

VCXO

VG-4231CA

SEIKO EPSON CORPORATION

Product name VG-4231CA 20.480000 MHz GRC-T

Product code / Ordering code Q3614CA001194xx

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.153mg

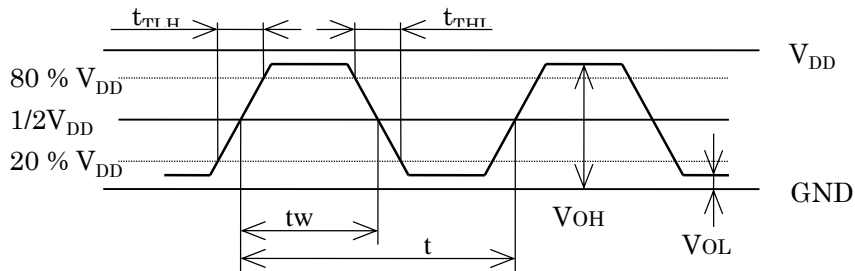
1.Absolute maximum ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	Vcc-GND	-0.3	-	+7	V	-
Storage temperature	T_stg	-55	-	+125	°C	Storage as single product after unpacking.
Input voltage	Vin	-0.3	-	Vcc+0.3	V	Vc traminial

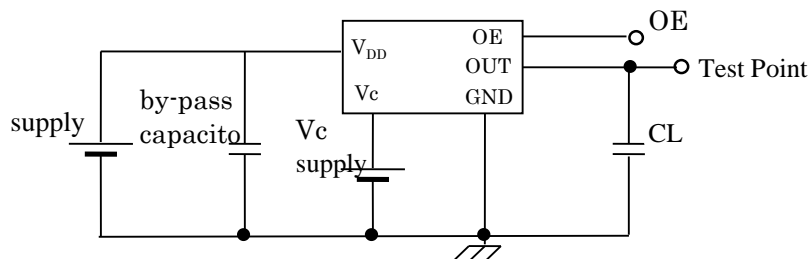
2.Specifications(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f ₀		20.4800		MHz	
Supply voltage	Vcc	3	3.3	3.6	V	-
Control voltage	Vc	0.15	1.65	3.15	V	Vc=1.65V+/-1.5V
Operating temperature	T_use	-40	-	+85	°C	-
Frequency tolerance	f_tol	-50	-	+50	x10 ⁻⁶	T_Use
Current consumption	I _{cc}	-	-	10	mA	no load
Disable current	I _{dis}	-	-	7	mA	OE=GND
Frequency control range	f_cont	+/-130	-	-	x10 ⁻⁶	-
Absolute pull range	APR	+/-65	-	-	x10 ⁻⁶	-
Modulation characteristics	BW	-	20	-	kHz	+/-3dB
Input resistance	Rin	10000	-	-	kΩ	-
Frequency change polarity	-					Positive Polarity
Symmetry	SYM	40	-	60	%	50% Vcc level
Output voltage	VOH	Vcc-0.4	-	-	V	50%Vcc Level
	VOL	-	-	0.4	V	-
Output load condition	L_CMOS	-	-	15	pF	-
Input voltage	VIH	70%Vcc	-	-	V	-
	VIL	-	-	30%Vcc	V	-
Rise time	t _r	-	-	4	ns	20%Vcc to 80%Vcc level
Fall time	t _f	-	-	4	ns	20%Vcc to 80%Vcc level
Start-up time	t _{str}	-	-	10	ms	t=0 at 90%Vcc
Jitter	t _{DJ}	-	TBD	-	ps	Deterministic Jitter
	T _{RJ}	-	TBD	-	ps	Random Jitter
	t _{RMS}	-	TBD	-	ps	δ(RMS of total distribution)
	t _{p-p}	-	TBD	-	ps	Peak to Peak
	t _{acc}	-	TBD	-	ps	Accumulated Jitter(δ) n=2 to 50000 cycles
Phase jitter	tPJ	-	-	TBD	ps	Off set Frequency: 12kHz to 20MHz
Frequency aging	f_aging	-10	-	10	x10 ⁻⁶	25°C,10years

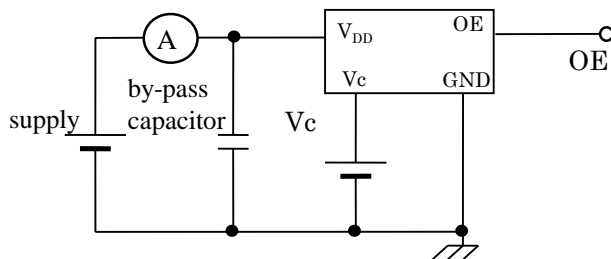
3. Timing chart



4. Test circuit

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

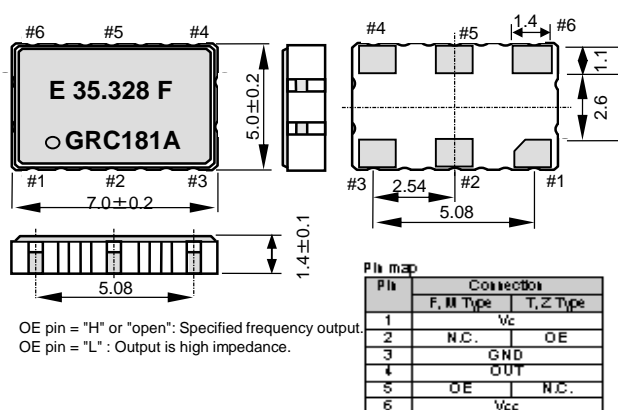
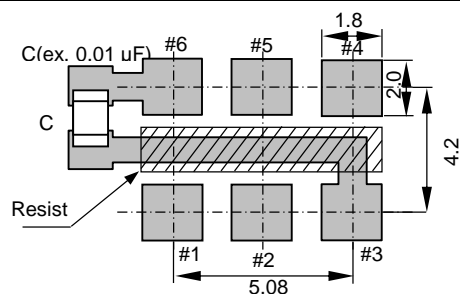
2) Current consumption



