Clock OSC XG5032HAN

Product name XG5032HAN 100.000000MHz +/-50ppm CJAA
Product Number / Ordering code X1M0004610002xx
Please refer to the 9.Packing information about xx (last 2 digits)

Output waveform HCSL
Pb free / Complies with EU RoHS directive
Reference weight Typ. 70 mg

1.Absolute maximum ratings

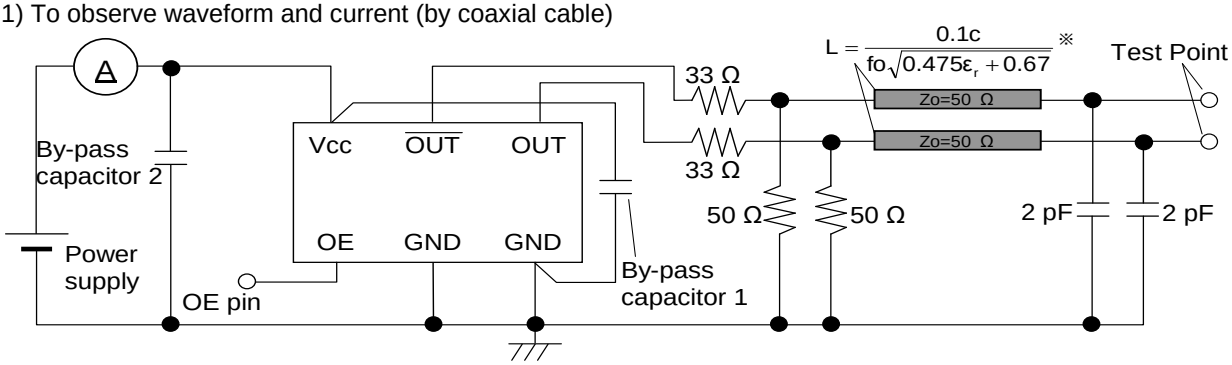
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	Vcc-GND	-0.5	-	4	V	-
Storage temperature	T_stg	-55	-	125	ºC	Storage as single product
Input voltage	Vin	-0.5	-	Vcc+0.5	V	ST or OE Terminal

2.Specifications(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f0	-	100.0000	-	MHz	
Supply voltage	Vcc	2.97	3.3	3.63	V	-
Operating temperature	T_use	0	-	70	ºC	-
Frequency tolerance	f_tol	-50	-	50	$x10^{-6}$	-
Current consumption	Icc	-	-	35	mA	OE=Vcc,HCSL=50Ω
Stand-by current	I_std	-	-	-	mA	-
Disable current	I_dis	-	-	15.0	mA	OE = GND
Symmetry	SYM	45	-	55	%	0
Output voltage(HCSL)	V_{OH}	-	0.75	-	V	-
	V_{OL}	-	0	-	V	-
Crossing voltage	V_{CR}	0.25	-	0.55	V	-
Output load condition(LVDS)	L_LVDS	-	50	-	Ω	Terminal to GND
	R_S	-	33	-	Ω	-
	C_L	-	2	-	pF	-
Input voltage	V_{IH}	0.7Vcc	-	-		-
	V_{IL}	-	-	0.3Vcc		-
Rise time	t_r	1	-	4	ps	[V/n]
Fall time	tf	1	-	4	ps	[V/n]
Start-up time	t_str	-	-	10	ms	-
Jitter	t_{DJ}	-	-	N/A	ps	Deterministic Jitter
	T_{RJ}	-	-	N/A	ps	Random Jitter
	t_{RMS}	-	-	N/A	ps	δ(RMS of total distribution)
	t_{p-p}	-	-	N/A	ps	Peak to Peak
	t_{acc}	-	-	N/A	ps	Accumulated Jitter(δ) n=2 to 50000 cycles
Phase jitter	t_{PJ}	-	-	0.3	ps	Off set Frequency: 12kHz to 20MHz
Phase noise	L(f)	-	-	-	dBc/Hz	Off set 1Hz
		-	-61.3	-	dBc/Hz	Off set 10Hz
		-	-91.2	-	dBc/Hz	Off set 100Hz
		-	-119.5	-	dBc/Hz	Off set 1kHz
		-	-144.6	-	dBc/Hz	Off set 10kHz
		-	-153.6	-	dBc/Hz	Off set 100kHz
		-	-155.5	-	dBc/Hz	Off set 1MHz
Frequency aging	f_age	-	-	-	$x10^{-6}$/Year	Included in Frequency tolerance 10 years
		-	-	-		-

