VOLTAGE –CONTROLLED CRYSTAL OSCILLATOR (VCXO)

OUTPUT : CMOS

Pb Free
RoHS Compliant

Product Number
Q3614CE00xxxx00

VG-4231CE



- •Frequency range : 3 MHz to 50 MHz *
  * 50MHz is not included in Output frequency range.
- •Supply voltage : 3.3 V (PSCM / CSCM)
  2.8 V (PSBM / CSBM)
  1.8 V (PQEM / CQEM)
- •Frequency control range : ±140 × 10^{-6} (*SCM / *SBM)
  ±120 × 10^{-6} (*QEM)
- •Low current consumption : 1.0 mA Typ. (27 MHz , 3.3 V)
- •External dimensions : 3.2 × 2.5 × 1.05 mm

Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		PSCM / CSCM	PSBM / CSBM	PQEM / CQEM	
Output frequency range	Fo	3 MHz to 50 MHz *		24 MHz to 30 MHz	Please contact us about available frequencies. 50MHz is not included in Output frequency range.
Supply voltage	Vcc	3.3 V ± 0.3 V	2.8 V ± 0.2 V	1.8 V ± 0.2 V	
Storage temperature	T_stg	-40 °C to +125 °C			Storage as single product.
Operating temperature	T_use	As per below table			
Frequency tolerance	f_tol	As per below table			C : Vc=1.65 V / B : Vc=1.40 V / E : Vc=0.90 V
Current consumption	Icc	7 mA Max.	6.8 mA Max.	1.2 mA Max.	No load condition
Frequency control range	f_cont	S:± 140 × 10^{-6} Min.		Q:± 120 × 10^{-6} Min.	Vc = 1/2 Vcc ± 1/2 Vcc
Modulation characteristics	BW	15 kHz Min.			± 3 dB (at 1 kHz)
Input resistance	Rin	M : 5 MΩ Min.			DC level
Frequency change polarity	—	Positive polarity			Vc=0 V to Vcc
Symmetry	SYM	40 % to 60 %			CMOS load:50 % Vcc level
Output voltage	VOH	Vcc-0.4 V Min.			IOH=-3.0 mA
	VOL	0.4 V Max.			IOL= 3.0 mA
Output load condition (CMOS)	L_CMOS	15 pF Max.			CMOS load
Rise time and Fall time	tr / tf	4 ns Max.		6 ns Max.	CMOS load: 20 % Vcc to 80 % Vcc level
Start-up time	t_str	5 ms Max.			Time at 90 % Vcc to be 0 s
Frequency aging	f_age	± 5 × 10^{-6} Max.			+25 °C, 5 years

Please keep Vc pin open or ground while powering up Vcc.
50MHz is not included in Output frequency range.

Product Name (Standard form): VG-4231 CE 27.000000MHz C S C - M (⑤⑥:SE,QC,QB are not available)
① ② ③ ④⑤⑥ ⑦

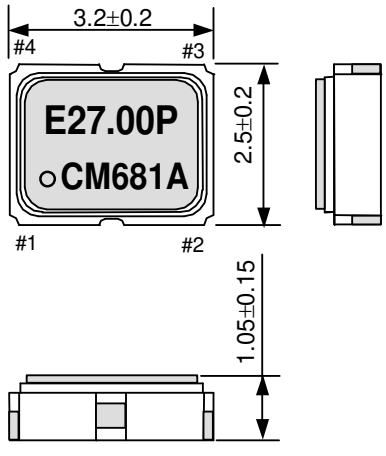
①Model ②Package type ③Frequency ④Frequency tolerance / Operating temperature
⑤Frequency control range ⑥Supply voltage ⑦Input resistance (M: 5 MΩ Min.)

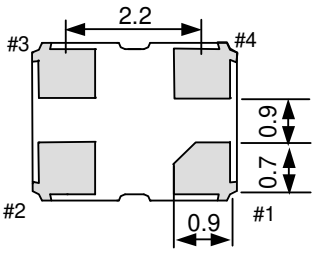
④⑤	④Frequency tolerance / Operating temperature		⑤Frequency control range (Absolute pull range*)	
CS	C	±30 × 10^{-6} / −20 to +70 °C	S	±140 × 10^{-6} Min. (±100 × 10^{-6} Min.)
PS	P	±37 × 10^{-6} / −40 to +85 °C	S	±140 × 10^{-6} Min. (±95 × 10^{-6} Min.)
CQ	C	±30 × 10^{-6} / −20 to +70 °C	Q	±120 × 10^{-6} Min. (±80 × 10^{-6} Min.)
PQ	P	±37 × 10^{-6} / −40 to +85 °C	Q	±120 × 10^{-6} Min. (±75 × 10^{-6} Min.)

⑥Supply voltage	
E	1.8 V Typ.
B	2.8 V Typ.
C	3.3 V Typ.

* Absolute pull range = Frequency control range- (Frequency tolerance + 5 years Aging + Free fall + Vibration)

External dimensions (Unit:mm)

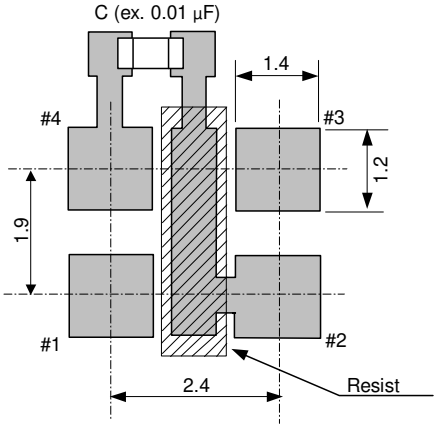




Pin map

Pin	Connection
1	Vc
2	GND
3	OUT
4	Vcc

Footprint (Recommended) (Unit:mm)



To maintain stable operation, provide a 0.01uF to 0.1uF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - GND).

►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 general equipment.
	►Designed for automotive applications related to driving and safety.

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