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[Citizen Finedevice](#)

[CSX750VCB4.096M-UT](#)

For any questions, you can email us directly:

sales@integrated-circuit.com

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Messrs.

SPECIFICATION

PRODUCT NAME:
VOLTAGE CONTROLLED CRYSTAL OSCILLATOR

TYPE: CSX-750V

FREQUENCY: MHz

PARTS NO.:

CITIZEN WATCH CO., LTD.
1-12, Honcho 6-chome, Tanashi-shi,
Tokyo 188-8511 Japan

Oscillator Technical section
Crystal Devices Div.
Telephone: 0424-68-4572
Fax : 0424-68-4666

APPROVED	CHECKED	PREPARED

PRODUCTS MARKETING GROUP
Telephone: 0424-67-6214
Telex:2822-471/ Fax: 0424-67-8503

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<p>I. SCOPE This specification relates to the voltage controlled crystal oscillator to be supplied by CITIZEN WATCH CO., LTD. (following as CITIZEN) .</p> <p>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.</p>																																																		
<p>II. SPECIFICATION</p> <p>1. ABSOLUTE MAXIMUM RATING</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Parameter</th> <th colspan="2">CSX750VB/CSX750VC</th> </tr> </thead> <tbody> <tr> <td>Supply Voltage Vmax</td> <td colspan="2">-0.5V to +7.0V</td> </tr> <tr> <td>Storage Temperature Tstg</td> <td colspan="2">-45°C to +90°C</td> </tr> <tr> <td>Output Current Iout</td> <td colspan="2">10mA Max.</td> </tr> <tr> <td>Input Control Voltage Vc_m</td> <td colspan="2">-0.5V to Vdd+0.5V</td> </tr> <tr> <td>Solder Heat Resistance Of The Outer Lead Tsol</td> <td colspan="2">Max.240°C x Max.10 seconds x 2times Max.200°C x Max. 3 minutes</td> </tr> </tbody> </table> <p>2. OPERATING RANGE</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Parameter</th> <th>CSX750VB</th> <th>CSX750VC</th> </tr> </thead> <tbody> <tr> <td>Supply Voltage Vdd</td> <td>3.3V±5%</td> <td>5.0V±10%</td> </tr> <tr> <td>Operating Temperature Topr</td> <td colspan="2">-10°C to 70°C or -40°C to 85°C</td> </tr> <tr> <td>Input Control Voltage Vc</td> <td colspan="2">0.0V to Vdd</td> </tr> <tr> <td>Output Load CL</td> <td colspan="2">30pF Max.</td> </tr> </tbody> </table> <p>3. FREQUENCY CHARACTERISTICS</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Parameter</th> <th>CSX750VB</th> <th>CSX750VC</th> </tr> </thead> <tbody> <tr> <td>Stability (note1) dF0</td> <td colspan="2">±50ppm Max.</td> </tr> <tr> <td>Pullability (note2) Fpull</td> <td>±90ppm Min.</td> <td>±100ppm Min.</td> </tr> <tr> <td>Linearity Ldev</td> <td>±15% Max.</td> <td>±10% Max.</td> </tr> <tr> <td>Modulation Band Width Fmod</td> <td colspan="2">10kHz Min.</td> </tr> </tbody> </table> <p>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)</p>			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 Of The Outer Lead Tsol	Max.240°C x Max.10 seconds x 2times Max.200°C x Max. 3 minutes		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.		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.	
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4. ELECTRICAL CHARACTERISTICS

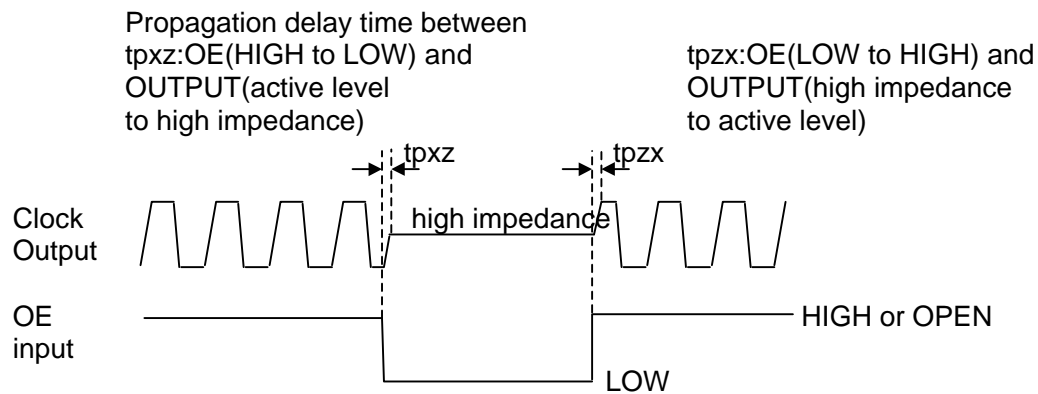
(Ta=25°C load=30pF Vc=Vdd/2)

