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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

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

APPROVED	CHECKED	PREPARED

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 Of The Outer Lead	Tsol	Max.240°C x Max.10 seconds x 2times 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)

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	tpzx		100ns Max.	

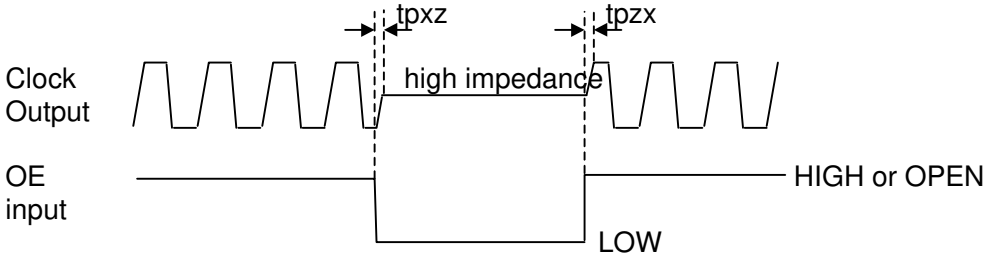
note) Vc must be kept ground level or left open when starting up.

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)

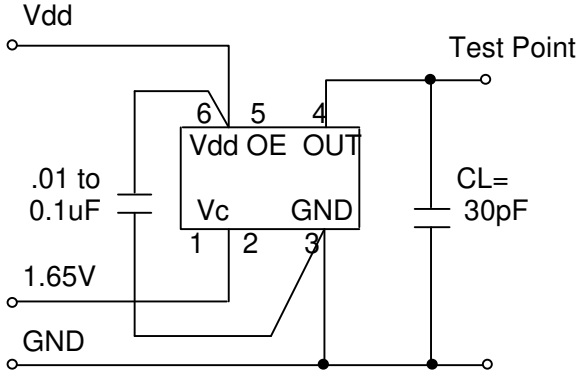
tpzx:OE(LOW to HIGH) and
OUTPUT(high impedance
to active level)



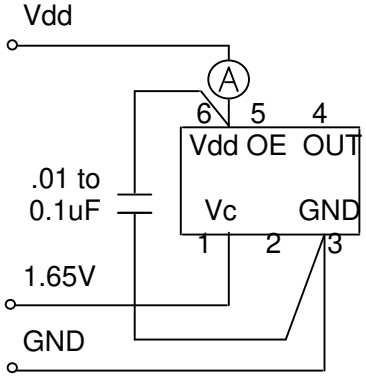
NOTE: A disable clock output does not synchronize with OE,
because internal quartz oscillator is continuous.

6. TEST CIRCUIT

[CMOS LOAD] (30pF)



[SUPPLY CURRENT]

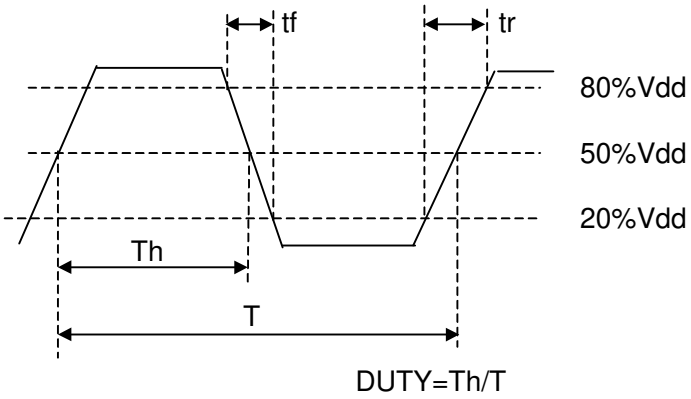


[MEASUREMENT CONDITION]

1.Osilloscope
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)



