



TCXO / VC-TCXO

HIGH STABILITY, CMOS OUTPUT



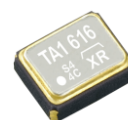
Product Number
TG3225CEN : X1G005101xxxxxx
TG2520CEN : X1G005161xxxxxx

TG3225CEN / TG2520CEN

- Output frequency : 12 MHz to 52 MHz
- 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 x 2.5 x 0.9 mm / 2.5 x 2.0 x 0.8 mm
- Applications : Reference clock for measurement machine
Wireless communication devices
(Smart meter, Telemeter, other)
- Features : High stability, CMOS output



TG3225CEN
(3.2 x 2.5 x 0.9 mm)



TG2520CEN
(2.5 x 2.0 x 0.8 mm)

Specifications (characteristics)

Item	Symbol	TCXO	VC-TCXO	Conditions / Remarks
Output frequency range	fo	12 MHz to 52 MHz 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	V _{CC}	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 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: $\pm 2.0 \times 10^{-6}$ Max. / -40 °C to +85 °C		Standard stability version
Frequency/load coefficient	fo-Load	$\pm 0.2 \times 10^{-6}$ Max.		15 pF \pm 10 %
Frequency/voltage coefficient	fo-V _{CC}	$\pm 0.3 \times 10^{-6}$ Max.		V _{CC} \pm 5 %
Frequency aging	f _{age}	$\pm 1.0 \times 10^{-6}$ Max.		+25 °C, First year, 12 MHz \leq fo \leq 20 MHz, 24 MHz \leq fo \leq 40 MHz
		$\pm 1.5 \times 10^{-6}$ Max.		+25 °C, First year, 20 MHz < fo < 24 MHz, 40 MHz < fo \leq 52 MHz
Current consumption	I _{CC}	4.0 mA Max.		12 MHz \leq fo \leq 26 MHz
		6.0 mA Max.		26 MHz < fo \leq 39 MHz
		6.5 mA Max.		39 MHz < fo \leq 52 MHz
Input impedance	Z _{in}	-	500 k Ω Min.	V _C - GND (DC)
Frequency control range	f _{cont}	-	$\pm 5.0 \times 10^{-6}$ Min.	C: V _C = 1.4 V \pm 1.0 V (V _{CC} = 2.8 V) or D: V _C = 1.5 V \pm 1.0 V (V _{CC} = 3.0 V) or E: V _C = 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.		
	V _{OL}	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 % V _{CC} to 90 % V _{CC} level, Load: 15 pF
CMOS load condition	L _{CMOS}	15 pF		15 pF \pm 10 %

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

Product Name **TG3225 CEN 39.000000MHz** **K F G N N M**
 (Standard form) ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ① Model ② Output (C: CMOS)
 ③ Frequency ④ Supply 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)
 ⑦ OE function (N: Non) ⑧ V_C function (Refer to symbol table, A: V_C = any)

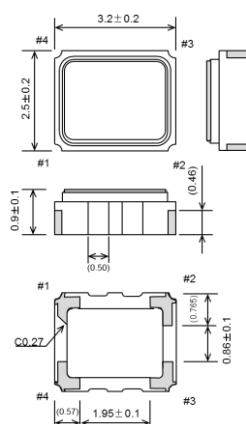
④ Supply voltage [V _{CC}], ⑧ V _C function [V _C] (Symbol table)				
Voltage [V]	TCXO	VC-TCXO		
④ V _{CC} (Typ.)	K: 2.5 to 3.3	K: 2.5 to 3.3	P: 2.6 to 3.3	M: 2.8 to 3.3
⑧ V _C (Typ.)	N: Non	C: 1.4	D: 1.5	E: 1.65

⑨ Internal identification code ("M" is default)

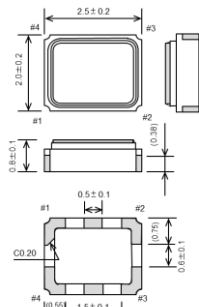
External dimensions

(Unit: mm)

TG3225CEN



TG2520CEN



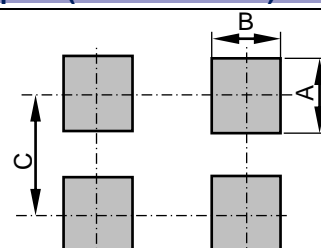
Pin map

Pin	Connection	
	TCXO	VC-TCXO
1	N.C.*1	V _C
2		GND
3		OUT
4		V _{CC}

*1) Please keep "N.C." pin OPEN condition or GND connection. "N.C." pin doesn't work as a ground pin.

