

VCXO

VG-4231CE

SEIKO EPSON CORPORATION

Product name VG-4231CE 28.636360 MHz PQE-M

Product code / Ordering code Q3614CE000066xx

Please refer to the 8.Packing information about xx (last 2 digits)

Output waveform CMOS

Pb free / Complies with EU RoHS directive

Reference weight Typ.26 mg

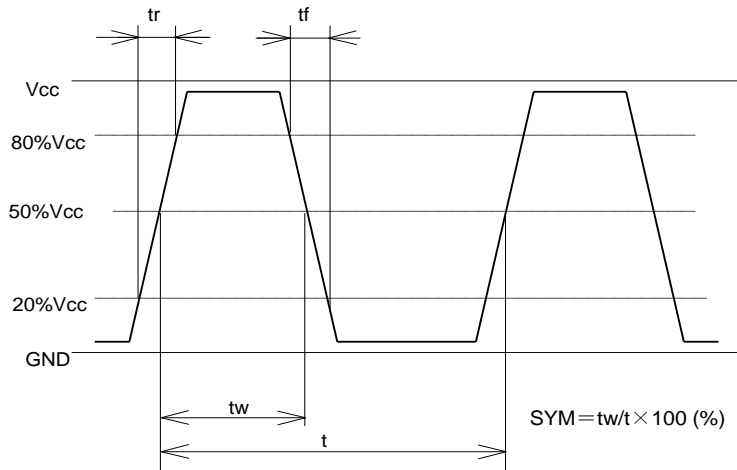
1.Absolute maximum ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	Vcc-GND	-0.3	-	+7	V	-
Storage temperature	T_stg	-40	-	+125	°C	Storage as single product after unpacking.
Input voltage	Vin	-0.3	-	Vcc+0.3	V	Vc traminal

2.Specifications(characteristics)

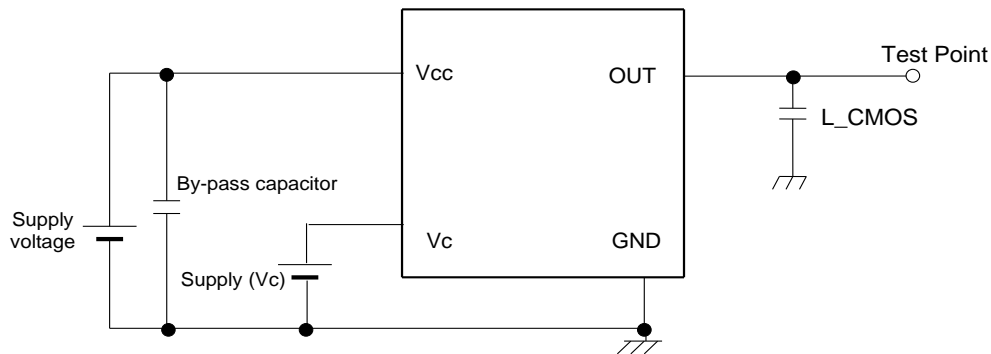
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	fo		28.6364		MHz	
Supply voltage	Vcc	1.6	1.8	2	V	-
Control voltage	Vc	0	0.9	1.8	V	Vc=0.9V+/-0.9V
Operating temperature	T_use	-40	-	+85	°C	-
Frequency tolerance	f_tol	-37	-	+37	x10 ⁻⁶	T_use
Current consumption	Icc	-	-	1.2	mA	No load
Frequency control range	f_cont	+/-120	-	-	x10 ⁻⁶	-
Absolute pull range	APR	+/-75	-	-	x10 ⁻⁶	-
Modulation characteristics	BW	15	-	-	kHz	+/-3dB
Input resistance	Rin	5	-	-	MΩ	-
Linearity	F_LIN	-	-	+/-10	%	-
Frequency change polarity	-	Positive			-	-
Symmetry	SYM	40	-	60	%	50% Vcc level
Output voltage	V_OH	90 % Vcc	-	-	V	I_OH = -3.0 mA
	V_OL	-	-	10 % Vcc	V	I_OL = 3.0 mA
Output load condition	L_CMOS	-	-	15	pF	-
Rise time	tr	-	-	6	ns	20%Vcc to 80%Vcc level
Fall time	tf	-	-	6	ns	80%Vcc to 20%Vcc level
Start-up time	t_str	-	-	5	ms	t=0 at 90 %Vcc
Frequency aging	f_aging	-5	-	5	x10 ⁻⁶	25°C, 5years

3. Timing chart

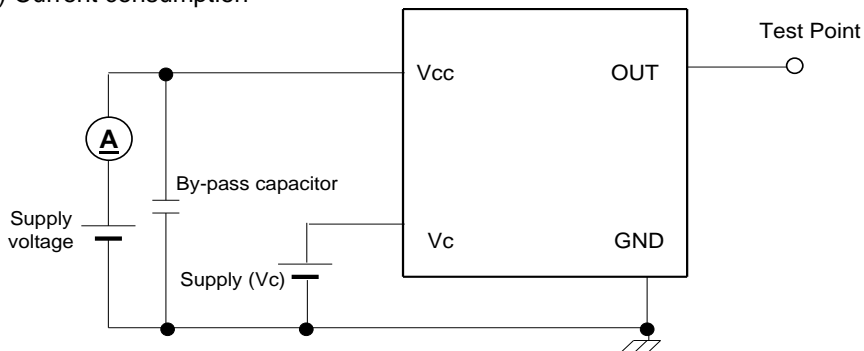


4. Test circuit

1) C-MOS load $CL=15\text{ pF}$



2) Current consumption



3) Condition

1. Oscilloscope

Impossible to measure both frequency and wave form at the same time.

