



VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)

VG-4231CB
VG-4531CB

- Frequency range : 1 MHz to 80 MHz
- Supply voltage : 3.3 V
- Absolute pull range : $\pm 50 \times 10^{-6}$
- : $\pm 100 \times 10^{-6}$... VG-4531CB
- External dimensions: 5.0 x 3.2 x 1.2 t (mm) Typ.
- Function : Output enable(OE)



Product Number (please contact us)
VG-4231CB : X1G002861xxxx00
VG-4531CB : X1G002881xxxx00



Actual size



Specifications (characteristics)

Item	Symbol	Specifications		Remarks
		VG-4231CB	VG-4531CB	
Output frequency range	f_o	1.000 MHz to 60.000 MHz	60.001 MHz to 125.000 MHz	Please contact us for inquiries regarding available frequencies.
Supply voltage	Vcc	3.3 V ± 0.165 V		
Storage temperature range	T_stg	-55 °C to +125 °C		Store as bare product after unpacking
Operating temperature range	T_use	As per blow table.		
Frequency tolerance	f_tol	$\pm 50 \times 10^{-6}$ Max.		Includes frequency aging (20 years)
Current consumption	Icc	10 mA Max.	15 mA Max.	No load condition.
Absolute pull range	APR	GCZ : $\pm 50 \times 10^{-6}$ Min.	GCZ : $\pm 50 \times 10^{-6}$ Min. HCT : $\pm 100 \times 10^{-6}$ Min.	Vc= 1.65 V ± 1.5 V
Input resistance	Rin	10 M Ω Min.		DC level
Frequency change polarity	—	Positive slope		Vc= 0.15 to 3.15 V
Symmetry	SYM	45 % to 55 %		50 % Vcc level
High output voltage	VOH	Vcc -0.4 V Min.		IOH= -0.8 mA
Low output voltage	VOL	0.4 V Max.		IOL= 3.2 mA
Output load condition (CMOS)	L_CMOS	15 pF Max.		
Output enable / disable input voltage	V _{IH}	70 % Vcc Min.		V _{IH} or OPEN : Enable
	V _{IL}	30 % Vcc Max.		V _{IL} or GND : Disable
Rise time / Fall time	t _r / t _f	6 ns Max.		20 % Vcc to 80 % Vcc level
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 °C, Vcc=3.3 V, 20 years

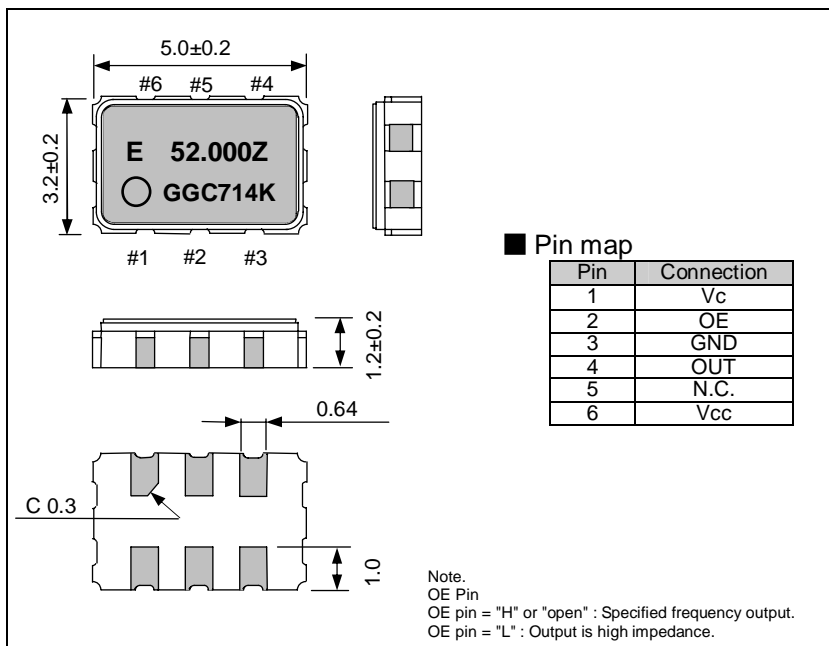
* Please keep Vc pin open or ground while powering up Vcc.