3.Test circuit

1) To observe waveform and current (by coaxial cable)



* Each output line is same length.

* To measure the disable current, OE pin is connected to GND.

* L=176mm (about 7 inch) when f0=100 MHz ,Ɛr=4.7 (FR-4)

2) Measurement condition

(1) Oscilloscope

- Bandwidth should be 5 times higher than DUT's output frequency (4 GHz).
- Probe ground should be placed closely from test point and lead length should be as short as possible.

(2) By-pass capacitor 1 (approx. 0.01 µF to 0.1 µF) places closely between Vcc and GND.

(3) By-pass capacitor 2 (approx. 10 µF) places closely between power supply terminals on the board.

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

(5) Output line length L is estimated as follows

$$L = \frac{0.1c}{fo\sqrt{0.475\varepsilon_r + 0.67}}$$

Ɛr : Relative dielectric constant of the board

f0 : Output frequency

c : Velocity of light in a vacuum

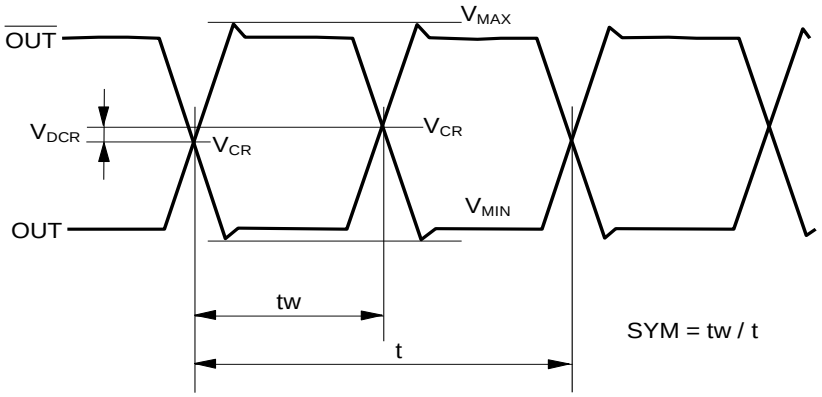
(6) Power supply

- Start up time (0 V→90 %Vcc) of power source should be more than 150 µs and slew rate should be less than 19.8 mV/µs.
- Impedance of power supply should be as low as possible.