(In case of using oscilloscope's amplifier output, possible to measure both at the same time.)

2. L_{CMOS} includes probe capacitance.

3. By-pass capacitor ($0.01\text{ }\mu\text{F}$ to $0.1\text{ }\mu\text{F}$) is placed closely between V_{cc} and GND.

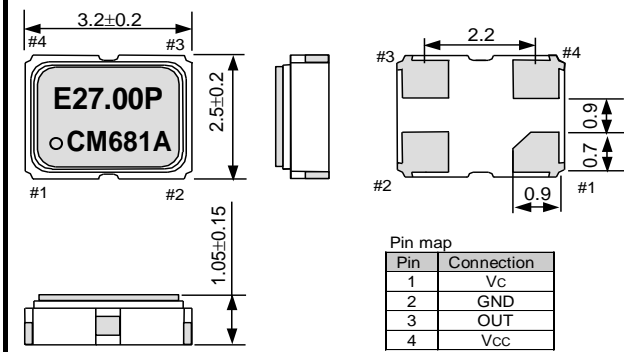
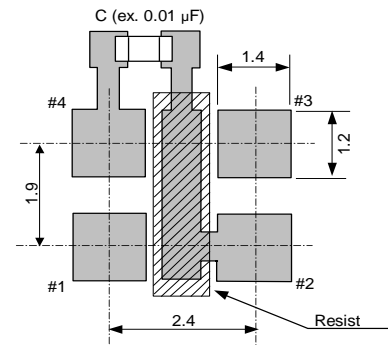
4. Use the current meter whose internal impedance value is small.

5. Power Supply

· Start up time ($0\%V_{cc} \rightarrow 90\%V_{cc}$) of power source should be more than $150\text{ }\mu\text{s}$.

· Impedance of power supply should be as low as possible.

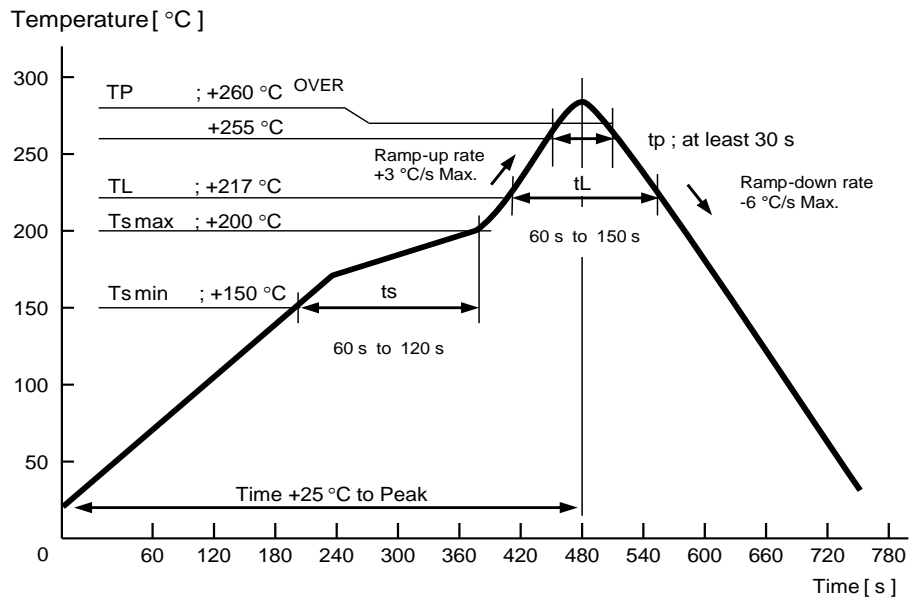
6. One point earth of test circuit is required.

5.External dimensions (Unit: mm)**6.Footprint(Recommended) (Unit: mm)**

To maintain stable operation, provide a 0.01 μ F to 0.1 μ F by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between V_{cc} - GND).

7.Reflow profile

JEDEC STD-020D.01

**8.Packing information**

[1] Product number last 2 digits code(xx) description

The recommended code is "00"

Q3614CE000066xx

Code	Condition	Code	Condition
00	1000pcs / Reel	12	250pcs / Reel
01	Any Q'ty vinyl bag(Tape cut)	13	500pcs / Reel
11	Any Q'ty / Reel	14	1kpcs / Reel

9. Notice

- This material is subject to change without notice.
- Any part of this material may not be reproduced or duplicated in any form or any means without the written permission of Seiko Epson.
- The information about applied circuitry, software, usage, etc. written in this material is intended for reference only. Seiko Epson does not assume any liability for the occurrence of infringing on any patent or copyright of a third party. This material does not authorize the licensing for any patent or intellectual copyrights.
- When exporting the products or technology described in this material, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
- You are requested not to use the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes. You are also requested that you would not make the products available to any third party who may use the products for such prohibited purposes.
- These products are intended for general use in electronic equipment. When using them in specific applications that require extremely high reliability, such as the applications stated below, you must obtain permission from Seiko Epson in advance.
 - / Space equipment (artificial satellites, rockets, etc.)
 - / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.)
 - / Medical instruments to sustain life
 - / Submarine transmitters
 - / Power stations and related
 - / Fire work equipment and security equipment
 - / Traffic control equipment
 - / And others requiring equivalent reliability.
- All brands or product names mentioned herein are trademarks and/or registered trademarks of their respective.

10. Contact us

<http://www5.epsondevice.com/en/contact/>