

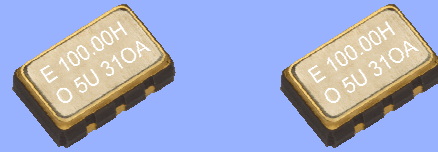
**LOW-JITTER SAW OSCILLATOR (SPSO)**  
**OUTPUT : HCSSL**



Product Number (please contact us)  
**X1M000461xxxx00**

**XG5032HAN**

- Frequency range : 100 MHz to 200 MHz
- Supply voltage : 2.5 V, 3.3 V
- Output : HCSSL
- Function : Output enable (OE)
- External dimensions : 5.0 × 3.2 × 1.4 mm
- Low jitter and low phase noise by SAW unit.



Actual size



**Specifications (characteristics)**

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	f <sub>0</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> V <sub>OL</sub>	0.75 V Typ., 0.66 V to 0.85 V 0 V Typ., -0.15 V to 0.15 V	DC characteristics, single output
Crossing voltage	V <sub>CR</sub>	0.25 V to 0.55 V	
Output load condition	L <sub>HCSSL</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
		0.3 ps Max.	
Phase Jitter	tp <sub>J</sub>	0.4 ps Max.	f <sub>0</sub> ≤ 160 MHz
		0.2 ps Max.	160 MHz < f <sub>0</sub> ≤ 175 MHz
			f <sub>0</sub> > 175 MHz
Frequency aging	f <sub>aging</sub>	N: ±10 × 10 <sup>-6</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 Model ② Output(H: HCSSL) ③ Frequency

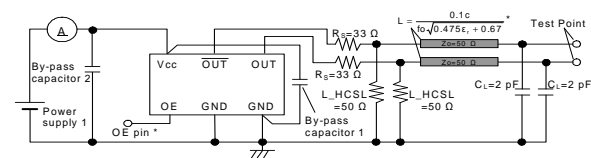
④ Supply voltage (C: 3.3 V Typ., D: 2.5 V Typ.) ⑤ Frequency tolerance ⑥ Operating temperature

⑦ Frequency aging (A: Frequency tolerance include aging, N: Frequency tolerance exclude aging)

ⓐ Frequency tolerance	
J	±50 × 10 <sup>-6</sup>
L	±100 × 10 <sup>-6</sup>

ⓑ Operating temp.	
A	0 to +70°C
B	-20 to +70°C
D	-5 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

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

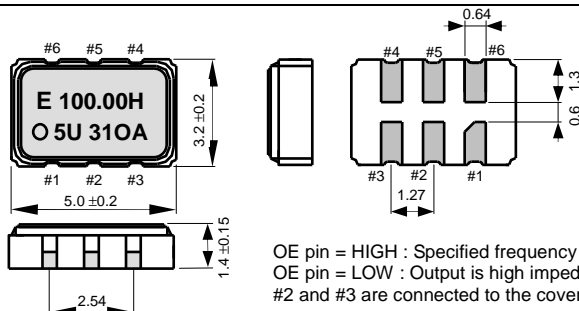
c : Velocity of light in a vacuum  
 ε<sub>r</sub> : Relative dielectric constant of the board  
 f<sub>o</sub> : Output frequency

**External dimensions**

(Unit:mm)

**Footprint (Recommended)**

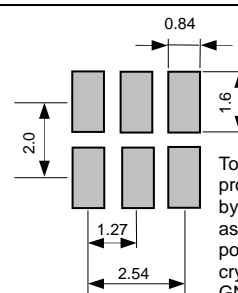
(Unit:mm)



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.



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

## PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc.)

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