Temperature range

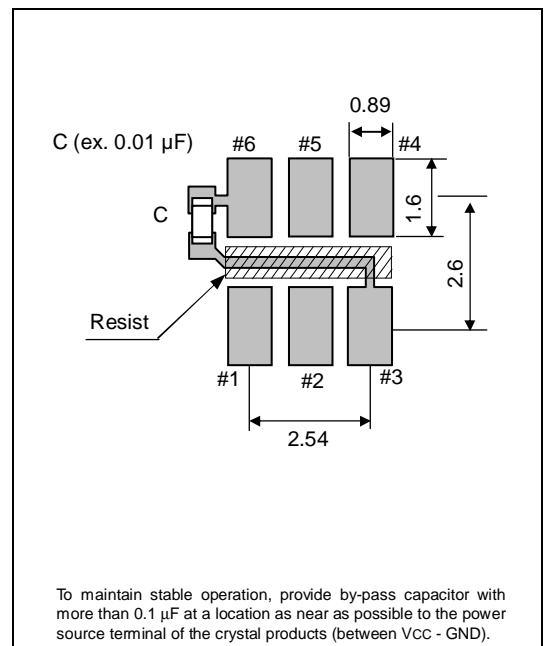
VG-4231CB	Operating temperature range
G GGCZ	-40 °C ~ +85 °C
J JGCZ	-20 °C ~ +70 °C
K KGCZ	0 °C ~ +70 °C

VG-4531CB	Operating temperature range
G GGCZ / GHCT	-40 °C ~ +85 °C
J JGCZ / JHCT	-20 °C ~ +70 °C
K KGCZ / KHCT	0 °C ~ +70 °C

External dimensions (Unit :mm)



Footprint (Recommended) (Unit :mm)



“QMEMS” EPSON TOYOCOM

In order to meet customer needs in a rapidly advancing digital, broadband and ubiquitous society, we are committed to offering products that are one step ahead of the market and a rank above the rest in quality. To achieve our goals, we follow a “3D (three device) strategy” designed to drive both horizontal and vertical growth. We will to grow our three device categories of “Timing Devices”, “Sensing Devices” and “Optical Devices”, and expand vertical growth through a combination of products from these categories.

A Quartz MEMS is any high added value quartz device that exploits the characteristics of quartz crystal material but that is produced using MEMS (micro-electro-mechanical system) processing technology.

Market needs are advancing faster than previously imagined toward smaller, more stable crystal products, but we will stay ahead of the curve by rolling out products that exceed market speed and quality requirements. We want to further accelerate the 3D strategy by QMEMS.

Quartz devices have become crucial in the network environment where products are increasingly intended for broadband, ubiquitous applications and where various types of terminals can transfer information almost immediately via LAN and WAN on a global scale. Epson Toyocom Corporation addresses every single aspect within a network environment. The new corporation offers “Digital Convergence” solutions to problems arising with products for consumer use, such as, core network systems and automotive systems.



PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Epson Toyocom, 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 to provide high quality and reliable products and services that meet customer needs, Epson Toyocom 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/TS 16949 is a global standard based on QS-9001, a severe standard corresponding to the requirements from the automobile industry.

► 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.)
	► The products have been designed for high reliability applications such as Automotive.

Notice

- This material is subject to change without notice.
- Any part of this material may not be reproduced or duplicated in any form or any means without the written permission of Epson Toyocom.
- The information, applied circuitry, programming, usage, etc., written in this material is intended for reference only. Epson Toyocom does not assume any liability for the occurrence of infringing on any patent or copyright of a third party. This material does not authorize the licensing for any patent or intellectual copyrights.
- Any product described in this material may contain technology or the subject relating to strategic products under the control of the Foreign Exchange and Foreign Trade Law of Japan and may require an export license from the Ministry of International Trade and Industry or other approval from another government agency.
- You are requested not to use the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes. You are also requested that you would not make the products available to any third party who may use the products for such prohibited purposes.
- These products are intended for general use in electronic equipment. When using them in specific applications that require extremely high reliability, such as the applications stated below, you must obtain permission from Epson Toyocom in advance.
/ Space equipment (artificial satellites, rockets, etc.) / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.)
/ Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment
/ traffic control equipment / and others requiring equivalent reliability.
- In this new crystal master for Epson Toyocom, product codes and markings will remain as previously identified prior to the merger.
Due to the on-going strategy of gradual unification of part numbers, please review product codes and markings, as they will change during the course of the coming months.

We apologize for the inconvenience, but we will eventually have a unified part numbering system for Epson Toyocom that will be user friendly.