

Clock OSC

XG5032HAN

Product name XG5032HAN 100.000000MHz +/-100ppm DLAA

Product Number / Ordering code X1M0004610001xx

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

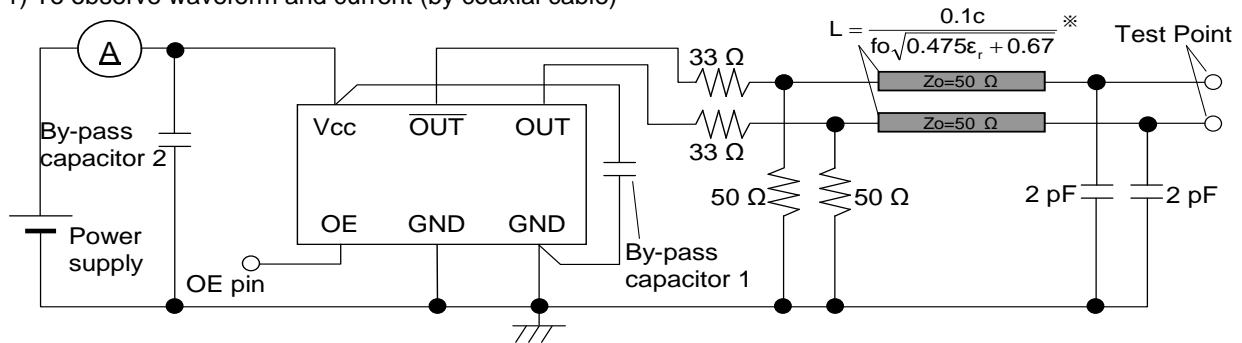
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	V _{cc-GND}	-0.5	-	4	V	-
Storage temperature	T _{stg}	-55	-	125	°C	Storage as single product
Input voltage	V _{in}	-0.5	-	V _{cc} +0.5	V	ST or OE Terminal

2.Specifications(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f ₀	-	100.0000	-	MHz	
Supply voltage	V _{cc}	2.375	2.5	2.625	V	-
Operating temperature	T _{use}	0	-	70	°C	-
Frequency tolerance	f _{tol}	-100	-	100	x10 ⁻⁶	-
Current consumption	I _{cc}	-	-	35	mA	OE=V _{cc} ,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}	0.7V _{cc}	-	-		-
	V _{IL}	-	-	0.3V _{cc}		-
Rise time	t _r	1	-	4	ps	[V/n]
Fall time	t _f	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
		-	-62.2	-	dBc/Hz	Off set 10Hz
		-	-90.9	-	dBc/Hz	Off set 100Hz
		-	-118.8	-	dBc/Hz	Off set 1kHz
		-	-144.9	-	dBc/Hz	Off set 10kHz
		-	-152.4	-	dBc/Hz	Off set 100kHz
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.
- * $L=176\text{mm}$ (about 7 inch) when $f_0=100\text{ MHz}$, $\epsilon_r=4.7$ (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. $0.01\text{ }\mu\text{F}$ to $0.1\text{ }\mu\text{F}$) places closely between Vcc and GND.

- (3) By-pass capacitor 2 (approx. $10\text{ }\mu\text{F}$) 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

