

## VCXO

## VG-4231CE

SEIKO EPSON CORPORATION

Product name VG-4231CE 32.000000 MHz CSC-M

Product code / Ordering code Q3614CE000095xx

Please refer to the 8.Packing information about xx (last 2 digits)

Output waveform CMOS

Pb free / Complies with EU RoHS directive

Reference weight Typ.26 mg

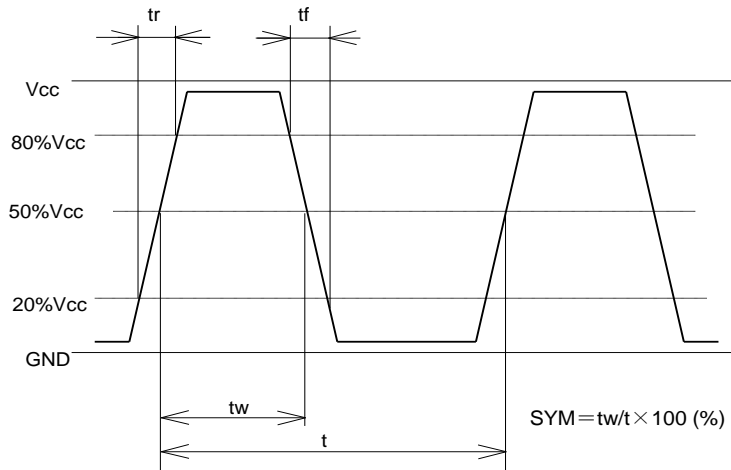
**1.Absolute maximum ratings**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	Vcc-GND	-0.3	-	+7	V	-
Storage temperature	T_stg	-40	-	+125	°C	Storage as single product after unpacking.
Input voltage	Vin	-0.3	-	Vcc+0.3	V	Vc traminal

**2.Specifications(characteristics)**

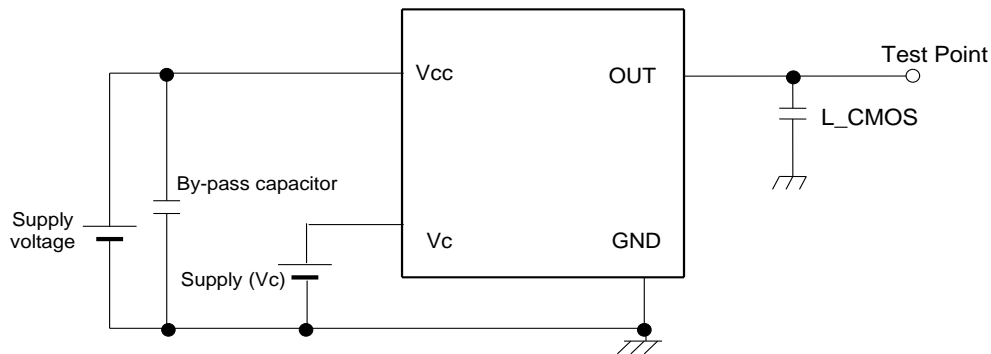
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	fo		32.0000		MHz	
Supply voltage	Vcc	3	3.3	3.6	V	-
Control voltage	Vc	0	1.65	3.3	V	Vc=1.65V+/-1.65V
Operating temperature	T_use	-20	-	+70	°C	-
Frequency tolerance	f_tol	-30	-	+30	x10 <sup>-6</sup>	T_use
Current consumption	Icc	-	-	2.5	mA	No load
Frequency control range	f_cont	+/-140	-	-	x10 <sup>-6</sup>	-
Absolute pull range	APR	+/-100	-	-	x10 <sup>-6</sup>	-
Modulation characteristics	BW	15	-	-	kHz	+/-3dB
Input resistance	Rin	5	-	-	MΩ	-
Linearity	F_LIN	-	-	+/-10	%	-
Frequency change polarity	-	Positive			-	-
Symmetry	SYM	40	-	60	%	50% Vcc level
Output voltage	V_OH	90 % Vcc	-	-	V	I_OH = -3.0 mA
	V_OL	-	-	10 % Vcc	V	I_OL = 3.0 mA
Output load condition	L_CMOS	-	-	15	pF	-
Rise time	tr	-	-	4	ns	20%Vcc to 80%Vcc level
Fall time	tf	-	-	4	ns	80%Vcc to 20%Vcc level
Start-up time	t_str	-	-	5	ms	t=0 at 90 %Vcc
Frequency aging	f_aging	-5	-	5	x10 <sup>-6</sup>	25°C, 5years

