

**LOW-JITTER SAW OSCILLATOR (SPSO)**  
OUTPUT : HCSL



Product Number  
X1M000461xxxx00

**XG5032HAN**

- Frequency range : 100 MHz to 200 MHz
- Supply voltage : 2.5 V, 3.3 V
- Output : HCSL
- Function : Output enable (OE)
- External dimensions : 5.0 × 3.2 × 1.4 mm



•Low jitter and low phase noise by SAW unit.

**Specifications (characteristics)**

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	f <sub>o</sub>	100 MHz to 200 MHz	Please contact us for inquiries regarding available frequencies.
Supply voltage	V <sub>CC</sub>	C:3.3 V ± 0.33 V, D:2.5 V ± 0.125 V	
Storage temperature	T <sub>stg</sub>	-55 °C to +125 °C	Store as bare product.
Operating temperature	T <sub>use</sub>	A: 0 °C to +70 °C, B: -20 °C to +70 °C, D: -5 °C to +85 °C	
Frequency tolerance	f <sub>tol</sub>	J: ± 50 × 10 <sup>-6</sup> , L: ± 100 × 10 <sup>-6</sup>	
Current consumption	I <sub>CC</sub>	35 mA Max.	OE = V <sub>CC</sub> , with output load
Disable current	I <sub>dis</sub>	15 mA Max.	OE = GND
Symmetry	SYM	45 % to 55 %	At outputs crossing point
Output voltage	V <sub>OH</sub>	0.75 V Typ., 0.66 V to 0.85 V	DC characteristics, single output
	V <sub>OL</sub>	0 V Typ., -0.15 V to 0.15 V	
Crossing voltage	V <sub>CR</sub>	0.25 V to 0.55 V	
Output load condition	L <sub>HCSL</sub>	50 Ω	As per measurement circuit below.
	R <sub>S</sub>	33 Ω	
	C <sub>L</sub>	2 pF	
Input voltage	V <sub>IH</sub>	70 % V <sub>CC</sub> Min.	OE terminal
	V <sub>IL</sub>	30 % V <sub>CC</sub> Max.	
differential output rise slew rate/ fall slew rate	R <sub>r</sub> / R <sub>f</sub>	1 V/n to 4 V/ns	Between -0.15 V and 0.15 V of differential output
Start-up time	t <sub>str</sub>	10 ms Max.	Time at minimum supply voltage to be 0 s
Phase Jitter	t <sub>PJ</sub>	0.3 ps Max.	fo ≤ 160 MHz
		0.4 ps Max.	160 MHz < fo ≤ 175 MHz
		0.2 ps Max.	fo > 175 MHz
Frequency aging	f <sub>age</sub>	N: ± 10 × 10 <sup>-8</sup> / year Max.	First year
		A: Included in Frequency tolerance	10 years

Product Name **XG5032 HAN 100.000000MHz C J A A** (ⓈⓈⓈ:JBA,JDA are not available)  
 (Standard form) ① ② ③ ④⑤⑥⑦  
 ①Model ②Output(H: HCSL) ③Frequency  
 ④Supply voltage (C: 3.3 V Typ., D: 2.5 V Typ.) ⑤Frequency tolerance ⑥Operating temperature  
 ⑦Frequency aging (A: Frequency tolerance include aging, N: Frequency tolerance exclude aging)

Ⓢ Frequency tolerance		Ⓢ Operating temp.	
J	±50 × 10 <sup>-6</sup>	A	0 °C to +70 °C
L	±100 × 10 <sup>-6</sup>	B	-20 °C to +70 °C
		D	-5 °C to +85 °C

**Measurement circuit**

By-pass capacitor 1 (approx. 0.01 μF to 0.1 μF) places closely between V<sub>CC</sub> and GND.  
 By-pass capacitor 2 (approx. 10 μF) places closely between power supply terminals on the board.  
 Output line length L is estimated as follows

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

c : Velocity of light in a vacuum  
 ε<sub>r</sub> : Relative dielectric constant of the board  
 f<sub>o</sub> : Output frequency

**External dimensions**

(Unit:mm)

Pin map

Pin	Connection
1	OE
2	GND
3	GND
4	OUT
5	OUT
6	V <sub>CC</sub>

OE pin = HIGH : Specified frequency output.  
 OE pin = LOW : Output is high impedance  
 #2 and #3 are connected to the cover.

**Footprint (Recommended)**

(Unit:mm)

To maintain stable operation, provide a 0.01 μF to 0.1 μF by-pass capacitor at a loca ion as near as possible to the power source terminal of the crystal product (between V<sub>CC</sub> - GND).