



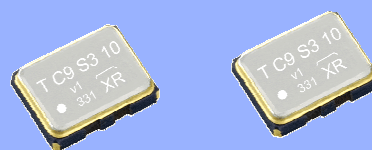
# TCXO/VC-TCXO HIGH STABILITY, CMOS OUTPUT

**NEW**

Product Number (Please contact us)  
X1G005101xxxx00

## TG3225CEN

- Output frequency : 12 MHz to 52MHz
- Supply voltage : 2.8 V Typ./ 3.0 V Typ./ 3.3 V Typ.
- Frequency / temperature characteristics :  $\pm 2.0 \times 10^{-6}$  Max.
- External dimensions: 3.2 × 2.5 × 0.9 mm
- Applications : Reference clock for measurement machine  
Wireless communication devices  
(Smart meter, Telemeter, other)
- Features : High stability, CMOS output



Actual size



### Specifications (characteristics)

| Item                                  | Symbol                          | VC-TCXO  | TCXO | Conditions / Remarks  |
|---------------------------------------|---------------------------------|--|------|---|
| Output frequency range                | f <sub>0</sub>                  | 12 MHz to 52MHz<br>27MHz, 39 MHz and 40MHz             |      | Standard frequency  |
| Supply voltage                        | V <sub>cc</sub>                 | 2.8 V $\pm 5\%$ / 3.0 V $\pm 5\%$ / 3.3 V $\pm 5\%$    |      | Supply voltage range :2.375 V to 3.63 V   |
| Storage temperature                   | T <sub>stg</sub>                | -40 °C to +90 °C                                       |      | Storage as single product.  |
| Operating temperature                 | T <sub>use</sub>                | G: -40 °C to +85 °C                                    |      |   |
| Frequency tolerance                   | f <sub>tol</sub>                | $\pm 2.0 \times 10^{-6}$ Max.                          |      | After reflow, +25 °C  |
| Frequency/temperature characteristics | f <sub>0</sub> -T <sub>c</sub>  | F: $\pm 2.0 \times 10^{-6}$ Max. / G: -40 °C to +85 °C |      | Standard stability version  |
| Frequency/load coefficient            | f <sub>0</sub> -Load            | $\pm 0.2 \times 10^{-6}$ Max.                          |      | 15 pF $\pm 10\%$  |
| Frequency/voltage coefficient         | f <sub>0</sub> -V <sub>cc</sub> | $\pm 0.3 \times 10^{-6}$ Max.                          |      | V <sub>cc</sub> $\pm 5\%$   |
| Frequency aging                       | f <sub>age</sub>                | $\pm 1.0 \times 10^{-6}$ Max.                          |      | +25 °C, First year, 12 MHz $\leq$ f <sub>0</sub> $\leq$ 40 MHz  |
|                                       |                                 | $\pm 1.5 \times 10^{-6}$ Max.                          |      | +25 °C, First year, 40 MHz < f <sub>0</sub> $\leq$ 52 MHz   |
| Current consumption                   | I <sub>cc</sub>                 | 4.0 mA Max.  |      | 12 MHz $\leq$ f <sub>0</sub> $\leq$ 26 MHz  |
|                                       |                                 | 6.0 mA Max.  |      | 26 MHz < f <sub>0</sub> $\leq$ 39 MHz   |
|                                       |                                 | 6.5 mA Max.  |      | 39 MHz < f <sub>0</sub> $\leq$ 52 MHz   |
| Input resistance                      | R <sub>in</sub>                 | 500 k $\Omega$ Min.                                    | -    | V <sub>c</sub> - GND (DC)   |
| Frequency control range               | f <sub>cont</sub>               | $\pm 8.0 \times 10^{-6}$ to $\pm 15.0 \times 10^{-6}$  | -    | V <sub>c</sub> = 1.4 V $\pm 1.0$ V (V <sub>cc</sub> = 2.8 V) or<br>V <sub>c</sub> = 1.5 V $\pm 1.0$ V (V <sub>cc</sub> = 3.0 V) or<br>V <sub>c</sub> = 1.65 V $\pm 1.0$ V (V <sub>cc</sub> = 3.3 V) |
| Frequency change polarity             | -                               | Positive polarity                                      | -    |   |
| Symmetry                              | SYM                             | 45 % to 55 %   |      | 50 % V <sub>cc</sub> level, L <sub>CMOS</sub> $\leq$ 15 pF  |
| Output voltage                        | V <sub>OH</sub>                 | 90 % V <sub>cc</sub> Min.                              |      |   |
|                                       | V <sub>OL</sub>                 | 10 % V <sub>cc</sub> Max.                              |      |   |
| Start-up time                         | t <sub>str</sub>                | 2.0 ms Max.  |      | T=0 at 90% V <sub>cc</sub>  |
| Output load condition                 | Load                            | 15 pF Max.   |      |   |