### 3. Timing chart

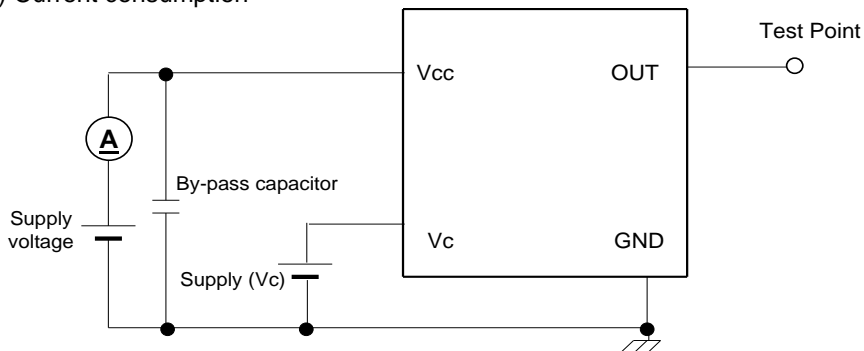


### 4. Test circuit

#### 1) C-MOS load $C_L=15 \text{ pF}$



#### 2) Current consumption



#### 3) Condition

##### 1. Oscilloscope

Impossible to measure both frequency and wave form at the same time.

(In case of using oscilloscope's amplifier output, possible to measure both at the same time.)

##### 2. $L_{\text{CMOS}}$ includes probe capacitance.

##### 3. By-pass capacitor (0.01 $\mu\text{F}$ to 0.1 $\mu\text{F}$ ) is placed closely between Vcc and GND.

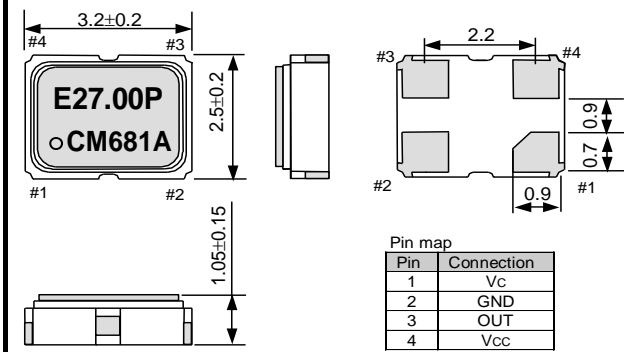
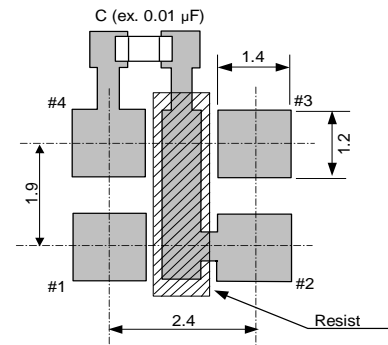
##### 4. Use the current meter whose internal impedance value is small.

##### 5. Power Supply

· Start up time (0 %Vcc  $\rightarrow$  90 %Vcc) of power source should be more than 150  $\mu\text{s}$ .

· Impedance of power supply should be as low as possible.

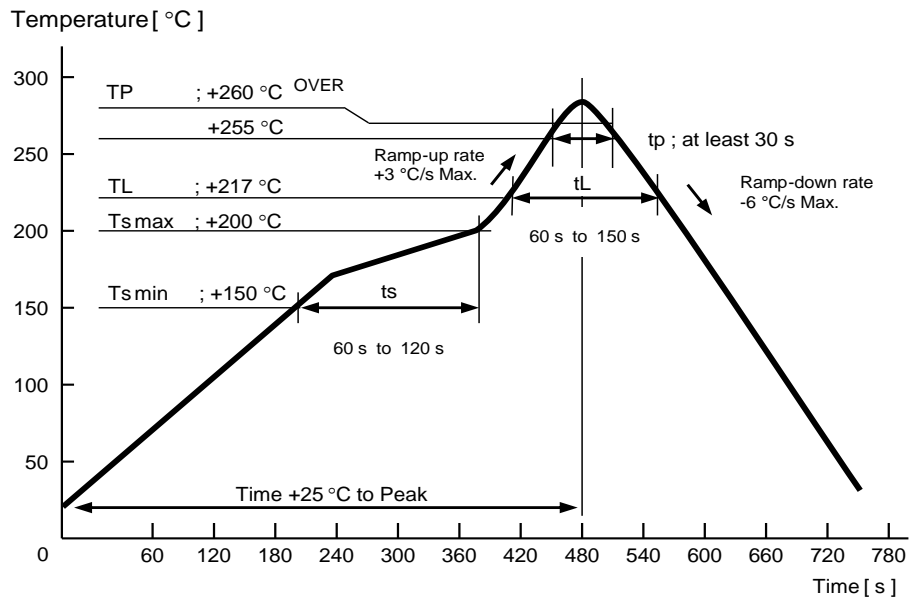
##### 6. One point earth of test circuit is required.

**5.External dimensions (Unit: mm)****6.Footprint(Recommended) (Unit: mm)**

To maintain stable operation, provide a 0.01μF to 0.1μF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between V<sub>cc</sub> - GND).