Footprint (Recommended)





(Unit: mm)



Size	TG3225CEN (3.2x2.5mm)	TG2520CEN (2.5x2.0mm)
A	1.15	1.0
B	0.85	0.8
C	1.6	1.4
D	2.6	2.1

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.

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

	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive general equipment.
	► Designed for automotive applications related to driving and safety.

NOTICE : PLEASE READ CAREFULLY BELOW BEFORE THE USE OF THIS DOCUMENT

1. The content of this document is subject to change without notice. Before purchasing or using Epson products, please contact with sales representative of Seiko Epson Corporation ("Epson") for the latest information and be always sure to check the latest information published on Epson's official web sites and resources.
2. This document may not be copied, reproduced, or used for any other purposes, in whole or in part, without Epson's prior consent.
3. Information provided in this document including, but not limited to application circuits, programs and usage, is for reference purpose only. Epson makes no guarantees against any infringements or damages to any third parties' intellectual property rights or any other rights resulting from the information. This document does not grant you any licenses, any intellectual property rights or any other rights with respect to Epson products owned by Epson or any third parties.
4. Epson has prepared this document carefully to be accurate and dependable, but Epson does not guarantee that the information is always accurate and complete. Epson assumes no responsibility for any damages you incurred due to any misinformation in this document.
5. Epson products listed in this document and our associated technologies shall not be used in any equipment or systems that laws and regulations in Japan or any other countries prohibit to manufacture, use or sell. Furthermore, Epson products and our associated technologies shall not be used for the purposes of military weapons development (e.g. mass destruction weapons), military use, or any other military applications. If exporting Epson products or our associated technologies, please be sure to comply with the Foreign Exchange and Foreign Trade Control Act in Japan, Export Administration Regulations in the U.S.A (EAR) and other export-related laws and regulations in Japan and any other countries and to follow their required procedures.
6. Epson assumes no responsibility for any damages (whether direct or indirect) caused by or in relation with your non-compliance with the terms and conditions in this document or for any damages (whether direct or indirect) incurred by any third party that you give, transfer or assign Epson products.
7. For more details or other concerns about this document, please contact our sales representative.
8. Company names and product names listed in this document are trademarks or registered trademarks of their respective companies.

● Disclaimer

1. Epson products are designed for use in general electronic equipment applications that do not require extremely high reliability or safety.
2. Epson does not represent or warrant that its products will not cause a failure for any particular application, except for cases where the failure is a direct result caused by defects in materials and workmanship of this product.
If a product fails due to defects in materials and workmanship, to the maximum extent permitted by law, we will, at our sole discretion, refund or replace the affected product.
3. When products for used directly or indirectly in certain devices or applications (ex. Nuclear power, aerospace, infrastructure facilities, medical equipment, etc.) which are connected to or affect safety of human life or property, Customer is solely responsible for determining if the products and respective specifications are suitable for the intended use in particular customer applications.
Customer shall implement necessary and proper safety design and measures (including redundant design, malfunction prevention design, etc.) to ensure reliability and safety before using the products in/with customer's Equipment.
4. For the products designed for automotive applications, the products comply with AEC-Q100 or AEC-Q200.
Products do not comply with ISO 26262 (Products are not categorized to ASIL A, B, C and D).
5. No dismantling, analysis, reverse engineering, modification, alteration, adaptation, reproduction, etc., of Epson products is allowed.
Furthermore, any defects caused by this are not covered by the warranty.

©Seiko Epson Corporation 2025