



VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)

OUTPUT : CMOS

Product Number
Q3614CE00xxxx00

VG-4231CE

- Frequency range : 3 MHz to 60 MHz
- Supply voltage : 3.3 V (PSCM / CSCM)
: 2.8 V (PSBM / CSBM)
: 1.8 V (PQEM / CQEM)
- Frequency control range : $\pm 140 \times 10^{-6}$ (*SCM / *SBM)
: $\pm 120 \times 10^{-6}$ (*QEM)
- Low current consumption : 1.0 mA Typ. (27 MHz, 3.3 V)
- External dimensions : $3.2 \times 2.5 \times 1.05$ mm



Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		PSCM / CSCM	PSBM / CSBM	PQEM / CQEM	
Output frequency range	Fo	3 MHz to 60 MHz		24 MHz to 30 MHz	Please contact us about available frequencies.
Supply voltage	Vcc	3.3 V \pm 0.3 V	2.8 V \pm 0.2 V	1.8 V \pm 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: $\pm 140 \times 10^{-6}$ Min.		Q: $\pm 120 \times 10^{-6}$ Min.	Vc = 1/2 Vcc \pm 1/2 Vcc
Modulation characteristics	BW	15 kHz Min.			± 3 dB (at 1 kHz)
Input resistance	Rin	M : 5 M Ω 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	$\pm 5 \times 10^{-6}$ Max.			+25 C, 5 years

Please keep Vc pin open or ground while powering up Vcc.

Product Name VG-4231 CE 27.000000MHz C S C - M (⑤⑥:SE, QC, QB are not available)

(Standard form) ① ② ③ ④⑤⑥ ⑦

① Model ② Package type ③ Frequency ④ Frequency tolerance / Operating temperature

⑤ Frequency control range ⑥ Supply voltage ⑦ Input resistance (M: 5 M Ω Min.)

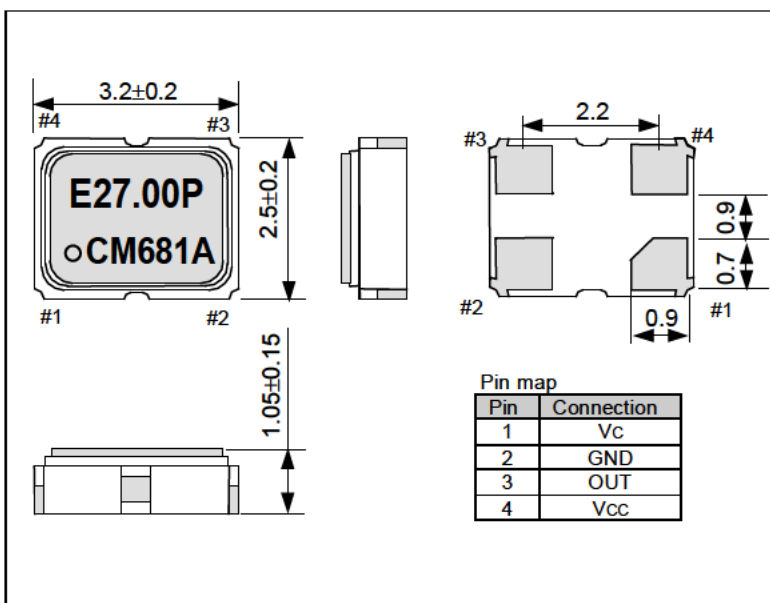
④⑤	④ Frequency tolerance / Operating temperature	⑤ Frequency control range (Absolute pull range*)
CS	C $\pm 30 \times 10^{-6}$ / -20 to +70 °C	S $\pm 140 \times 10^{-6}$ Min. ($\pm 100 \times 10^{-6}$ Min.)
PS	P $\pm 37 \times 10^{-6}$ / -40 to +85 °C	S $\pm 140 \times 10^{-6}$ Min. ($\pm 95 \times 10^{-6}$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

⑥ Supply 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)

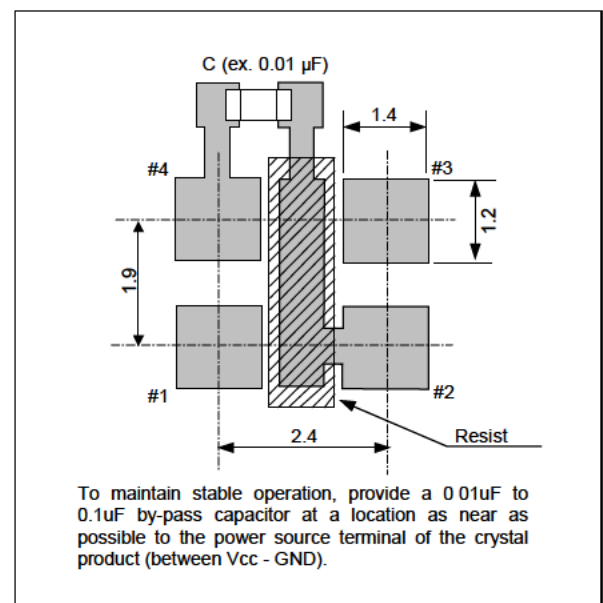
External dimensions

(Unit:mm)



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.
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