**7.Reflow profile**

JEDEC STD-020D.01

**8.Packing information**

[ 1 ] Product number last 2 digits code(xx) description

The recommended code is "00"

Q3614CE000095xx

Code	Condition	Code	Condition
00	1000pcs / Reel	12	250pcs / Reel
01	Any Q'ty vinyl bag(Tape cut)	13	500pcs / Reel
11	Any Q'ty / Reel	14	1kpcs / Reel

## [ 2 ] Taping specification

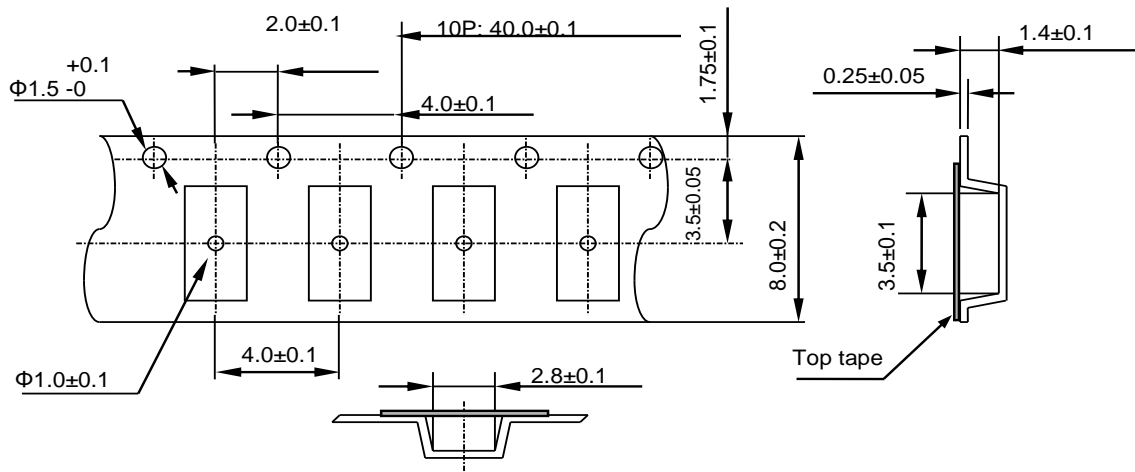
Subject to EIA-481 &amp; IEC-60286

## (1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

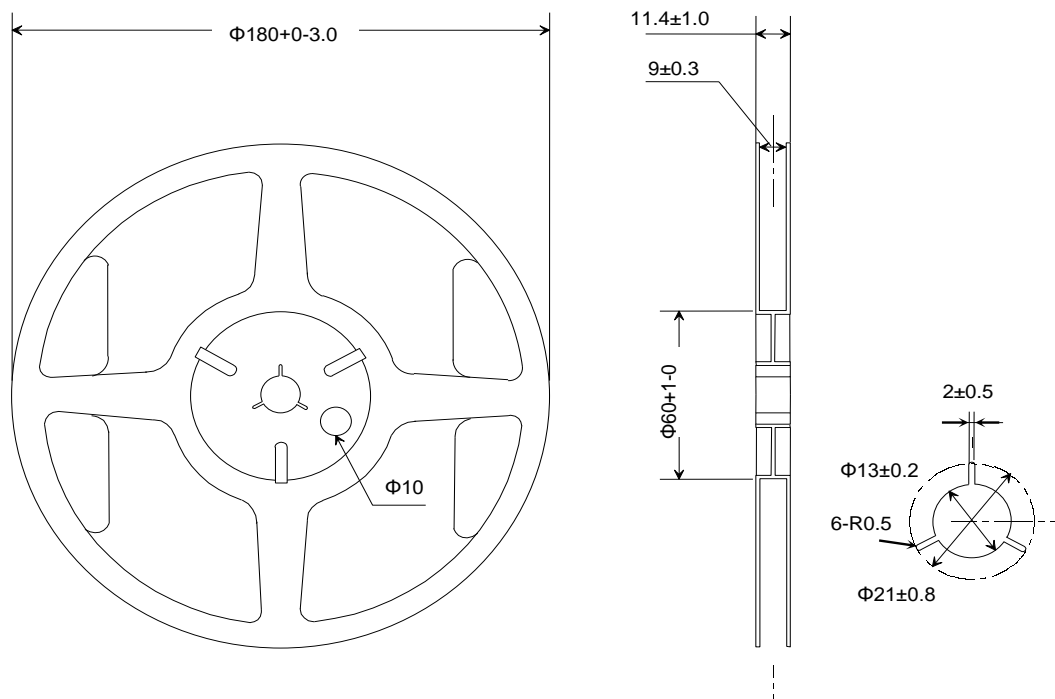
Unit: mm



## (2) Reel dimensions

Material of the Reel : PS

Unit: mm



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