\* Note : Please contact us for requirements not listed in this specification.

Product Name TG3225 CEN 39.000000MHz K F G N N A

(Standard form)

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

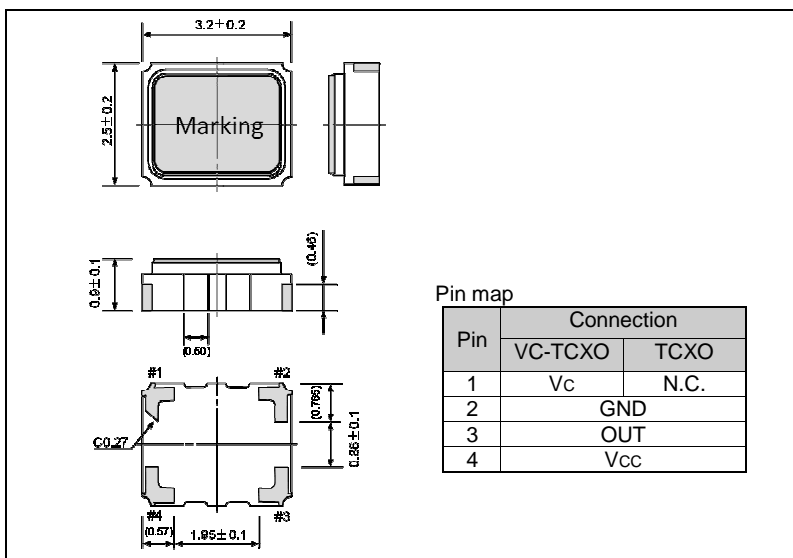
①Model ②Output (C: CMOS) ③Frequency ④Supply voltage (K: 2.5 to 3.3 V)

⑤Frequency / temperature characteristics (F:  $\pm 2.0 \times 10^{-6}$  Max.) ⑥Operating temperature (G: -40 °C to +85 °C)

⑦OE function (N: Non) ⑧V<sub>c</sub> function(A: VC-TCXO, N: Non) ⑨Internal identification code ("A" is default)

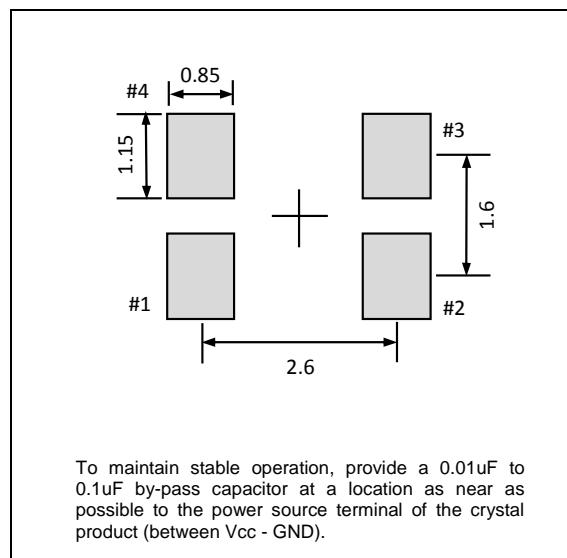
### External dimensions

(Unit:mm)



### Footprint (Recommended)

(Unit:mm)



## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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|   |   |
|---|---|
|  | ► Pb free.  |
|  | ► Complies with EU RoHS directive.<br>*About the products without the Pb-free mark.<br>Contains Pb in products exempted by EU RoHS directive.<br>(Contains Pb in sealing glass, high melting temperature type solder or other.) |
|  | ► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.  |
|  | ► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc ).  |

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