

SEIKO EPSON CORPORATION

TCXO / VC-TCXO HIGH STABILITY, CMOS OUTPUT **TG3225CEN / TG2520CEN**

	2.8 V Typ. / 3.0 V Typ. / 3.3 V Typ.				
 Frequency / temperature characteristics 					
:	±2.0 × 10 ⁻⁶ Max.				
 External dimensions: 	3.2 × 2.5 × 0.9 mm / 2.5 × 2.0 × 0.8 mm				
•Applications :	Reference clock for measurement machine				
	Wireless communication devices				
	(Smart meter, Telemeter, other)				
•Features :	High stability, CMOS output				



Product Number TG3225CEN : X1G005101xxxxxx TG2520CEN : X1G005161xxxxxx



TG3225CEN (3.2 × 2.5 × 0.9 mm)

TG2520CEN $(2.5 \times 2.0 \times 0.8 \text{ mm})$

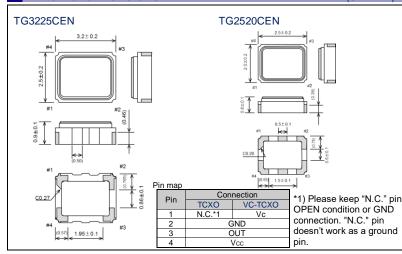
Specifications (characteristics)

Item	Symbol	тсхо	VC-TCXO	Conditions / Remarks	
			to 52 MHz		
Output frequency range	fo	12 MHz, 20 MHz, 24 MHz, 25 MHz, 26 MHz, 27 MHz, 32 MHz, 36 MHz, 38.4 MHz, 39 MHz and 40 MHz		Standard frequency	
Supply voltage	Vcc	$2.8 \text{ V} \pm 5 \% / 3.0 \text{ V} \pm 5 \% / 3.3 \text{ V} \pm 5 \%$		Supply voltage range: 2.375 V to 3.63 V	
Storage temperature range	T_stg	-40 °C to +90 °C		Storage as single product.	
Operating temperature range	T_use	G: -40 °C to +85 °C			
Frequency tolerance	f_tol	$\pm 2.0 \times 10^{-6}$ Max.		After reflow, +25 °C	
Frequency/temperature characteristics	fo-Tc	F: $\pm 2.0 \times 10^{\text{-6}}$ Max. / -40 °C to +85 °C		Standard stability version	
Frequency/load coefficient	fo-Load	$\pm 0.2 \times 10^{-6}$ Max.		15 pF ± 10 %	
Frequency/voltage coefficient	fo-Vcc	$\pm 0.3 \times 10^{-6}$ Max.		V _{cc} ± 5 %	
Frequency aging	f_age	±1.0 × 10 ⁻⁶ Max.		+25 °C, First year, 12 MHz ≤ fo ≤ 20 MHz, 24 MHz ≤ fo ≤ 40 MHz	
		$\pm 1.5 \times 10^{\text{-6}}$ Max.		+25 °C ,First year, 20 MHz < fo < 24 MHz, 40 MHz < fo ≤ 52 MHz	
	lcc	4.0 mA Max.		12 MHz \leq fo \leq 26 MHz	
Current consumption		6.0 mA Max.		26 MHz < fo≤ 39 MHz	
-		6.5 mA Max.		39 MHz < fo≤ 52 MHz	
Input impedance	Zin	-	500 kΩ Min.	Vc - GND (DC)	
Frequency control range	f_cont	-	$\pm 5.0 imes 10^{-6}$ Min.	C: Vc = 1.4 V \pm 1.0 V (V _{cc} = 2.8 V) or	
				D: Vc = 1.5 V \pm 1.0 V (V _{cc} = 3.0 V) or	
				E: Vc = 1.65 V \pm 1.0 V (V _{cc} = 3.3 V)	
Frequency change polarity	f_cp	-	Positive polarity		
Symmetry	SYM	45 % to 55 %		50 % V _{CC} level, L_CMOS \leq 15 pF	
Output voltage	V _{OH}	90 % V _{cc} Min.			
	Vol	10 % V _{CC} Max.			
Start-up time	t_str	2.0 ms Max.		t = 0 at 90 % V _{CC}	
Rise time / Fall time	tr/tf	8.0 ns Max.		10 % Vcc to 90 % Vcc level, Load: 15 pF	
CMOS load condition	L_CMOS	15	5 pF	15 pF \pm 10 %	

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

- TG3225 CEN 39.00000MHz K F G N N M Product Name 6 7 8 (9)
- (Standard form) 1 2 3 4 5
 - ①Model ②Output (C: CMOS)
 - ③Frequency ④Supply voltage (Refer to symbol table)
 - (5) Frequency / temperature characteristics (F: $\pm 2.0 \times 10^{-6}$ Max.)
 - 6 Operating temperature (G: -40 °C to +85 °C)

⑦OE function (N: Non) ⑧Vc function (Refer to symbol table, A: Vc = any) ⑨Internal identification code ("M" is default) External dimensions (Unit: mm)



④Supply voltage [Vcc],⑧Vc function [Vc] (Symbol table)					
Voltage [V]	тсхо	VC-TCXO			
④Vcc (Тур.)	K: 2.5 to 3.3	K: 2.5 to 3.3	P: 2.6 to 3.3	M: 2.8 to 3.3	
⑧Vc (Typ.)	N: Non	C: 1.4	D: 1.5	E: 1.65	

Footprint (Recommended) (Unit: mm) D Size TG3225CEN TG2520CEN (3.2x2.5mm) (2.5x2.0mm) 1.15 A B 0.85 0.8 1.6 1.4 D 2.6 21 For stable operation, please add a bypass

capacitor (0.01 uF to 0.1 uF) between V_{CC} and GND. Please place it as close to TCXO as possible.

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.

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.

Explanation of the mark that are using it for the catalog

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.

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

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