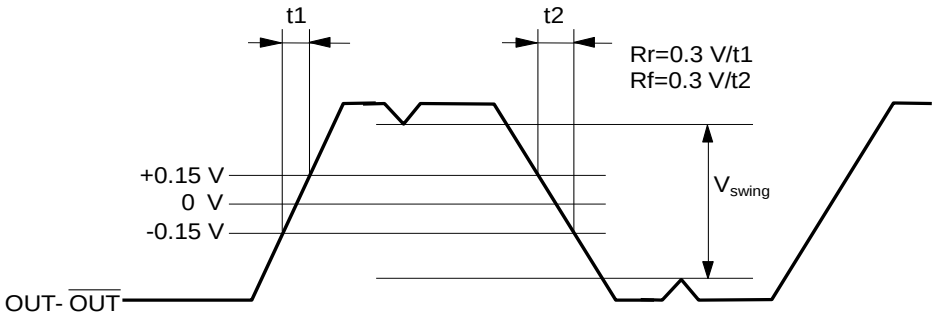
4.Timing chart

1) Output waveform and level

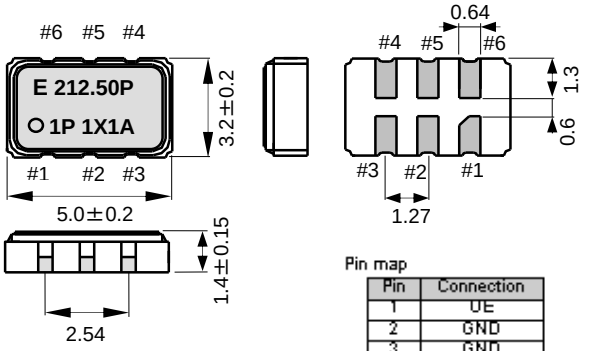
• OUT and $\overline{OUT}$



• OUT-$\overline{OUT}$



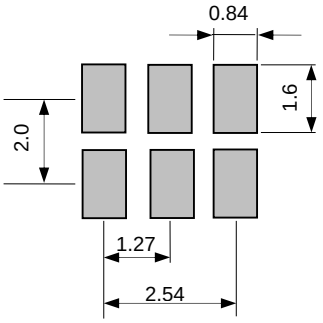
5.External dimensions (Unit: mm)



Pin map

Pin	Connection
1	OE
2	GND
3	GND
4	OUT
5	$\overline{OUT}$
6	Vcc

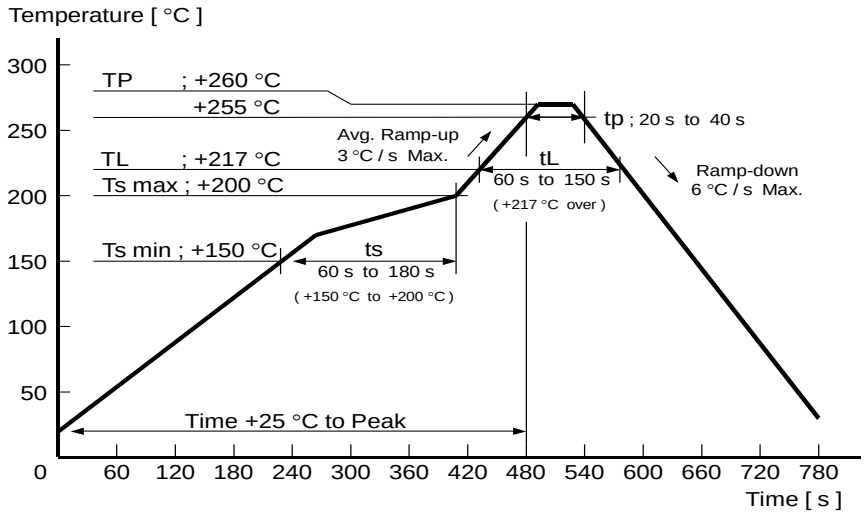
6.Footprint(Recommended) (Unit: mm)



