

VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)

OUTPUT : CMOS



Product Number  
 VG-4231CA: Q3614CA00xxxx00  
 VG-4232CA: X1G003921xxxx00

# VG-4231CA

# VG-4232CA



- Frequency range : 1 MHz to 80 MHz
- Supply voltage : 3.3 V / 5.0V ... VG-4231CA  
3.3 V ... VG-4232CA
- Absolute pull range :  $\pm 80 \times 10^{-6}$ ,  $\pm 65 \times 10^{-6}$  ... VG-4231CA  
 $\pm 50 \times 10^{-6}$  ... VG-4232CA
- External dimensions : 7.0 × 5.0 × 1.4 mm

**Specifications (characteristics)**

Item	Symbol	VG-4231CA	VG-4232CA	Conditions / Remarks
Output frequency range	fo	1.000 MHz to 60.000 MHz	60.001 MHz to 80.000 MHz	Please contact us about available frequencies.
Supply voltage	Vcc	H:5.0 V ±0.5 V, C:3.3 V ±0.3 V	C:3.3 V ±0.165 V	
Control voltage	Vc	H:2.5 V ±2.0 V, C:1.65 V ±1.5 V	1.65 V ±1.65 V	
Storage temperature	T stg	-40 °C to +125 °C	-55 °C to +125 °C	Storage as single product.
Operating temperature	T use	As per table below		
Frequency tolerance	f tol	As per table below		Vc=2.5 V(**H), Vc=1.65 V(**C)
Current consumption	Icc	H:20 mA Max., C: 10 mA Max.	35mA Max.	No load condition
Disable current	I dis	H:15 mA Max., C: 7 mA Max.	25mA Max.	OE=GND
Frequency control range	F cont	$\pm 130 \times 10^{-6}$		
Absolute pull range *1	APR	$\pm 80 \times 10^{-6}$ Min., $\pm 65 \times 10^{-6}$ Min.	$\pm 50 \times 10^{-6}$ Min.	
Modulation characteristics	BW	15 kHz Min.	5 kHz Min.	±3 dB (at 1 kHz)
Input resistance	Rin	50 kΩ Min.	80 kΩ Min.	F or T Type
		H:—, C:10 MΩ Min.	—	M or Z Type
Frequency change polarity	—	Positive polarity		
Symmetry	SYM	40 % to 60 %	45 % to 55 %	CMOS load: 50 % Vcc level
Output voltage	VOH	Vcc-0.4 V Min.	90 % Vcc Min.	IOH=-4 mA(**H), IOH=-0.8 mA(**C)
	VOL	0.4 V Max.	10 % Vcc Max.	IOL=4 mA(**H), IOL=3.2 mA(**C)
Output load condition	L CMOS	15 pF Max.		CMOS load
Input voltage	VH	70 % Vcc Min.		OE terminal
	VIL	30 % Vcc Max.		
Rise time and Fall time	tr / tf	4 ns Max.	5 ns Max.	CMOS load: 20 % Vcc to 80 % Vcc level
Start-up time	t str	10 ms Max.		Time at 90 % Vcc to be 0s
Frequency aging	f age	$\pm 10 \times 10^{-6}$ Max.*2	Included in Frequency tolerance.	+25 °C, 10 years

\*1 Absolute pull range = Frequency control range - (Frequency tolerance + 10 years Aging + Free fall + Vibration) \*2 50 MHz < fo ≤ 60 MHz:  $\pm 15 \times 10^{-6}$  Max.  
 \* Please keep VC pin open or ground while powering up Vcc.

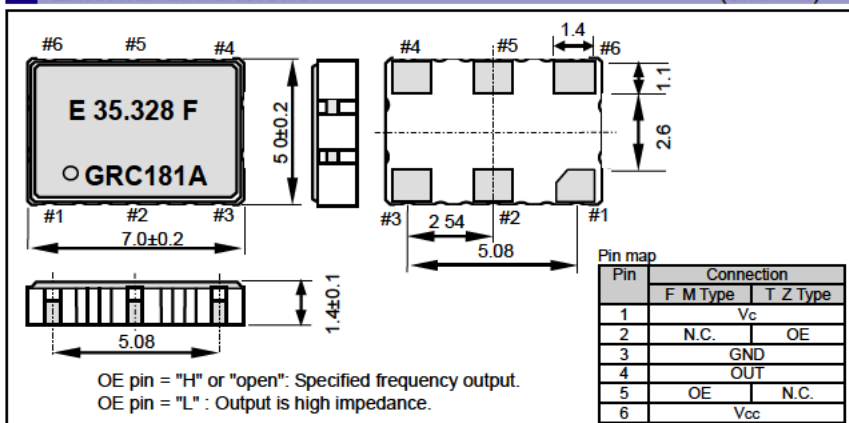
Product Name VG-4231 CA 35.328000MHz G R C - E VG-4232 CA 65.000000MHz J G C - E  
 (Standard form) ① ② ③ ④⑤⑥ ⑦ ① ② ③ ④⑤⑥ ⑦

- ① Model ② Package type ③ Frequency ④ Frequency tolerance / Operating temperature / (Absolute pull range)(Only VG-4231)
- ⑤ Frequency control range(VG-4231), Absolute pull range(VG-4232) ⑥ Supply voltage
- ⑦ Input resistance / OE pin# (Refer to specification table and Pin map)

Model	④ Frequency tolerance / Operating temperature / Absolute pull range	⑤ Frequency control range	⑥ Supply voltage
4231	G $\pm 50 \times 10^{-6}$ / -40 to +85 °C / $\pm 65 \times 10^{-6}$ Min.	R $\pm 130 \times 10^{-6}$	H 5.0V Typ.
	D $\pm 35 \times 10^{-6}$ / -20 to +70 °C / $\pm 80 \times 10^{-6}$ Min.		C 3.3 V Typ.
Model	④ Frequency tolerance / Operating temperature	⑤ Absolute pull range	
4232	G $\pm 50 \times 10^{-6}$ / -40 to +85 °C	G $\pm 50 \times 10^{-6}$ Min.	
	J $\pm 50 \times 10^{-6}$ / -20 to +70 °C		
	K $\pm 50 \times 10^{-6}$ / 0 to +70 °C		

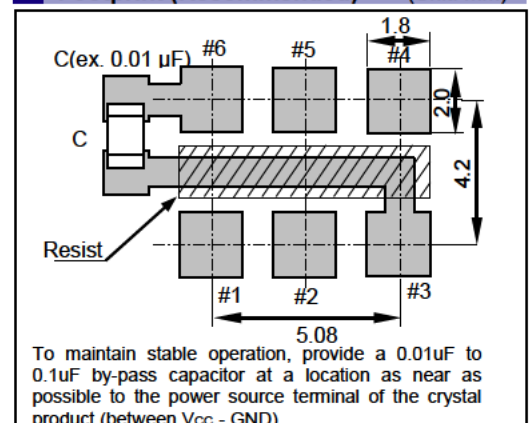
**External dimensions**

(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.

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IATF 16949 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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