$$L = \frac{0.1c}{f_0 \sqrt{0.475\epsilon_r + 0.67}}$$

ϵ_r : Relative dielectric constant of the board

f_0 : Output frequency

c : Velocity of light in a vacuum

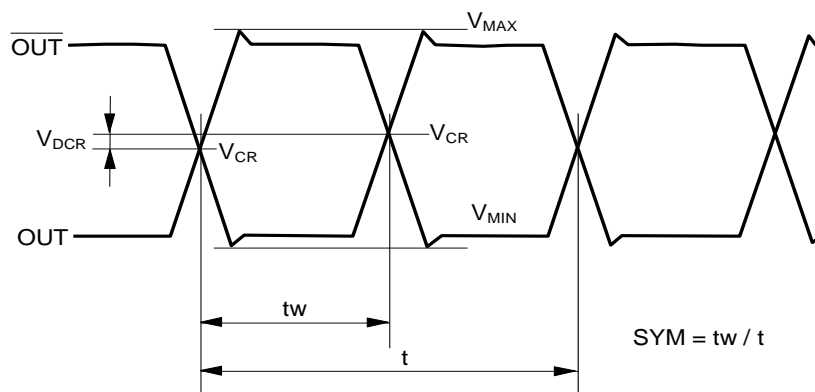
- (6) Power supply

- Start up time ($0\text{ V} \rightarrow 90\%V_{cc}$) of power source should be more than $150\text{ }\mu\text{s}$ and slew rate should be less than $19.8\text{ mV}/\mu\text{s}$.
- Impedance of power supply should be as low as possible.