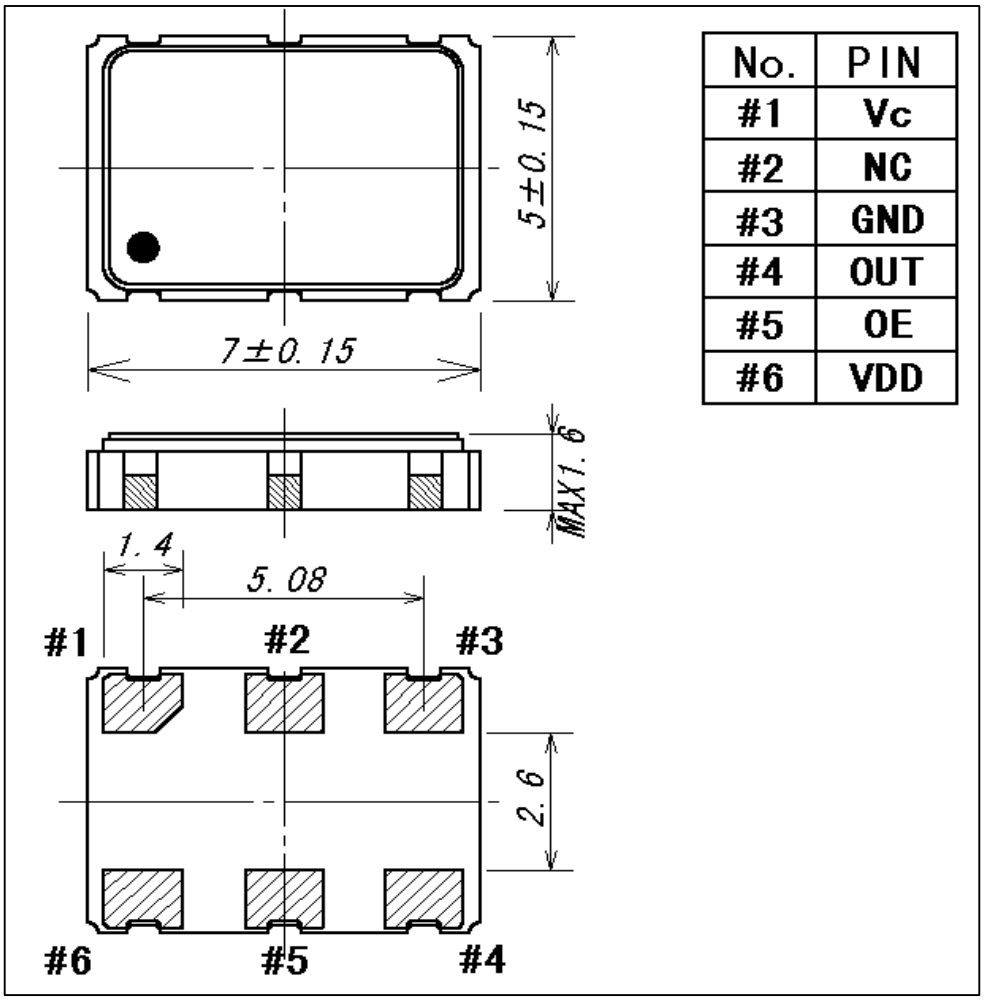
DUTY=Th/T

8. ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS
The following are our reliability test conditions.

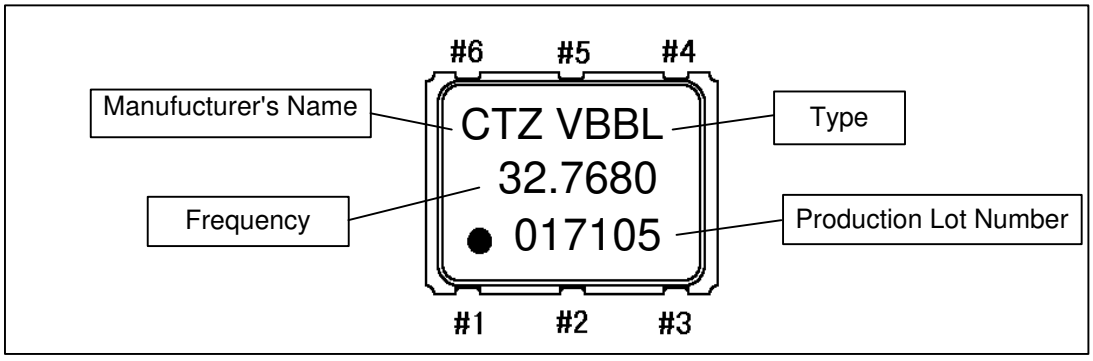
Item	Conditions
Shock	MIL-STD-883E 2002.3B
Vibration	MIL-STD-883E 2007.2A
Gross Leak	Leak rate less than 50ppm atm cc /sec of Air
Fine Leak	Leak rate less than 0.01ppm atm cc /sec of Herium

III. DIMENSIONS AND MARKING

<<Dimensions>> (UNIT mm)



