

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
4231	G $\pm 50 \times 10^{-6}$ / -40 to +85 °C / $\pm 65 \times 10^{-6}$ Min.	R $\pm 130 \times 10^{-6}$
	D $\pm 35 \times 10^{-6}$ / -20 to +70 °C / $\pm 80 \times 10^{-6}$ Min.	
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	

⑥ Supply voltage	
H	5.0V Typ.
C	3.3 V Typ.

External dimensions

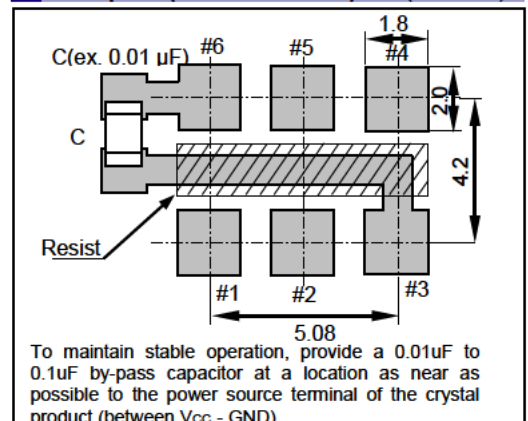
(Unit: mm)



OE pin = "H" or "open": Specified frequency output.
 OE pin = "L": Output is high impedance.

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.

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	► 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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