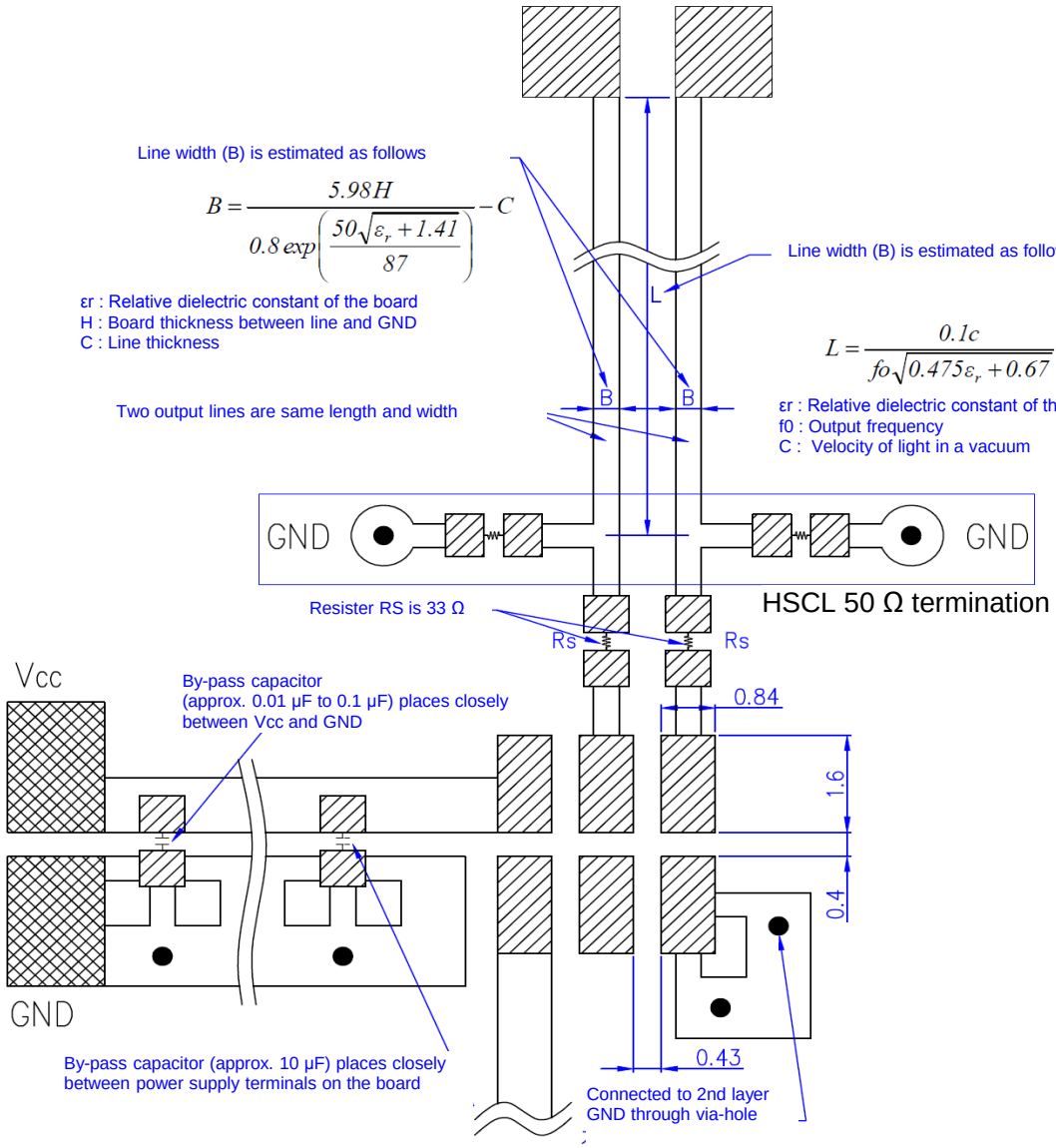
To maintain stable operation, provide a 0.01uF to 0.1uF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - GND).

7.Reflow profile

Reflow condition (Follow of JEDEC STD-020D.01)



8.PCB layout (2 layers, 2nd layer is all GND pattern)



* By-pass capacitor (approx. 0.01 µF to 0.1 µF) places closely between Vcc and GND.
* By-pass capacitor (approx. 10 µF) places closely between power supply terminals on the board.
* Please design the two output lines by characteristic impedance 50 Ω and same length,
* Reflection wave occurs in two output lines sfter 50 Ω terminal resistances.
  In the case except output line length L shown in the upper figure, reflection wave may influence the rise and fall waveform and electric characteristic may not satisfy this specifications.

