

**VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)**

OUTPUT : LV-PECL



Product Number (please contact us)  
X1G003691xxx00

**VG-4512CA**

- Frequency range : 80 MHz to 200 MHz
- Supply voltage : 3.3 V
- Absolute pull range :  $50 \times 10^{-6}$ ,  $100 \times 10^{-6}$
- External dimensions :  $7.0 \times 5.0 \times 1.6$  mm
- Function : Output enable (OE)  
Active High or Low
- Output : LV-PECL



Actual size



**Specifications (characteristics)**

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	$f_o$	80.000 MHz to 200.000 MHz	Please contact us about available frequencies.
Supply voltage	$V_{cc}$	$3.3 \text{ V} \pm 0.165 \text{ V}$	
Storage temperature	$T_{stg}$	$-55 \text{ }^\circ\text{C}$ to $+125 \text{ }^\circ\text{C}$	Storage as single product.
Operating temperature	$T_{use}$	G: $-40$ to $+85 \text{ }^\circ\text{C}$ , J: $-20$ to $+70 \text{ }^\circ\text{C}$ , K: $0$ to $+70 \text{ }^\circ\text{C}$	
Frequency tolerance	$f_{tol}$	$\pm 50 \times 10^{-6}$ Max.	Includes frequency aging (20 years)
Current consumption	$I_{cc}$	60 mA Max.	$50 \Omega$
Absolute pull range *1	APR	H: $\pm 100 \times 10^{-6}$ Min., G: $\pm 50 \times 10^{-6}$ Min.	$V_c = 1.65 \text{ V} \pm 1.50 \text{ V}$
Input resistance	$R_{in}$	100 k $\Omega$ Min.	DC level
Frequency change polarity	—	Positive slope	$V_c = 0.15$ to $3.15 \text{ V}$
Symmetry	SYM	45 % to 55 %	$V_{cc} = 1.3 \text{ V}$ , $V_c = 1/2 V_{cc}$
Output voltage	$V_{OH}$	$V_{cc} - 1.1 \text{ V}$ Min.	
	$V_{OL}$	$V_{cc} - 1.5 \text{ V}$ Max.	
Output load condition (ECL)	$L_{ECL}$	$50 \Omega$	Terminated to $V_{cc} - 2.0 \text{ V}$
Input voltage	$V_{IH}$	70 % $V_{cc}$ Min.	
	$V_{IL}$	30 % $V_{cc}$ Max.	
Rise time / Fall time	$t_r / t_f$	1.0 ns Max.	between 20% and 80% of ( $V_{OH} - V_{OL}$ )
Start-up time	$t_{str}$	10 ms Max.	Time at minimum supply voltage to be 0 s
Frequency aging	$f_{aging}$	This is included frequency tolerance	$+25 \text{ }^\circ\text{C}$ , $V_{cc} = 3.3 \text{ V}$ , 20 years

\*1 Absolute pull range = Frequency control range - Frequency tolerance

\* Please keep  $V_c$  pin open or ground while powering up  $V_{cc}$ .

Product Name VG-4512CA - 155.520000 - G G C T  
(Standard form) ① ② ③ ④⑤⑥⑦

①Model ②Package type ③Frequency(MHz) ④Operating temperature ⑤Absolute pull range  
⑥Supply voltage (C: 3.3V Typ.) ⑦OE function

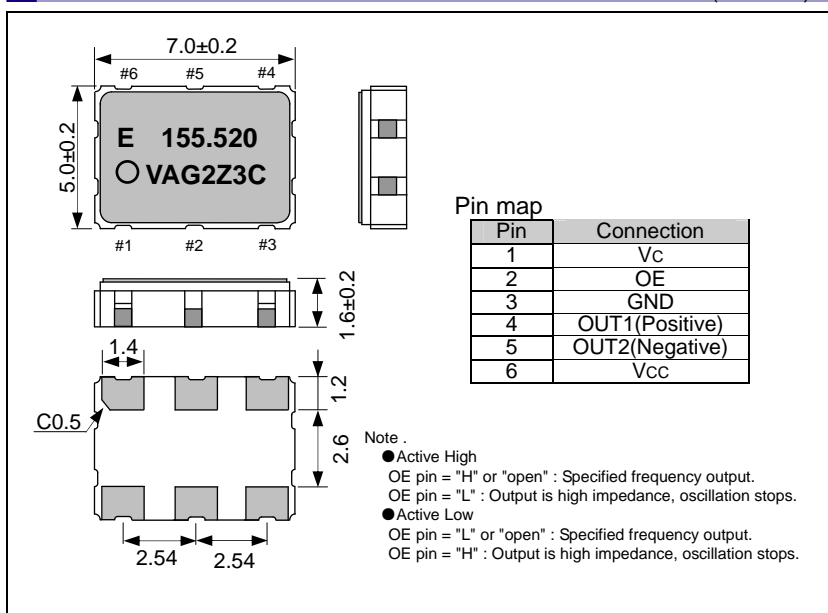
④Operating temperature	
G	$-40$ to $+85 \text{ }^\circ\text{C}$
J	$-20$ to $+70 \text{ }^\circ\text{C}$
K	$0$ to $+70 \text{ }^\circ\text{C}$

⑤Absolute pull range	
H	$\pm 100 \times 10^{-6}$ Min.
G	$\pm 50 \times 10^{-6}$ Min.

⑦OE function	
T	Active High
L	Active Low

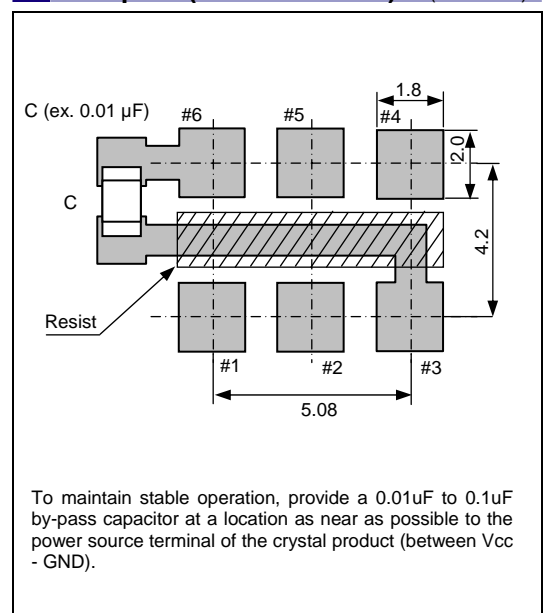
**External dimensions**

(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.

## 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 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.

### ► 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 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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