

VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)
OUTPUT : CMOS

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 x 5.0 x 1.4 mm



Product Number (please contact us)
VG-4231CA: Q3614CA00xxxx00
VG-4232CA: X1G003921xxxx00



Actual size



Specifications (characteristics)

Item	Symbol	VG-4231CA	VG-4232CA	Conditions / Remarks
Output frequency range	f _o	1.000 MHz to 60.000 MHz	60.001 MHz to 80.000 MHz	Please contact us about available frequencies.
Supply voltage	V _{cc}	H:5.0 V \pm 0.5 V, C:3.3 V \pm 0.3 V	C:3.3 V \pm 0.165 V	
Control voltage	V _c	H:2.5 V \pm 2.0 V, C:1.65 V \pm 1.5 V	1.65 V \pm 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		V _c =2.5 V(**H), V _c =1.65 V(**C)
Current consumption	I _{cc}	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	R _{in}	50 k Ω Min. H: — , C:10 M Ω Min.	80 k Ω Min.	F or T Type M or Z Type
Frequency change polarity	—	Positive polarity		
Symmetry	SYM	40 % to 60 %	45 % to 55 %	CMOS load: 50 % V _{cc} level
Output voltage	V _{OH} V _{OL}	V _{cc} -0.4 V Min. 0.4 V Max.	90 % V _{cc} Min. 10 % V _{cc} Max.	I _{OH} =-4 mA(**H), I _{OH} =-0.8 mA(**C) I _{OL} =4 mA(**H), I _{OL} =3.2 mA(**C)
Output load condition	L _{CMOS}	15 pF Max.		CMOS load
Input voltage	V _{IH} V _{IL}	70 % V _{cc} Min. 30 % V _{cc} Max.		OE terminal
Rise time and Fall time	t _r / t _f	4 ns Max.	5 ns Max.	CMOS load: 20 % V _{cc} to 80 % V _{cc} level
Start-up time	t _{str}	10 ms Max.		Time at 90 % V _{cc} to be 0s
Frequency aging	f _{aging}	$\pm 10 \times 10^{-6}$ 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 < f_o \leq 60 MHz : $\pm 15 \times 10^{-6}$ Max.

* Please keep VC pin open or ground while powering up V_{cc}.

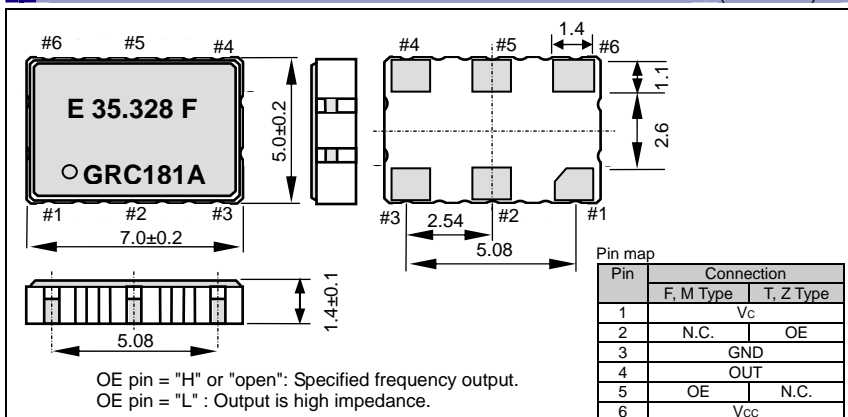
Product Name VG-4231 CA 35.328000MHz G R C - F VG-4232 CA 65.000000MHz J G C - F
(Standard form) ① ② ③ ④⑤⑥ ⑦ ① ② ③ ④⑤⑥ ⑦

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

Model	④Frequency tolerance / Operating temperature / Absolute pull range	⑤Frequency control range	⑥Supply 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	④Frequency 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		

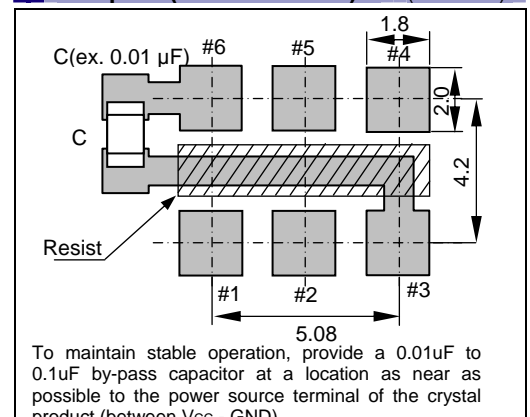
External dimensions

(Unit: mm)



Footprint (Recommended)

(Unit: mm)



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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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