9.Packing information

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

X1M0004610002xx

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

[2] Taping specification

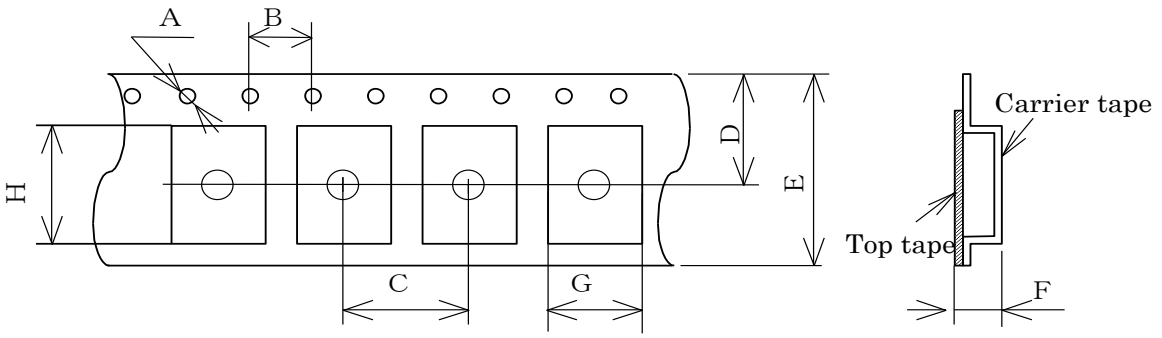
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm

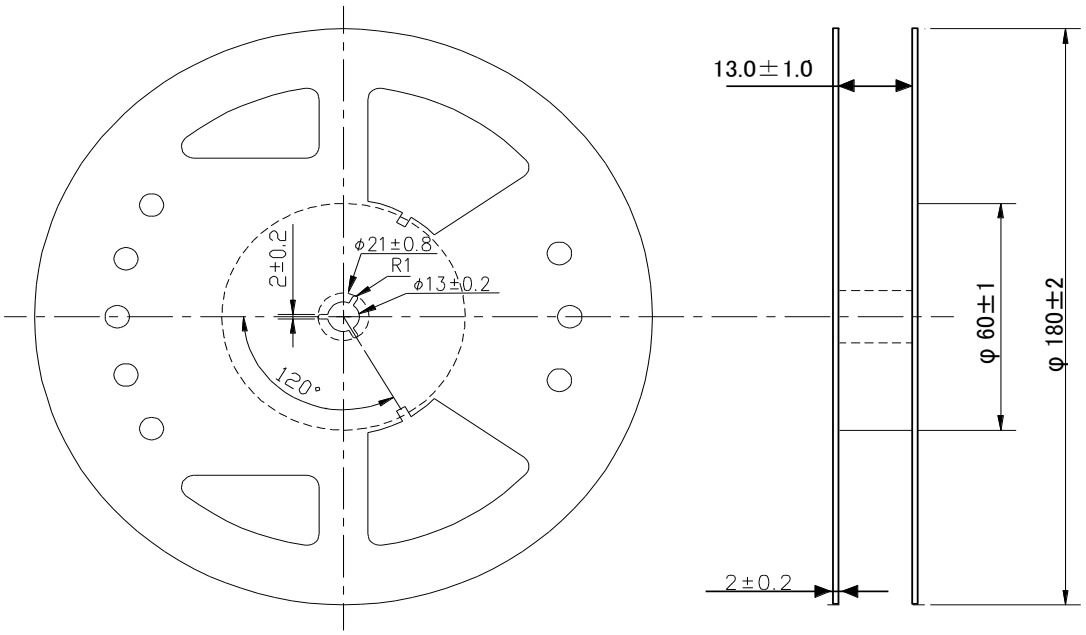


Symbol	A	B	C	D	E	F	G	H
Value	φ1.5 +0.1/-0	4.0±0.1	8.0±0.1	7.25±0.2	12.0±0.2	1.40±0.1	3.5±0.1	5.4±0.1

(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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