VCXO VG-4231CE

SEIKO EPSON CORPORATION

Product name VG-4231CE 32.768000 MHz PSB-M
Product code / Ordering code Q3614CE000043xx
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

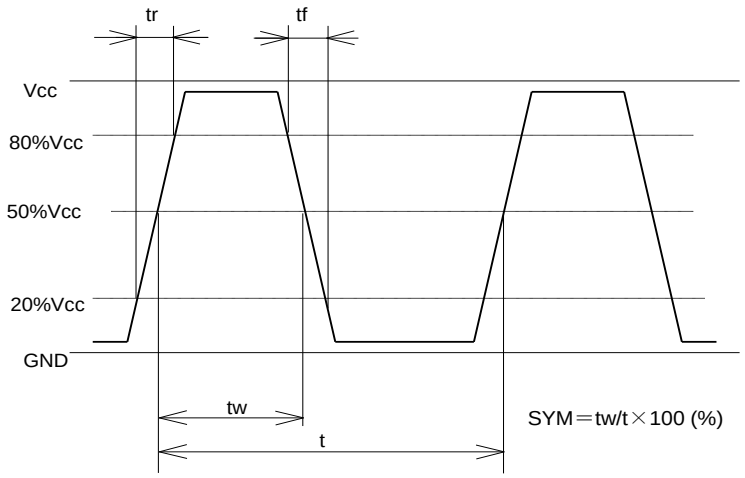
1.Absolute maximum ratings

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

2.Specifications(characteristics)

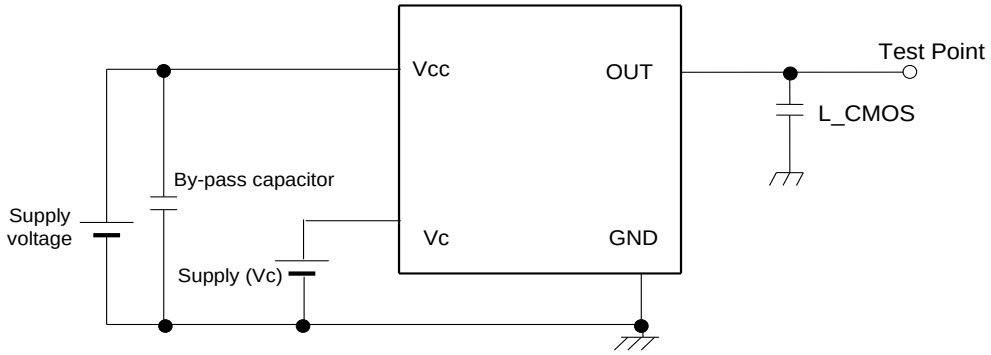
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	fo		32.7680		MHz	
Supply voltage	Vcc	2.6	2.8	3	V	-
Control voltage	Vc	0	1.4	2.8	V	Vc=1.4V+/-1.4V
Operating temperature	T_use	-40	-	+85	ºC	-
Frequency tolerance	f_tol	-37	-	+37	$x10^{-6}$	T_use
Current consumption	Icc	-	-	2.2	mA	No load
Frequency control range	f_cont	+/-140	-	-	$x10^{-6}$	-
Absolute pull range	APR	+/-95	0	0	$x10^{-6}$	0
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	-	-	4	ns	20%Vcc to 80%Vcc level
Fall time	tf	-	-	4	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	$x10^{-6}$	25ºC, 5years

