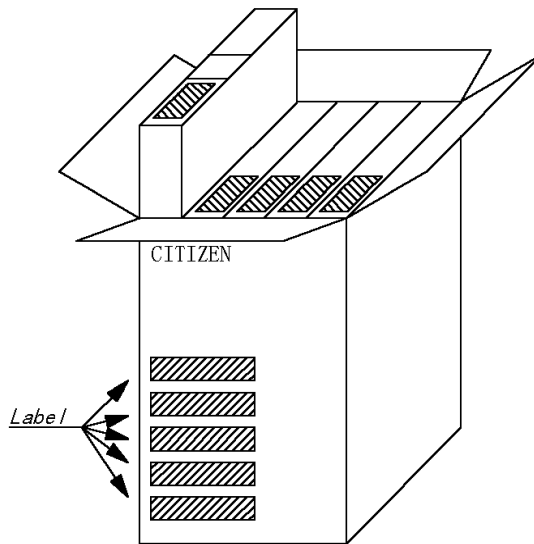
## (3) Packing



Item		Empty Space
Tape Leader	Cover Tape	Min. 500 mm
	Empty Pockets	Min. 20 Pockets
Tape Trailer	Cover Tape	Min. 0 mm
	Empty Pockets	Min. 40 mm

## 2. INNER CARTON



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<p data-bbox="293 268 537 296">3. OUTER CARTON</p> <div data-bbox="493 312 1024 852">  </div> <p data-bbox="293 909 449 936">4. MARKING</p> <p data-bbox="324 940 1120 968">(1) Marking Labels are affixed to reel , inner carton and outer carton.</p> <p data-bbox="352 972 662 999">Reel Marking is consist of:</p> <p data-bbox="324 1003 893 1031">(2) Each label contains the following information.</p> <ul style="list-style-type: none"> <li data-bbox="358 1035 600 1062">* Parts name or type</li> <li data-bbox="358 1066 505 1094">* Frequency</li> <li data-bbox="358 1098 477 1125">* Quantity</li> <li data-bbox="358 1129 730 1157">* Manufacturing Date or symbol</li> <li data-bbox="358 1161 747 1188">* Manufacturer's name or symbol</li> <li data-bbox="358 1192 613 1220">* Others(if necessary)</li> </ul> <p data-bbox="293 1245 459 1272">5. QUANTITY</p> <p data-bbox="373 1308 534 1335">2000 pcs/reel</p> <p data-bbox="293 1367 657 1394">6. STORAGE ENVIRONMENT</p> <ul style="list-style-type: none"> <li data-bbox="337 1398 967 1425">* Storage the reel at normal temperature and humidity</li> <li data-bbox="337 1430 771 1457">* Open the packing just before using.</li> <li data-bbox="337 1461 626 1488">* Do not expose the sun.</li> <li data-bbox="337 1493 878 1520">* Do not storage with some erosive chemicals.</li> <li data-bbox="337 1524 1260 1551">* Nothing is allowed to put on the reel or carton to prevent mechanical damage.</li> </ul> <p data-bbox="293 1556 462 1583">7. HANDLING</p> <ul style="list-style-type: none"> <li data-bbox="337 1587 1135 1614">* Handle with care to prevent the damage of tape, reel and products.</li> </ul>		

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<p>V. NOTES</p> <p>1. HANDLING (ELECTROSTATIC DISCHARGES) This device is made with CMOS circuitry. Please take precautions to prevent damage due to electrical static discharge.</p> <p>(SHOCK RELIABILITY) This device contains a quartz crystal, so please do not give too much shock or vibration. An automatic inserion is available, however, the internal quartz crystal might be damaged in case that too much shock or vibration is given by machine condition. Be sure to check your machine condition in advance.</p> <p>(CLEANING) Since, depending on the cleaning conditions,there is a possibility of damage being caused to the Crystal Osillator,do not fail to test and confirm the results beforehand,using your company's cleaning conditions.</p> <p>(TEMPERATURE AND HUMIDITY) We recomend to store and use device under normal temperature and humidity. When this device is used in high humidity applications, there is a potential problem with condensation. As with other IC's, please take precautions to prevent condensation.</p> <p>2. CIRCUIT DESIGNS (POWER LINES) We recomend placing a 0.01 to 0.1uF capacitor between VDD and GND to obtain stable operation and protect against power line ripple . VDD and GND pattern should be as wide as possible.</p> <p>(OE INPUT LINE) When OE pin is not used, please connect it to VDD.</p> <p>(OUTPUT LINE) As a long output line may cause irregular output, please take care to design that output line is as short as possible, and also keep high level signal source away from this device.</p> <p>(STARTING UP) Vc must be kept ground level or left open when starting up.</p>			