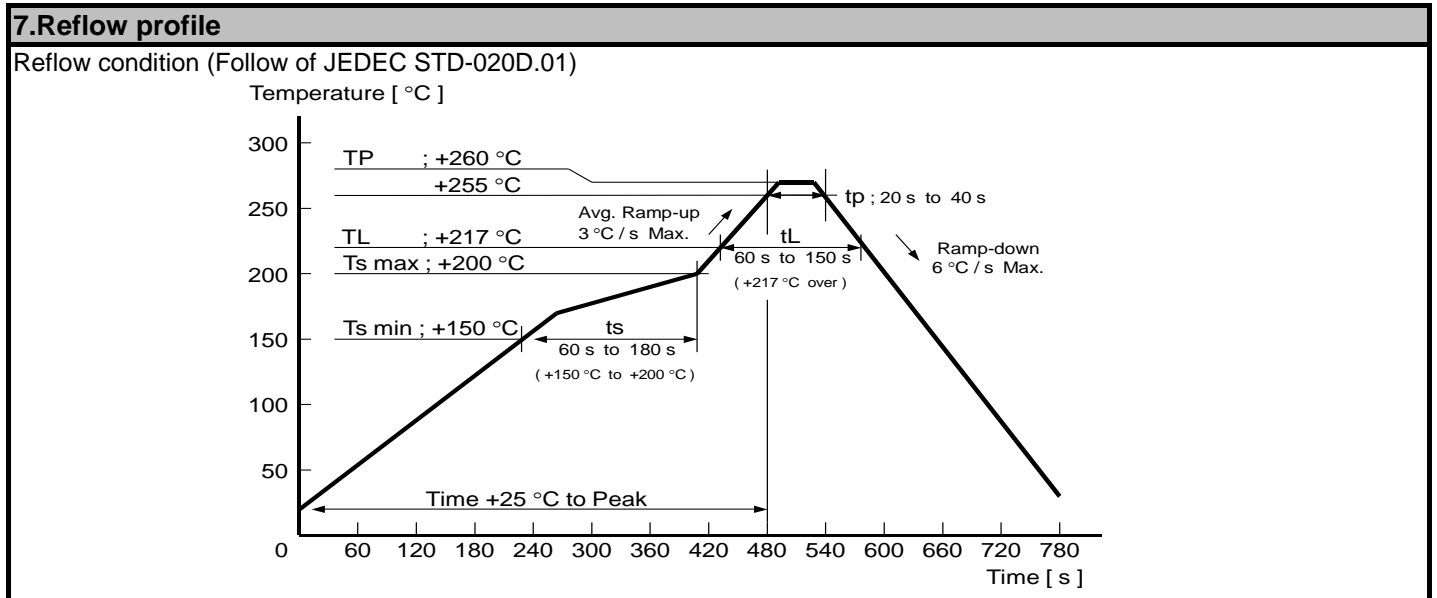
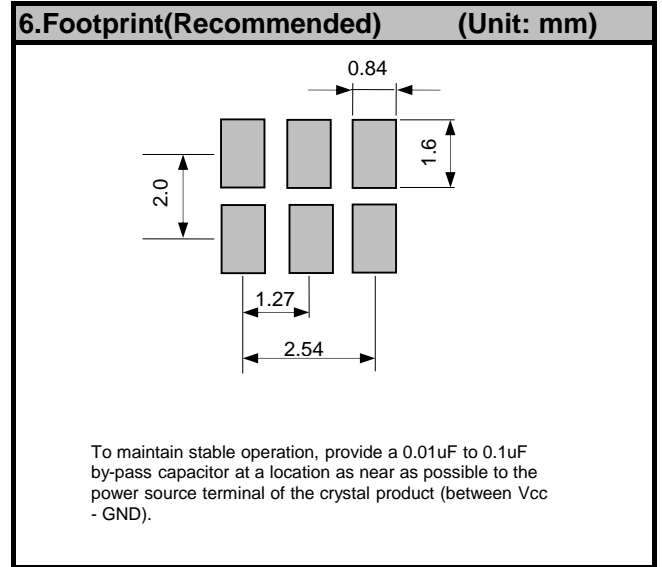
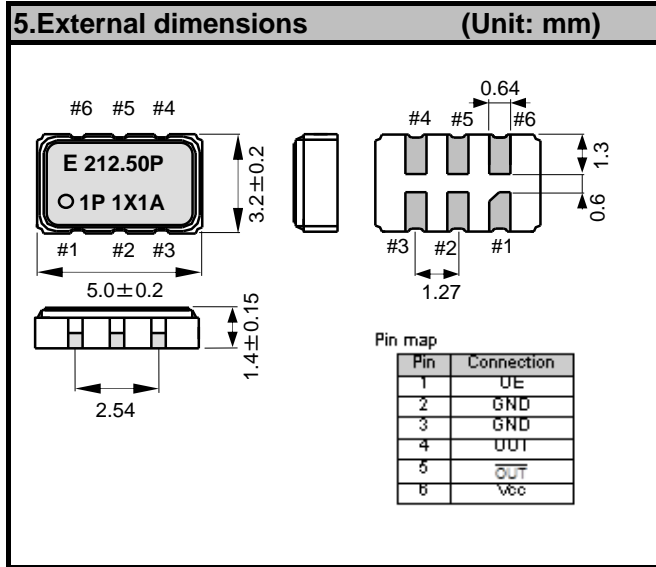
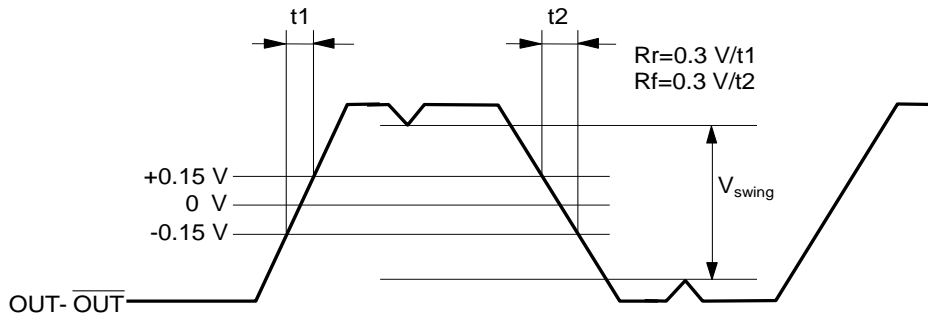
4. Timing chart