Parameter	Conditions	CSX750VB	CSX750VC
Start Up Time (note) tosc		4msec Max.	
Power Supply Current Idd	No Load	11mA Max.	30mA Max.
Disable Current Iinh	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 tpxz		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



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

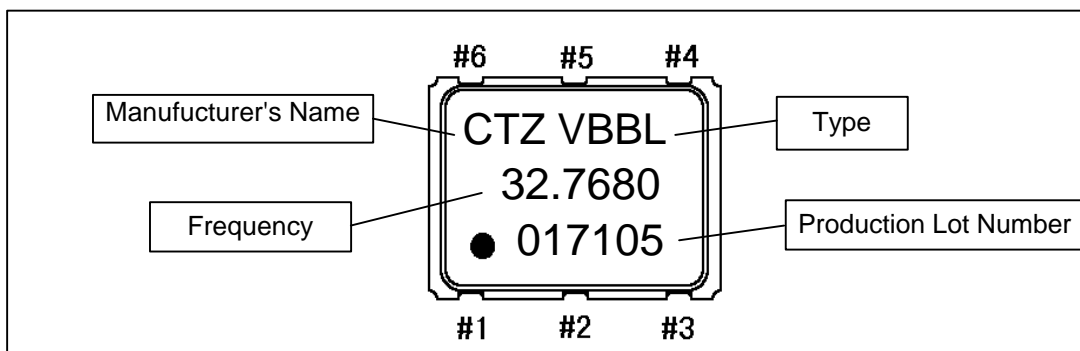
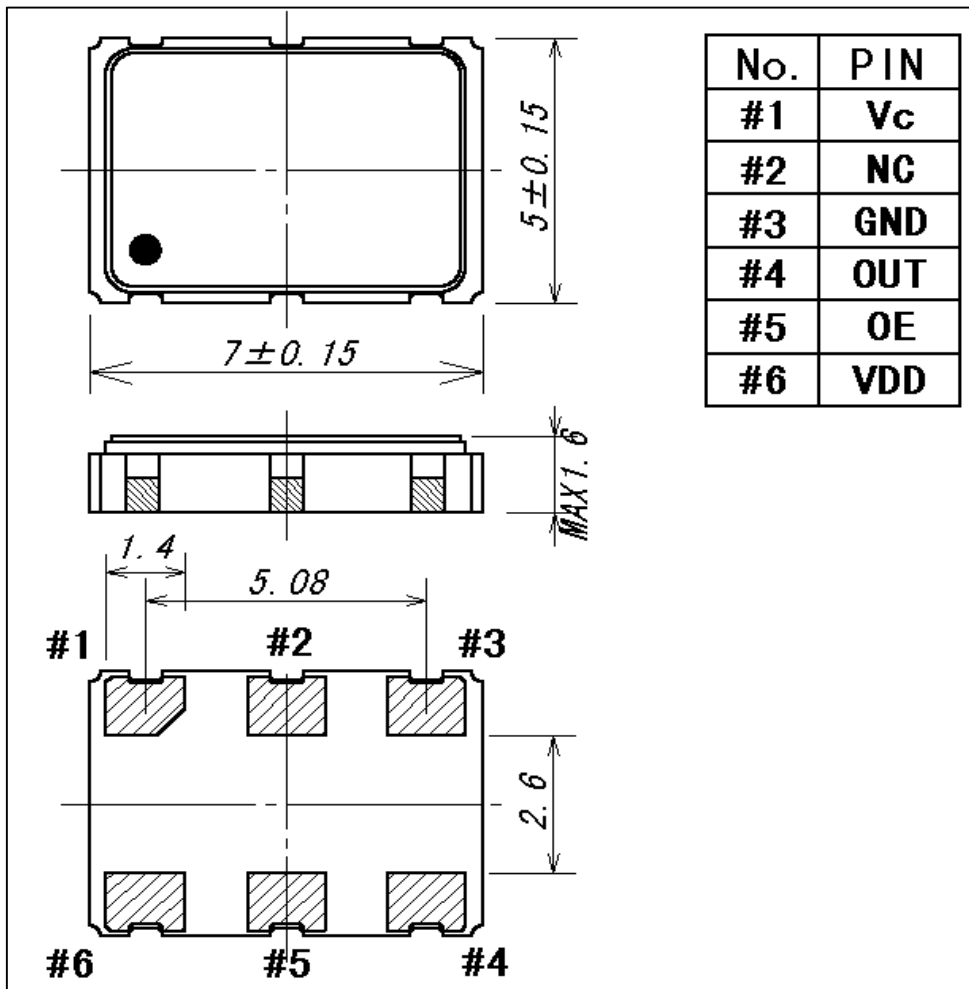
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<p>6. TEST CIRCUIT</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="239 465 829 873"> <p>[CMOS LOAD] (30pF)</p> </div> <div data-bbox="925 465 1292 873"> <p>[SUPPLY CURRENT]</p> </div> </div> <p>[MEASUREMENT CONDITION]</p> <ol style="list-style-type: none"> 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. <p>7. OUTPUT WAVEFORM</p> <p>[CMOS LOAD] (30pF)</p> <p style="text-align: center;">$DUTY = Th/T$</p>		