*Current consumption under the disable function should be $OE=GND$

3) Condition

- Oscilloscope : Impedance Min. 1 MW
Input capacitance Max. 15 pF
Band width Min. 400 MHz
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.)
- CL includes probe capacitance.
- By-pass capacitor (0.01 mF to 0.1 mF) is placed closely between VDD and GND.
- Use the current meter whose internal impedance value is small.
- Power Supply
 - Start up time ($0\%V_{DD} \rightarrow 90\%V_{DD}$) of power source should be more than 150 ms.
 - Impedance of power supply should be as lowest as possible.
- One point earth of test circuit is required.

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

To maintain stable operation, provide a 0.01uF to 0.1uF 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

Pre Heating Temperature

Tp1 ~ Tp2 = + 170 °C

Heating Temperature

T_{Mlt} = + 220 °C

Peak Temperature

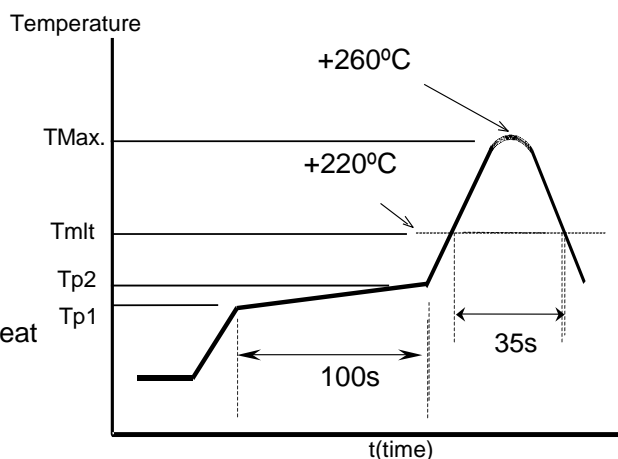
T_{Max.} = + 260 °C

Point of measuring

In case of Solder ability

Terminal.

In case of Resistance to soldering heat Surface.

**8.Packing information**

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

The recommended code is "00"

Q3614CA001194xx

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

[2] Taping specification

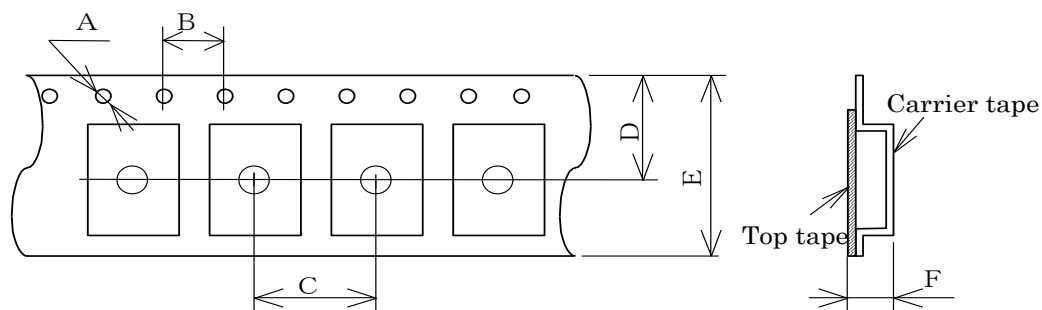
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm



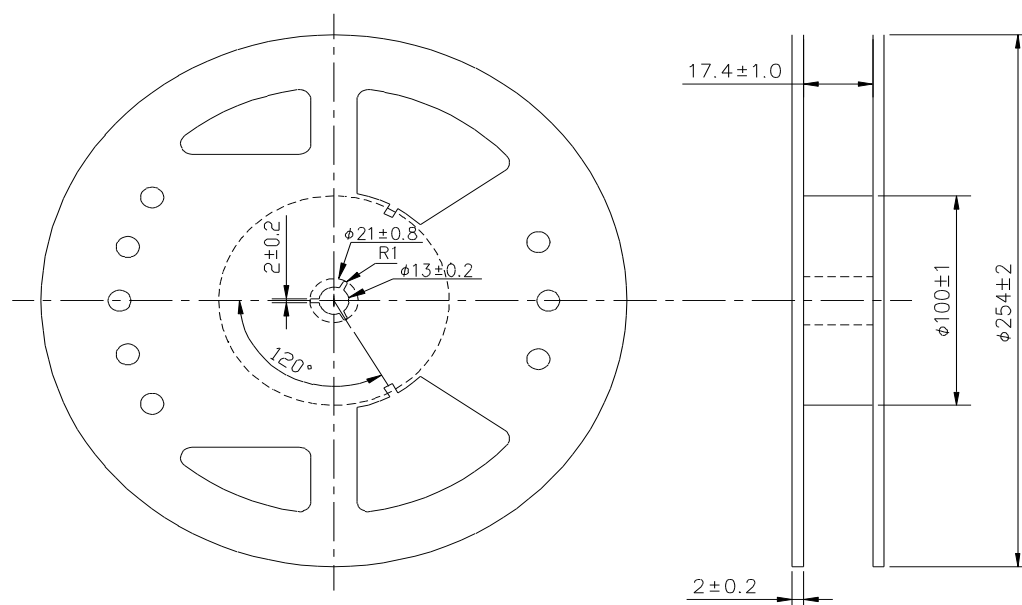
Symbol	A	B	C	D	E	F
Value	$\Phi 1.5$	4	8	9.25	16	2.3

(2) Reel dimensions

Center material : PS

Material of the Reel : PS

Unit: mm



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