- 1) Output waveform and level

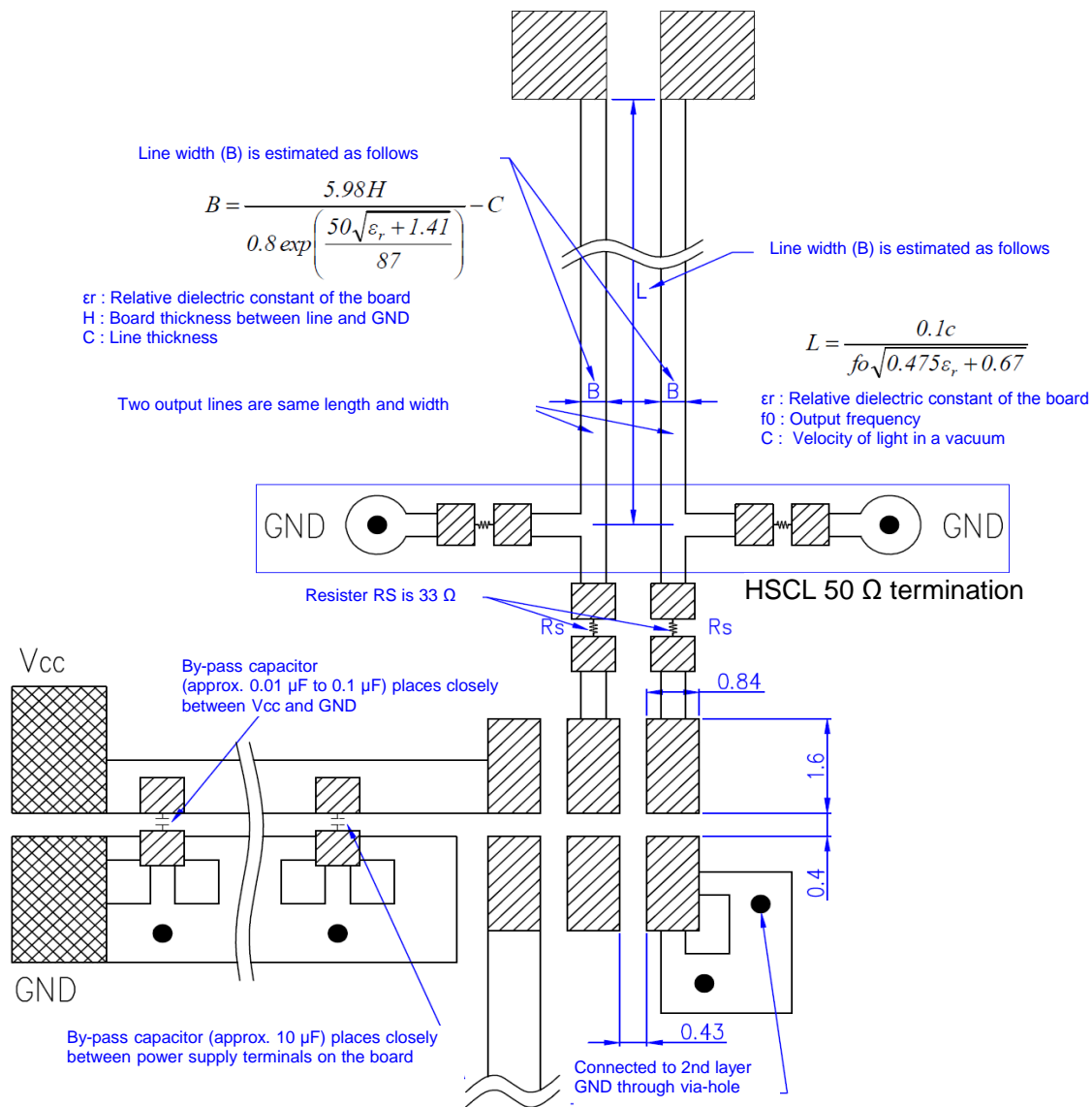
- OUT and OUT-bar



• OUT-OUT



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



- * By-pass capacitor (approx. 0.01 μ F to 0.1 μ F) places closely between Vcc and GND.
 - * By-pass capacitor (approx. 10 μ F) 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 after 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"

