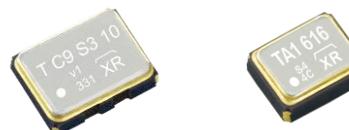



TCXO / VC-TCXO
HIGH STABILITY, CMOS OUTPUT
TG3225CEN / TG2520CEN

- 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


Product Number
TG3225CEN : X1G005101xxxxxx
TG2520CEN : X1G005161xxxxxx
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	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: $\pm 2.0 \times 10^{-6}$ 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-Vcc	$\pm 0.3 \times 10^{-6}$ 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	Icc	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	Zin	-	500 kΩ Min.	$V_c - GND$ (DC)
Frequency control range	f_cont	-	$\pm 5.0 \times 10^{-6}$ Min.	C: $V_c = 1.4 \text{ V} \pm 1.0 \text{ V}$ ($V_{cc} = 2.8 \text{ V}$) or D: $V_c = 1.5 \text{ V} \pm 1.0 \text{ V}$ ($V_{cc} = 3.0 \text{ V}$) or E: $V_c = 1.65 \text{ V} \pm 1.0 \text{ V}$ ($V_{cc} = 3.3 \text{ V}$)
Frequency change polarity	f_cp	-	Positive polarity	
Symmetry	SYM	45 % to 55 %		50 % V_{cc} level, $L_{CMOS} \leq 15 \text{ pF}$
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

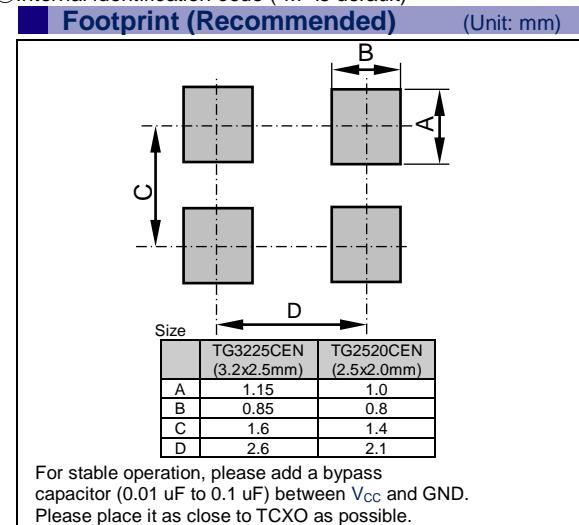
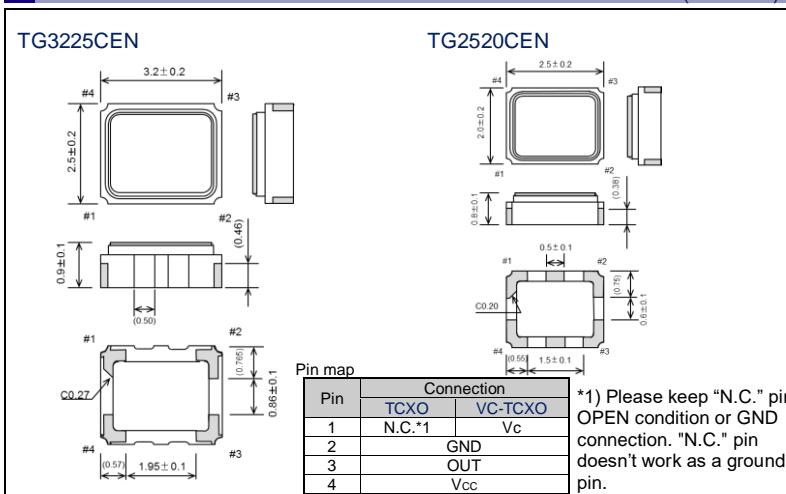
- ① Model
- ② Output (C: CMOS)
- ③ Frequency
- ④ Supply voltage (Refer to symbol table)
- ⑤ Frequency / temperature characteristics (F: $\pm 2.0 \times 10^{-6}$ Max.)
- ⑥ Operating temperature (G: -40 °C to +85 °C)
- ⑦ OE function (N: Non)
- ⑧ Vc function (Refer to symbol table, A: Vc = any)

④ Supply voltage [V _{cc}] , ⑧ Vc function [Vc] (Symbol table)		
Voltage [V]	TCXO	VC-TCXO
④ V _{cc} (Typ.)	K: 2.5 to 3.3	K: 2.5 to 3.3
⑧ V _c (Typ.)	P: 2.6 to 3.3	M: 2.8 to 3.3

⑨ Internal identification code ("M" is default)

External dimensions

(Unit: mm)



► **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.

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