No.	PIN
#1	Vc
#2	NC
#3	GND
#4	OUT
#5	OE
#6	VDD



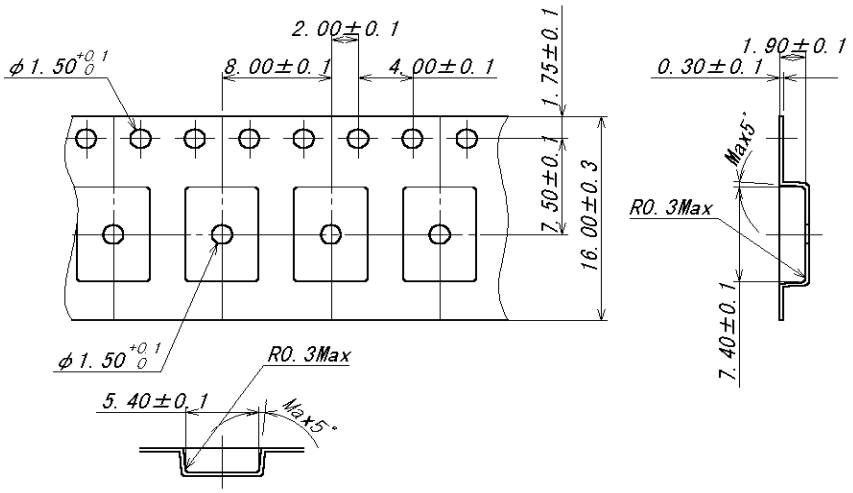
IV. TAPE AND REEL PACKAGING

1. TAPING SPECIFICATION

Subject to EIA 481A & JIS C 0806

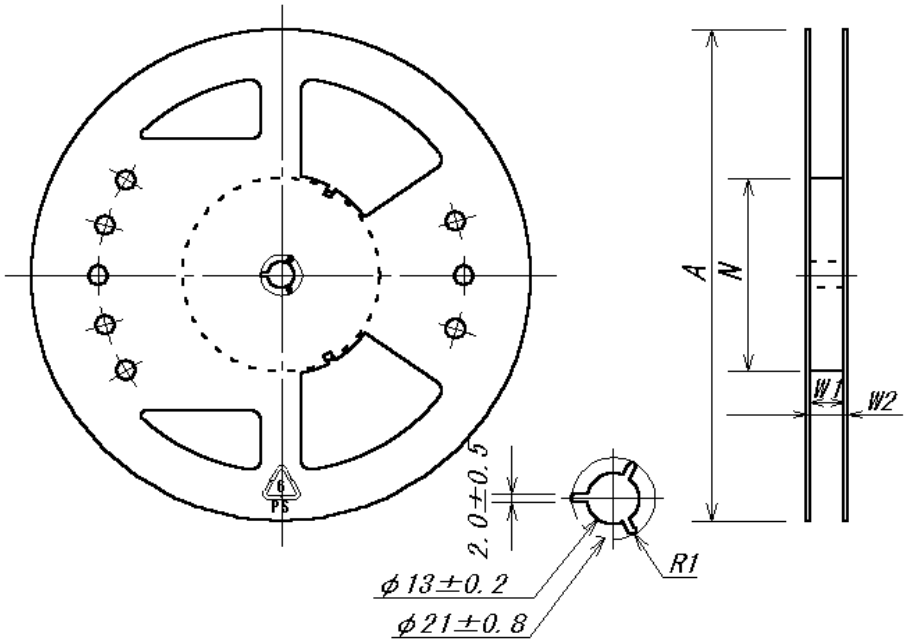
(1) Tape Dimensions

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



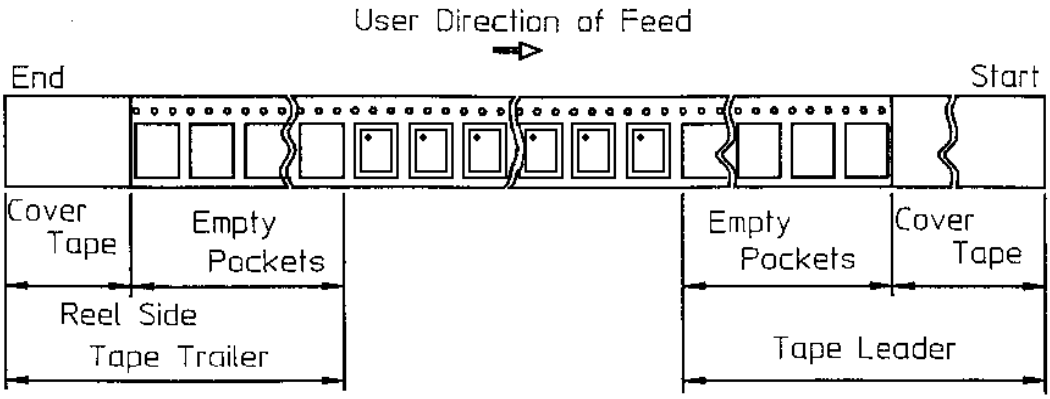
(2) Reel Dimensions

Material of the Reel : PS



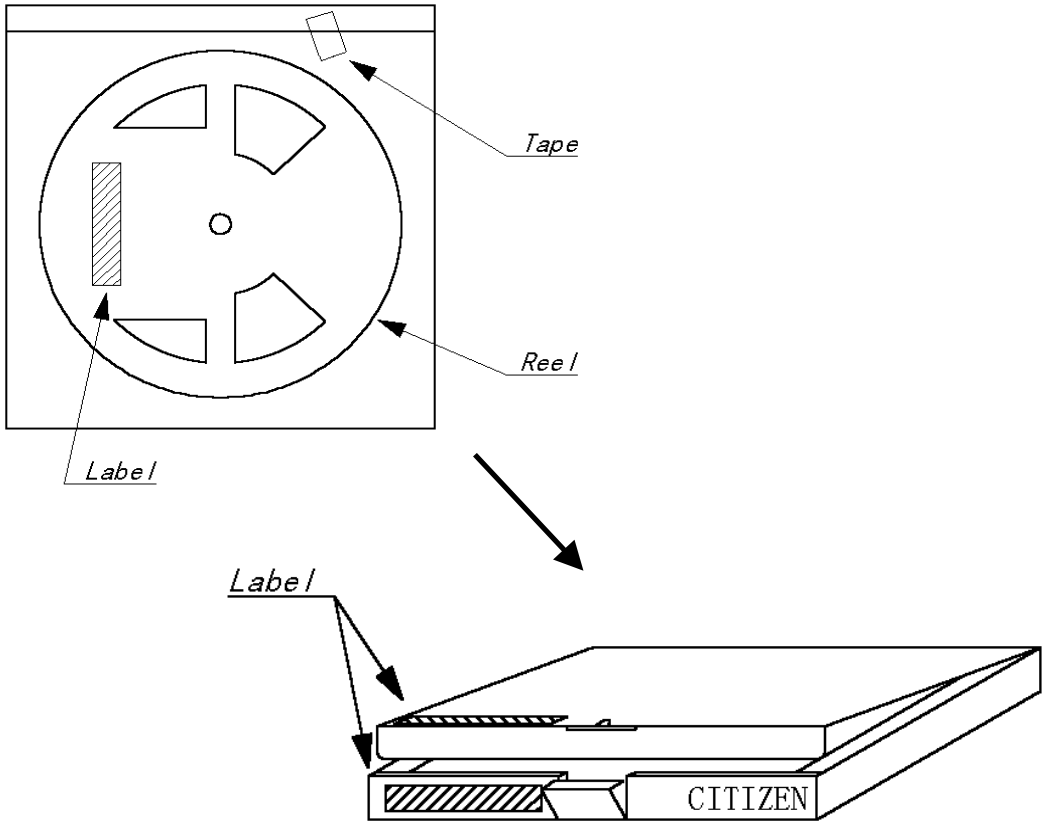
Symbol	A	N	W1	W2
Dimension(mm)	254+/-2	100+/-1	17.5+/-1.0	21.5+/-1.0

(3) Packing

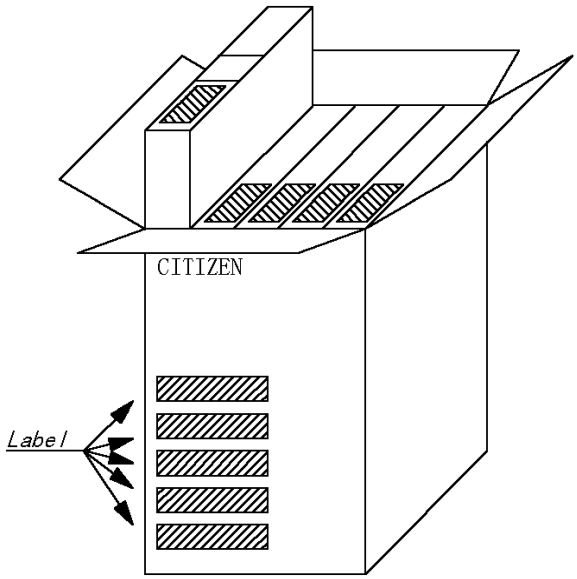


Item		Empty Space
Tape Leader	Cover Tape	Min. 500 mm
	Empty Pockets	Min. 20 Pockets
Tape Trailer	Cover Tape	Min. 0 mm
	Empty Pockets	Min. 40 mm

2. INNER CARTON



3. OUTER CARTON



4. MARKING
   (1) Marking Labels are affixed to reel , inner carton and outer carton.
   Reel Marking is consist of:
   (2) Each label contains the following information.
   * Parts name or type
   * Frequency
   * Quantity
   * Manufucturing Date or symbol
   * Manufucturer's name or symbol
   * Others(if necessary)

5. QUANTITY

   2000 pcs/reel

6. STORAGE ENVIRONMENT
   * 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.

7. HANDLING
   * Handle with care to prevent the damege of tape, reel and products.

V. NOTES

1. HANDLING

(ELECTROSTATIC DISCHARGES)

This device is made with CMOS circuitry. Please take precautions to prevent damage due to electrical static discharge.

(SHOCK RELIABILITY)

This device contains a quartz crystal, so please do not give too much shock or vibration. An automatic insersion 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.

(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.

(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.

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.

(OE INPUT LINE)

When OE pin is not used, please connect it to VDD.

(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.

(STARTING UP)

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