X1M0004610001xx

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

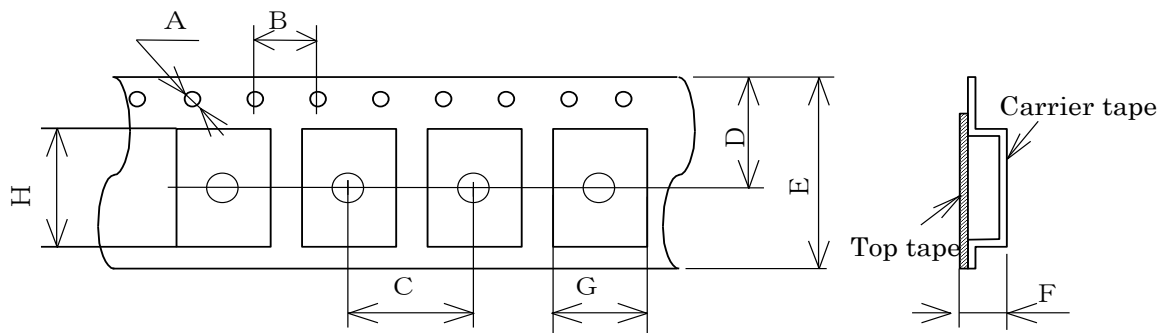
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm

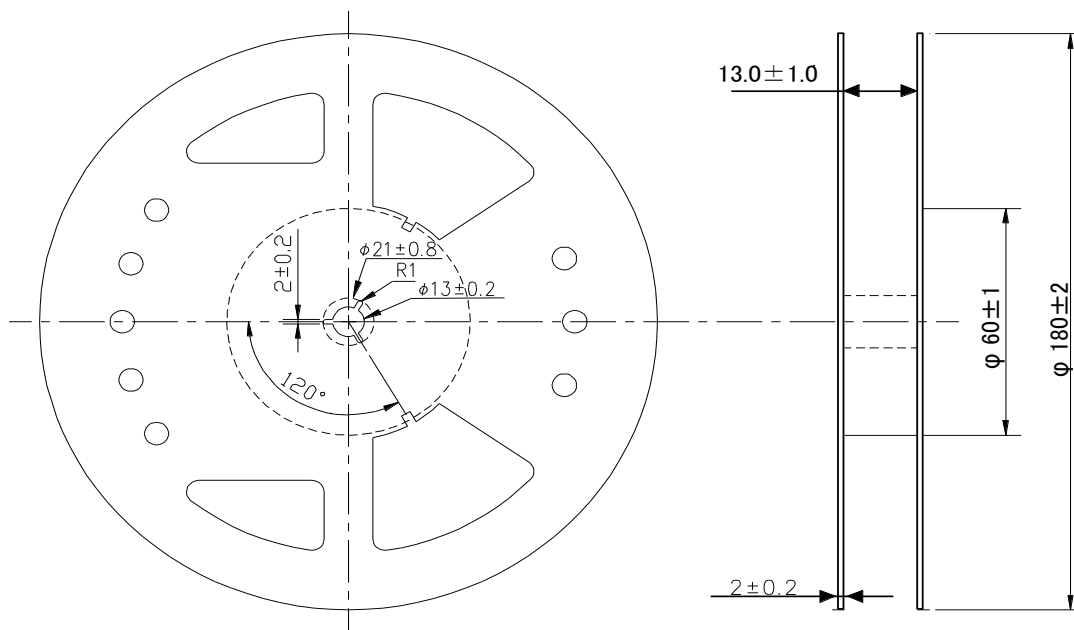


Symbol	A	B	C	D	E	F	G	H
Value	$\phi 1.5$ $+0.1/-0$	4.0 ± 0.1	8.0 ± 0.1	7.25 ± 0.2	12.0 ± 0.2	1.40 ± 0.1	3.5 ± 0.1	5.4 ± 0.1

(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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