3.Timing chart

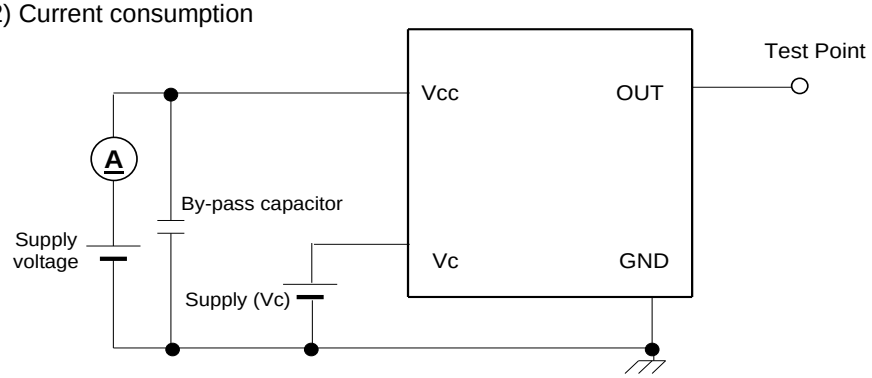


4.Test circuit

1) C-MOS load CL=15 pF



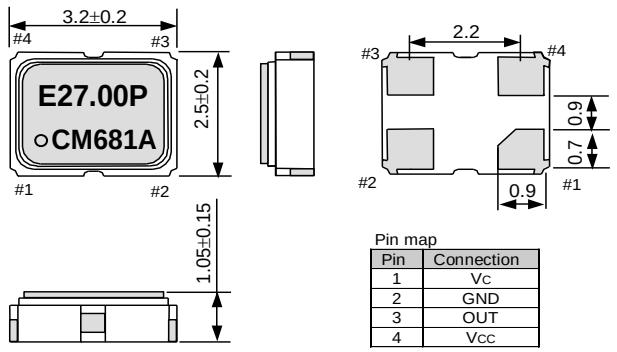
2) Current consumption



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 µF to 0.1 µF) is placed closely between Vcc and GND.
4. Use the current meter whose internal impedance value is small.
5. Power Supply
   ・Start up time (0 %Vcc→90 %Vcc) of power source should be more than 150 µs.
   ・Impedance of power supply should be as low as possible.
6. One point earth of test cirouit is required.

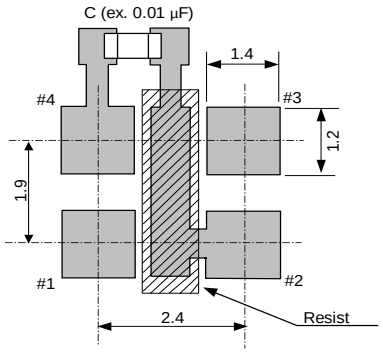
5.External dimensions (Unit: mm)



Pin map

Pin	Connection
1	Vc
2	GND
3	OUT
4	Vcc

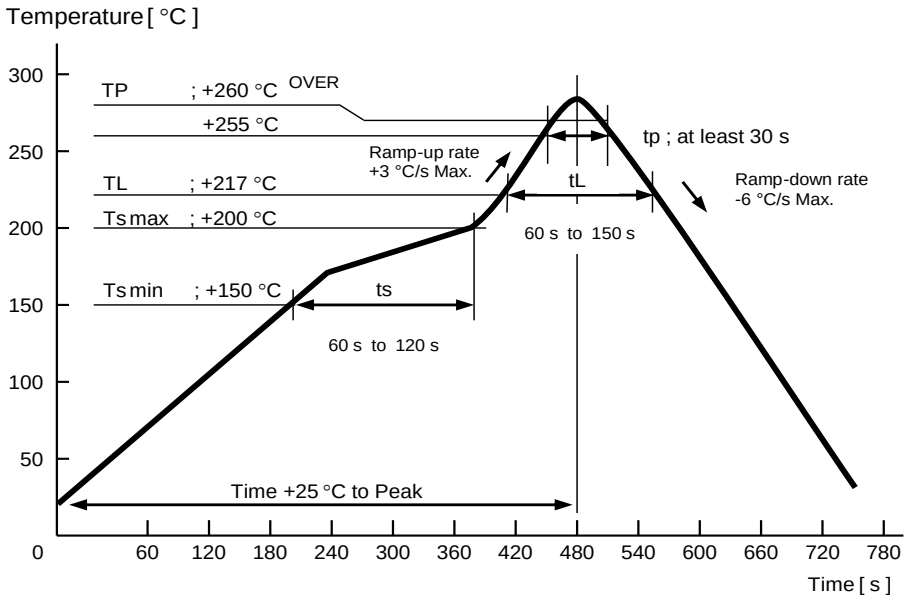
6.Footprint(Recommended) (Unit: mm)



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).

