

**LOW-JITTER SAW OSCILLATOR (SPSO)**

OUTPUT : LV-PECL, LVDS



**Product Number**  
 XG-2121CA P: X1M000311xxxx00  
 XG-2121CA L: X1M000351xxxx00  
 XG-2102CA P: X1M000301xxxx00  
 XG-2102CA L: X1M000341xxxx00

**XG-2121CA**  
**XG-2102CA**

- Frequency range : 100 MHz to 700 MHz
  - Supply voltage : 2.5 V ... XG-2121CA  
3.3 V ... XG-2102CA
  - Output : LV-PECL or LVDS
  - Function : Output enable (OE)
  - External dimensions : 7.0 × 5.0 × 1.2 mm
- Low jitter and low phase noise by SAW unit.



**Specifications (characteristics)**

Item	Symbol	LV-PECL		LVDS		Conditions / Remarks
		XG-2121CA P	XG-2102CA P	XG-2121CA L	XG-2102CA L	
Output frequency range	f <sub>o</sub>	100 MHz to 700 MHz				Please contact us about available frequencies.
Supply voltage	V <sub>cc</sub>	2.5 V ± 0.125 V	3.3 V ± 0.33 V	2.5 V ± 0.125 V	3.3 V ± 0.33 V	
Storage temperature	T <sub>stg</sub>	-55 °C to +125 °C				Storage as single product.
Operating temperature	T <sub>use</sub>	P: 0 °C to +70 °C, R: -5 °C to +85 °C, S: -20 °C to +70 °C				
Frequency tolerance	f <sub>tol</sub>	G: ± 50 × 10 <sup>-6</sup> , H: ± 100 × 10 <sup>-6</sup>				
Current consumption	I <sub>cc</sub>	60 mA Max.		30 mA Max.		OE=V <sub>cc</sub> , L ECL=50 Ω or L LVDS=100 Ω
Disable current	I <sub>dis</sub>	2 mA Max.		15 mA Max.		OE=GND
Symmetry	SYM	45 % to 55 %				At outputs crossing point
Output voltage (LV-PECL)	V <sub>OH</sub>	1.55 V Typ.	2.35 V Typ.	-		DC characteristics
	V <sub>OL</sub>	V <sub>cc</sub> -1.025 V to V <sub>cc</sub> -0.88 V		-		
Output voltage (LVDS)	V <sub>OD</sub>	-		350 mV Typ., 247 mV to 454 mV		DC characteristics
	dV <sub>OD</sub>	-		50 mV Max.		
Output load condition (ECL) / (LVDS)	L ECL	50 Ω		-		Terminated to V <sub>cc</sub> -2.0 V
	L LVDS	-		100 Ω		Connected between OUT to OUT
Input voltage	V <sub>IH</sub>	70 % V <sub>cc</sub> Min.				OE terminal
	V <sub>IL</sub>	30 % V <sub>cc</sub> Max.				
Rise time / Fall time	t <sub>r</sub> / t <sub>f</sub>	400 ps Max.				Between 20 % and 80 % of (V <sub>OH</sub> -V <sub>OL</sub> ). Between 20 % and 80 % of Differential Output Peak to Peak voltage
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>	0.23 ps Max.		0.27 ps Max.		100 MHz ≤ f <sub>o</sub> < 150 MHz
		0.22 ps Max.		0.24 ps Max.		150 MHz ≤ f <sub>o</sub> < 200 MHz
		0.21 ps Max.		0.23 ps Max.		200 MHz ≤ f <sub>o</sub> < 300 MHz
		0.18 ps Max.		0.19 ps Max.		300 MHz ≤ f <sub>o</sub> < 400 MHz
		0.16 ps Max.		0.16 ps Max.		400 MHz ≤ f <sub>o</sub> < 500 MHz
		0.14 ps Max.		0.14 ps Max.		500 MHz ≤ f <sub>o</sub> < 600 MHz
0.10 ps Max.		0.10 ps Max.		600 MHz ≤ f <sub>o</sub> ≤ 700 MHz	Offset frequency: 12 kHz to 20 MHz	
Frequency aging	f <sub>age</sub>	± 10 × 10 <sup>-6</sup> / year Max.				+25 °C, First year, V <sub>cc</sub> =2.5 V, 3.3 V

Product Name **XG-2121CA 212.50000MHz P H P A** (⑤⑥⑦: GRA, GSA are not available)  
 (Standard form) ① ② ③ ④⑤⑥⑦

- ① Model ② Package type ③ Frequency
- ④ Output (P:LV-PECL, L:LVDS)

⑤ Frequency tolerance ⑥ Operating temperature

⑦ Frequency aging (A\*1: Frequency tolerance include aging, N\*2: Frequency tolerance exclude aging)

⑤ Frequency tolerance	
G	± 50 × 10 <sup>-6</sup>
H	± 100 × 10 <sup>-6</sup>

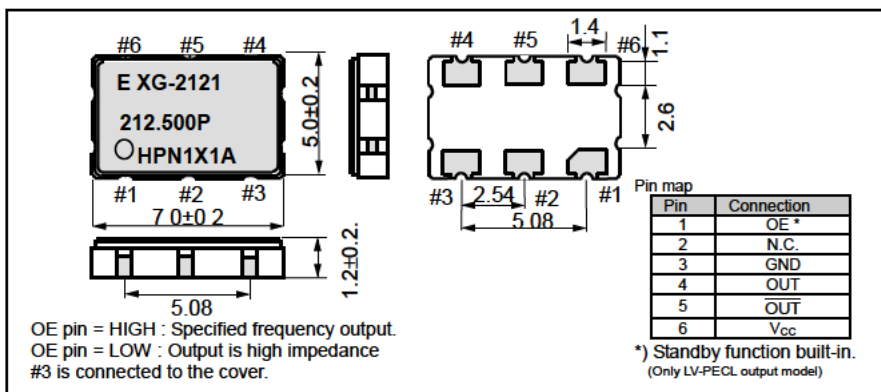
⑥ Operating temp.	
P	0 °C to +70 °C
R	-5 °C to +85 °C
S	-20 °C to +70 °C

\*1 This includes initial frequency tolerance, temperature variation, supply voltage change, reflow drift, and aging(+25 °C, 10 years).

\*2 This includes initial frequency tolerance, temperature variation, supply voltage change, and reflow drift (except aging).

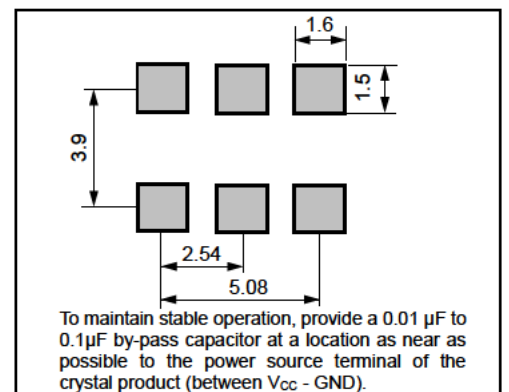
**External dimensions**

(Unit:mm)



**Footprint (Recommended)**

(Unit:mm)



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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.

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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.
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