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<p>8. ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS The following are our reliability test conditions.</p> <table border="1" data-bbox="236 497 1369 716"> <thead> <tr> <th data-bbox="236 497 561 539">Item</th> <th data-bbox="561 497 1369 539">Conditions</th> </tr> </thead> <tbody> <tr> <td data-bbox="236 539 561 582">Shock</td> <td data-bbox="561 539 1369 582">MIL-STD-883E 2002.3B</td> </tr> <tr> <td data-bbox="236 582 561 624">Vibration</td> <td data-bbox="561 582 1369 624">MIL-STD-883E 2007.2A</td> </tr> <tr> <td data-bbox="236 624 561 667">Gross Leak</td> <td data-bbox="561 624 1369 667">Leak rate less than 50ppm atm cc /sec of Air</td> </tr> <tr> <td data-bbox="236 667 561 710">Fine Leak</td> <td data-bbox="561 667 1369 710">Leak rate less than 0.01ppm atm cc /sec of Herium</td> </tr> </tbody> </table>				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
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III. DIMENSIONS AND MARKING

<<Dimensions>> (UNIT mm)



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IV. TAPE AND REEL PACKAGING

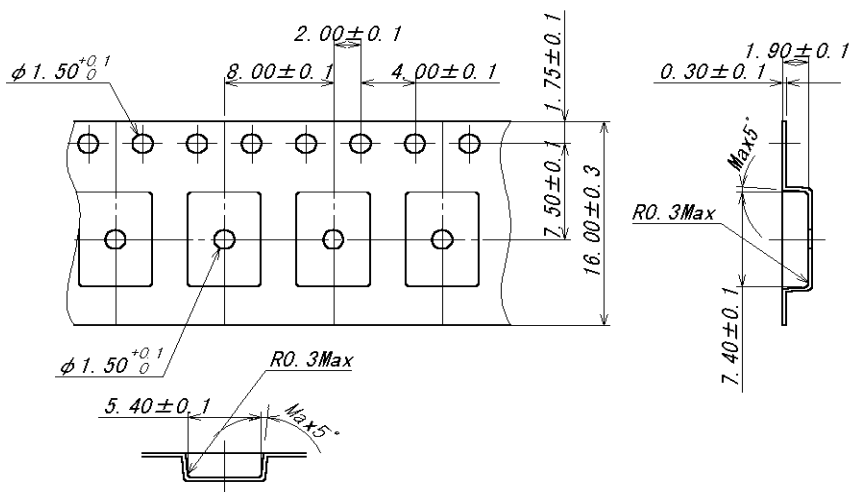
1. TAPING SPECIFICATION

Subject to EIA 481A & JIS C 0806

(1) Tape Dimensions

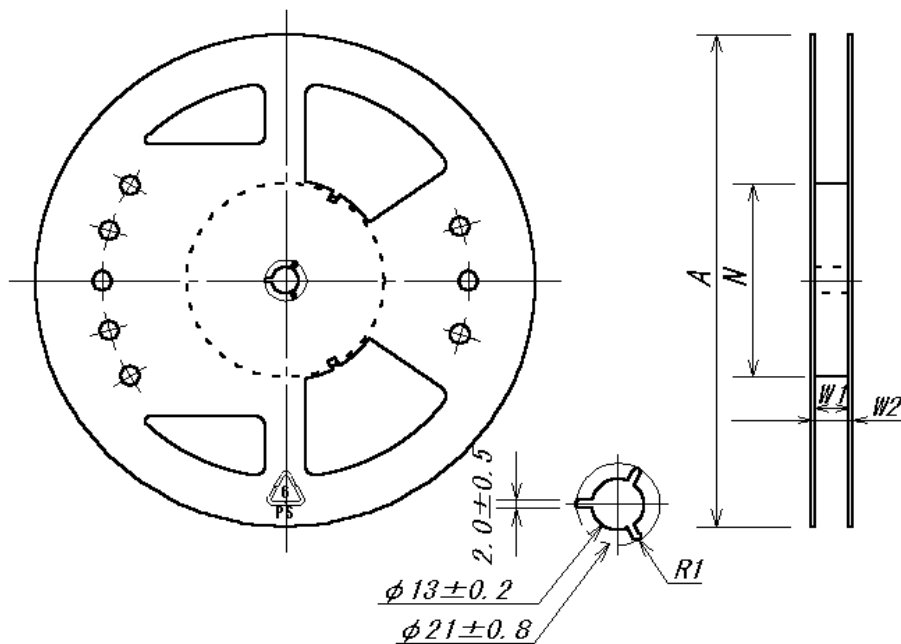
Material of the Carrier Tape : PA-PET conductive coat

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



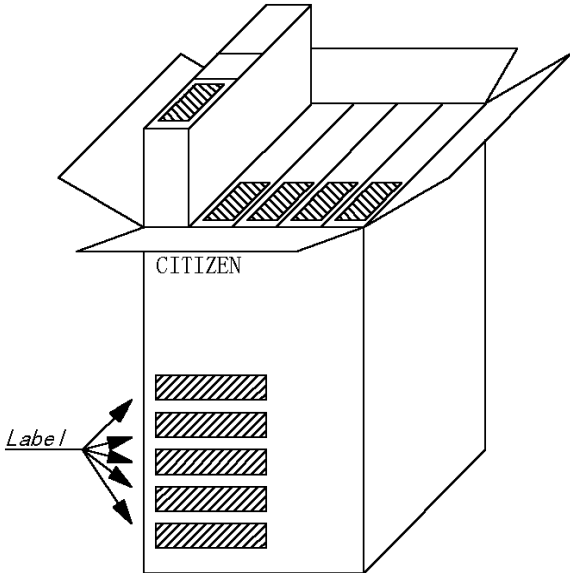
(2) Reel Dimensions

Material of the Reel : PS



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