7.Reflow profile

JEDEC STD-020D.01



8.Packing information

[1]Product number last 2 digits code(xx) description The recommended code is "00"

Q3614CE000043xx

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

[2] Taping specification

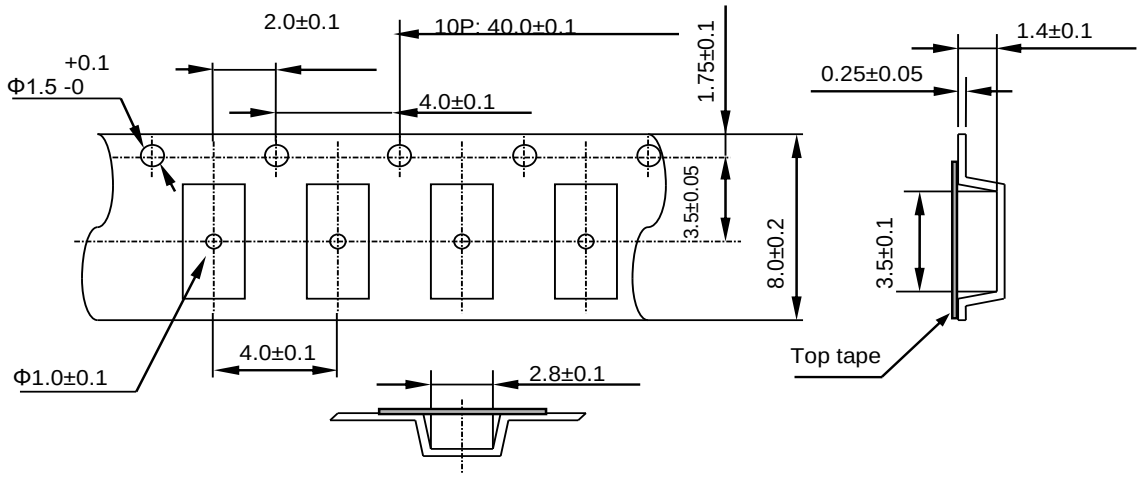
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

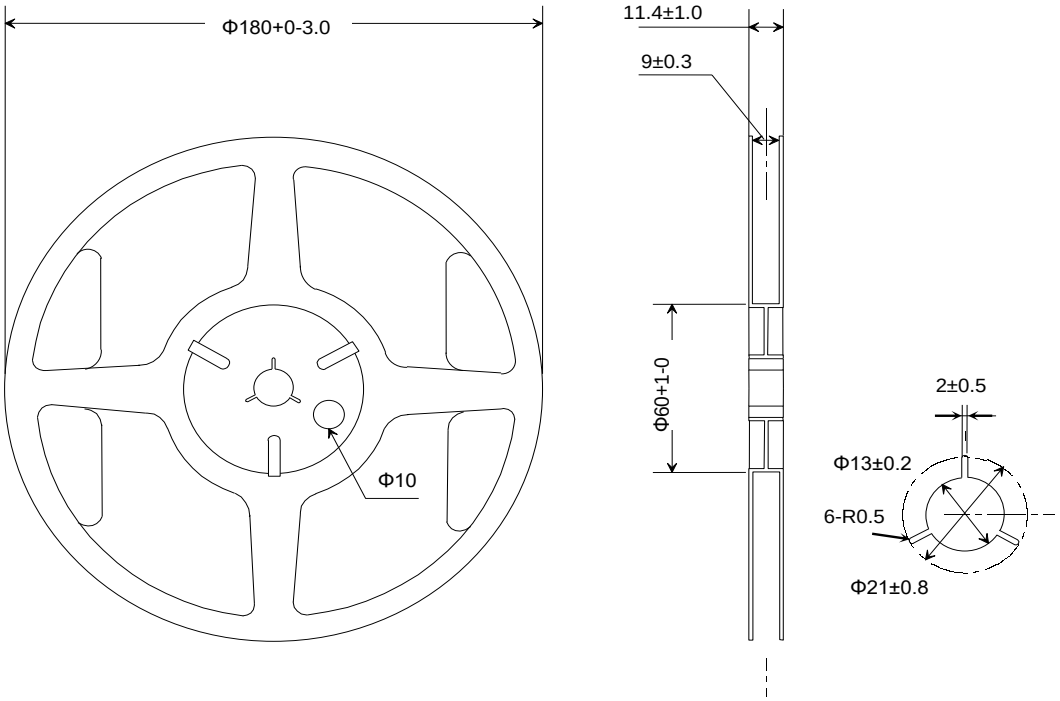
Unit: mm



(2) Reel dimensions

Material of the Reel : PS

Unit: mm



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