

VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)
OUTPUT : CMOS



Product Number (please contact us)
 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 x 5.0 x 1.4 mm



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 ± 0.5 V, C:3.3 V ± 0.3 V | C:3.3 V ± 0.165 V | |
| Control voltage | V _c | 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 | | 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. | 80 k Ω Min. | F or T Type |
| | | H: —, C:10 M Ω Min. | — | 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 _{cc} -0.4 V Min. | 90 % V _{cc} Min. | I _{OH} =-4 mA(**H), I _{OH} =-0.8 mA(**C) |
| | V _{OL} | 0.4 V Max. | 10 % V _{cc} Max. | 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} | 70 % V _{cc} Min. | | OE terminal |
| | V _{IL} | 30 % V _{cc} Max. | | |
| 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}.

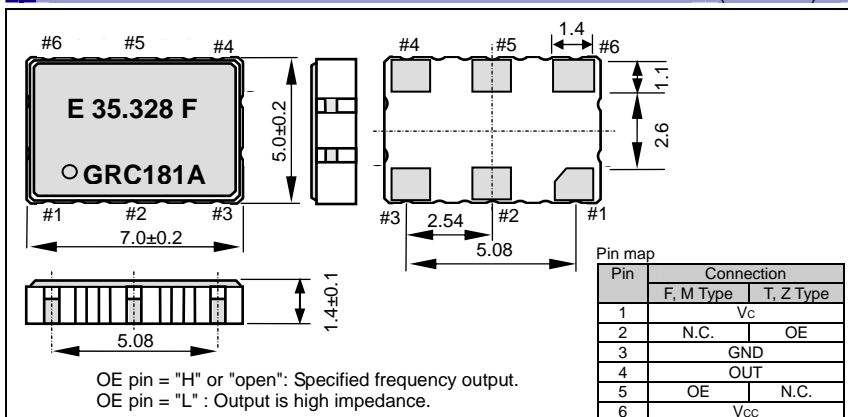
Product Name VG-4231 CA 35.328000MHz G R C - F VG-4232 CA 65.000000MHz J G C - F
 (Standard form) ① ② ③ ④⑤⑥ ⑦ ① ② ③ ④⑤⑥ ⑦

- 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 | |
|-------|--|---|-----------------------|------------------------------|
| | | | H | C |
| 4231 | G $\pm 50 \times 10^{-6}$ / -40 to +85 °C / $\pm 65 \times 10^{-6}$ Min. | R | 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 | |
| | 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 | | | |

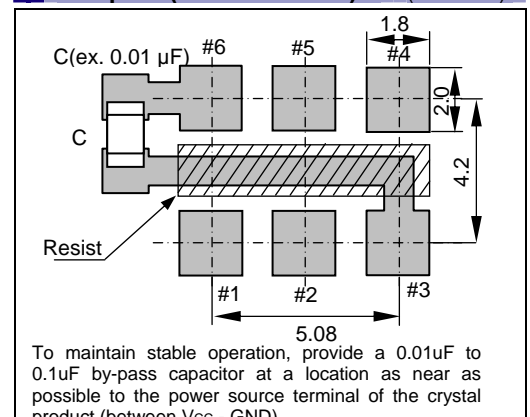
External dimensions

(Unit: mm)



Footprint (Recommended)

(Unit: mm)



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► 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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