

VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)

OUTPUT: LV-PECL

VG-4513CB VG-4513CA

•Frequency range : 100 MHz to 500 MHz

 Supply voltage 3.3 V

•Absolute pull range $\pm 30 \times 10^{-6}$ Min, $\pm 50 \times 10^{-6}$ Min, $\pm 100 \times 10^{-6}$ Min Actual size

Function Output Enable(OE) Active High or Low

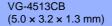
LV-PECL Output





Product Number (Please contact us) VG-4513CB: X1G004151xxxx00 VG-4513CA: X1G004141xxxx00







VG-4513CA $(7.0 \times 5.0 \times 1.6 \text{ mm})$

VG-4513CB	VG-4513CA	
F 62 100	500 To 5	

Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	fo	100.000 MHz to 500.000 MHz	Please contact us about available frequencies.
Supply voltage	Vcc	3.3 V ± 0.165 V	
Storage temperature range	T_stg	-55 °C to +125 °C	
Operating temperature range	T_use	-40 °C to +85 °C	
Current consumption	Icc	65 mA Max.	
Frequency tolerance	f_tol	100 MHz \leq fo \leq 200 MHz : \pm 50 \times 10 ⁻⁶ Max. 200 MHz $<$ fo \leq 500 MHz : \pm 70 \times 10 ⁻⁶ Max.	Includes initial tolerance, temperature change, Vcc change and 10years aging
Absolute pull range	APR	120 MHz \leq fo \leq 200 MHz \pm 30 × 10 ⁻⁶ Min. \pm 50 × 10 ⁻⁶ Min. \pm 100 × 10 ⁻⁶ Min. 100 MHz \leq fo $<$ 120 MHz, 200 MHz $<$ fo \leq 500 MHz \pm 30 × 10 ⁻⁶ Min. \pm 50 × 10 ⁻⁶ Min.	
Input resistance	Rin	100 kΩ Min.	DC level
Output load condition	L_ECL	50Ω at Vcc -2.0V	
High output voltage	Voн	Vcc-1.1 V Min.	
Low output voltage	Vol	Vcc-1.5 V Max.	
Symmetry	SYM	40 % to 60 %	at Vcc-1.30 V, Vc=1/2Vcc
Rise/Fall times	tr/tf	0.5 ns Max.	at 20 % to 80 % output swing
High input voltage	Vih	70% Vcc Min.	
Low input voltage	VIL	30% Vcc Max.	
Oscillation start up time	t_str	10ms Max.	

Item	Offset frequency	122.88 MHz	153.6 MHz	245.76 MHz	368.64 MHz	491.52 MHz
	10 Hz	-75 dBc/Hz	-70 dBc/Hz	-64 dBc/Hz	-57 dBc/Hz	-55 dBc/Hz
Phase noise	100 Hz	-105 dBc/Hz	-100 dBc/Hz	-94 dBc/Hz	-87 dBc/Hz	-85 dBc/Hz
(Typical value)	1 kHz	-129 dBc/Hz	-124 dBc/Hz	-118 dBc/Hz	-114 dBc/Hz	-110 dBc/Hz
APR $\pm 50 \times 10^{-6}$ Min.	10 kHz	-147 dBc/Hz	-143 dBc/Hz	-138 dBc/Hz	-137 dBc/Hz	-132 dBc/Hz
	100 kHz	-151 dBc/Hz	-152 dBc/Hz	-149 dBc/Hz	-152 dBc/Hz	-150 dBc/Hz

Product Name (Standard form) VG-4513 CA - 491.520000 - G F C T 1 3 4567

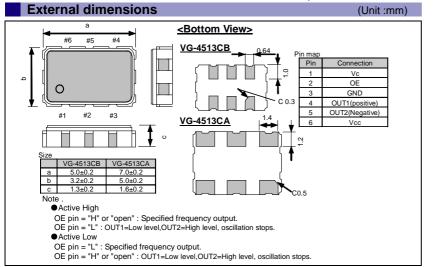
②Package type ③Frequency(MHz) ④Operating temperature range ⑤Absolute pull range ①Model ⑤Supply voltage (C: 3.3V Typ.) ⑦OE function

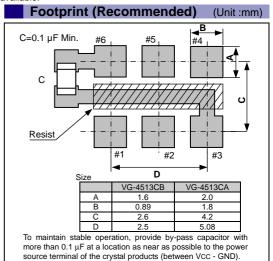
۷	Joupply Vollage (C. 3.3V		
	G	-40 to +85℃	
	J	-20 to +70℃	
	K	0 to +70℃	

	SAbsolute pull range		
H* ±100 × 10 ⁻⁶ Min.		$\pm 100 \times 10^{-6}$ Min.	
	G	±50 × 10 ⁻⁶ Min.	
	F	±30 × 10 ⁻⁶ Min.	

⑦OE function	
Т	Active High
L	Active Low

*Only 120 MHz ≤ fo ≤ 200 MHz are available.





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.



 \blacktriangleright Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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