



# TCXO HIGH STABILITY

## 105 °C HIGH TEMPERATURE



Product Number  
**TG-5510CA: X1G006001xxxx99**  
**TG-5511CA: X1G006011xxxx99**

# TG-5510CA / TG-5511CA

- Frequency range : 10 MHz to 54 MHz
- Supply voltage : 3.3 V Typ.
- Frequency / temperature characteristics :  $\pm 0.28 \times 10^{-6}$  Max. (-40 °C to +85 °C, 105 °C option)
- Free-run accuracy :  $\pm 4.6 \times 10^{-6}$  Max. / 20 years (for Stratum3)
- External dimensions : 7.0 × 5.0 × 1.5 mm (10 pins or 4 pins)
- Applications : Network synchronization, Stratum3, BTS, SyncE, IEEE1588, Microwave, BTS
- Features : 105 °C High temp, High stability



TG-5510CA  
(10 pins)



TG-5511CA  
(4 pins)

## Specifications (characteristics)

| Item                                      | Symbol             | CMOS                                                                                                   | Clipped sine wave | Condition                                                                       |
|-------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------|
| Output frequency range                    | fo                 | 10 MHz to 54 MHz                                                                                       |                   | Please contact us about available frequencies.                                  |
| Supply voltage                            | V <sub>CC</sub>    | 3.3 V ± 5 %                                                                                            |                   |                                                                                 |
| Storage temperature                       | T <sub>stg</sub>   | -40 °C to +105 °C                                                                                      |                   | Storage as single product.                                                      |
| Operating temperature                     | T <sub>use</sub>   | -40 °C to +85 °C<br>(-40 °C to +105 °C)                                                                |                   | Standard<br>(Option)                                                            |
| a) Frequency tolerance                    | f <sub>tol</sub>   | $\pm 1.0 \times 10^{-6}$ Max.                                                                          |                   | After reflow, +25 °C                                                            |
| b) Frequency/temperature characteristics  | fo-Tc              | $\pm 0.28 \times 10^{-6}$ Max.<br>( $\pm 0.25 \times 10^{-6}$ Max.)                                    |                   | Standard<br>(Option)                                                            |
| c) Frequency/load coefficient             | fo-Load            | $\pm 0.1 \times 10^{-6}$ Max.                                                                          |                   | Load ± 10 %                                                                     |
| d) Frequency/voltage coefficient          | fo-V <sub>CC</sub> | $\pm 0.1 \times 10^{-6}$ Max.                                                                          |                   | V <sub>CC</sub> ± 5 %                                                           |
| e) Frequency aging                        | f <sub>age</sub>   | $\pm 0.5 \times 10^{-6}$ Max.<br>$\pm 3.0 \times 10^{-6}$ Max.                                         |                   | +25 °C, First year<br>+25 °C, 20 years                                          |
| Holdover stability (Constant temperature) | -                  | $\pm 0.01 \times 10^{-6}$ Max. (+25 °C, 24 hours)<br>$\pm 0.04 \times 10^{-6}$ Max. (+25 °C, 24 hours) |                   | After 10 days of continuous operation<br>After 48 hours of continuous operation |
| Wander generation (MTIE, TDEV)            |                    | Compliant with GR-1244CORE, ITU-T G.8262                                                               |                   |                                                                                 |
| Free-run accuracy                         | -                  | $\pm 4.6 \times 10^{-6}$ Max. / 20 years                                                               |                   |                                                                                 |
| Current consumption                       | I <sub>CC</sub>    | 7.0 mA Max.                                                                                            | 6.0 mA Max.       | This includes Item a), b), c), d) and e)                                        |
|                                           |                    | 9.0 mA Max.                                                                                            |                   | 10 MHz ≤ fo ≤ 26 MHz                                                            |
|                                           |                    | 10.0 mA Max.                                                                                           |                   | 26 MHz < fo ≤ 40 MHz                                                            |
| Symmetry                                  | SYM                | 45 % to 55 %                                                                                           | -                 | 40 MHz < fo ≤ 54 MHz<br>GND level (DC cut)                                      |
| Output voltage                            | V <sub>OH</sub>    | 90 % V <sub>CC</sub> Min.                                                                              | -                 |                                                                                 |
|                                           | V <sub>OL</sub>    | 10 % V <sub>CC</sub> Max.                                                                              | -                 |                                                                                 |
| Rise time / Fall time                     | tr/tf              | 8.0 ns Max.                                                                                            | -                 | 10 % V <sub>CC</sub> to 90 % V <sub>CC</sub> level, Load: 15 pF                 |
| Start-up time                             | t <sub>str</sub>   | 5 ms. Max.                                                                                             |                   | t = 0 at 90 % V <sub>CC</sub>                                                   |
| Output level                              | V <sub>pp</sub>    | -                                                                                                      | 0.8 V Min.        | Peak to Peak                                                                    |
| Output load condition                     | Load               | 15 pF                                                                                                  | 10 kΩ // 10 pF    |                                                                                 |
| Input voltage                             | V <sub>IH</sub>    | 70 % V <sub>CC</sub> Min.                                                                              |                   | OE terminal (Enable voltage)                                                    |
|                                           | V <sub>IL</sub>    | 30 % V <sub>CC</sub> Max.                                                                              |                   | OE terminal (Disable voltage)                                                   |