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(3) Packing														
<table border="1"> <thead> <tr> <th>Item</th> <th>Empty Space</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Tape Leader</td> <td>Cover Tape</td> <td>Min. 500 mm</td> </tr> <tr> <td>Empty Pockets</td> <td>Min. 20 Pockets</td> </tr> <tr> <td rowspan="2">Tape Trailer</td> <td>Cover Tape</td> <td>Min. 0 mm</td> </tr> <tr> <td>Empty Pockets</td> <td>Min. 40 mm</td> </tr> </tbody> </table>			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
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2. INNER CARTON														

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<p>3. OUTER CARTON</p>  <p>4. MARKING</p> <p>(1) Marking Labels are affixed to reel , inner carton and outer carton. Reel Marking is consist of:</p> <p>(2) Each label contains the following information.</p> <ul style="list-style-type: none"> * Parts name or type * Frequency * Quantity * Manufacturing Date or symbol * Manufacturer's name or symbol * Others(if necessary) <p>5. QUANTITY</p> <p>2000 pcs/reel</p> <p>6. STORAGE ENVIRONMENT</p> <ul style="list-style-type: none"> * Storage the reel at normal temperature and humidity * Open the packing just before using. * Do not expose the sun. * Do not storage with some erosive chemicals. * Nothing is allowed to put on the reel or carton to prevent mechanical damage. <p>7. HANDLING</p> <ul style="list-style-type: none"> * Handle with care to prevent the damage of tape, reel and products. 		

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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>			