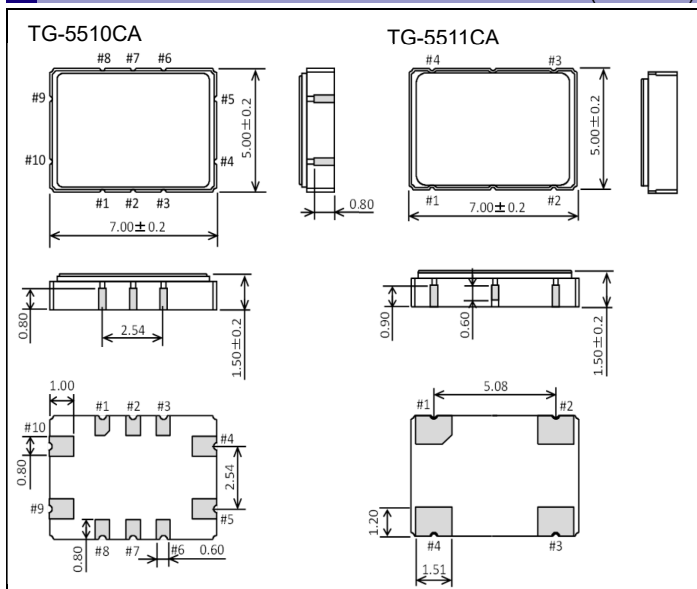
\* Note : Please contact us for requirements not listed in this specification.

Product Name **TG-5510CA-\*\*\*** **30.720000MHz**  
 (Standard form) ① ② ③ ④

①Model ②Package type ③Spec segment (Please contact us) ④Frequency

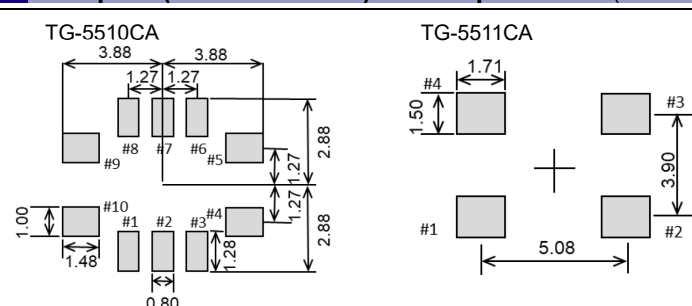
## External dimensions

(Unit : mm)



## Footprint (Recommended) / Pin Map

(Unit : mm)



To maintain stable operation, provide a 0.01 μF to 0.1 μF 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).

| Pin               | Connection      |
|-------------------|-----------------|
| 1, 2, 3, 6, 7, 10 | N.C.            |
| 4                 | GND             |
| 5                 | OUT             |
| 8                 | OE              |
| 9                 | V <sub>CC</sub> |

OE pin = "H" or "open": Specified frequency output.  
 OE pin = "L" : Output is high impedance.

| Pin | Connection      |
|-----|-----------------|
| 1   | N.C             |
| 2   | GND             |
| 3   | OUT             |
| 4   | V <sub>CC</sub> |

## 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.

## WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs, 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 IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

### ► Explanation of the mark that are using it for the catalog

|                                                                                   |                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | ► 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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