

**LOW-JITTER SAW OSCILLATOR (SPSO)**  
**OUTPUT : LV-PECL, LVDS**



**Product Number (please contact us)**  
 EG-2121CB P: X1M00021xxxx00  
 EG-2121CB L: X1M000231xxxx00  
 EG-2102CB P: X1M000201xxxx00  
 EG-2102CB L: X1M000221xxxx00

**EG-2121/2102CB**

- Frequency range : 100 MHz to 700 MHz
- Supply voltage : 2.5 V ... EG-2121CB  
3.3 V ... EG-2102CB
- Output : LV-PECL or LVDS
- Function : Output enable (OE)
- External dimensions : 5.0 x 3.2 x 1.4 mm
- Low jitter and low phase noise by SAW unit.



Actual size



**Specifications (characteristics)**

Item	Symbol	LV-PECL		LVDS		Conditions / Remarks		
		EG-2121CB P	EG-2102CB P	EG-2121CB L	EG-2102CB L			
Output frequency range	f <sub>0</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	ICC	60 mA Max.		30 mA Max.		OE=V <sub>CC</sub> , L <sub>ECL</sub> =50 Ω or L <sub>LVDS</sub> =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>CC</sub> -1.025 V to V <sub>CC</sub> -0.88 V		-				
	V <sub>OL</sub>	0.80 V Typ.	1.60 V Typ.	-				
Output voltage (LVDS)	V <sub>OD</sub>	-		350 mV Typ., 247 mV to 454 mV		DC characteristics		
	dV <sub>OD</sub>	-		50 mV Max.				
	V <sub>OS</sub>	-		1.25 V Typ., 1.125 V to 1.375 V				
	dV <sub>OS</sub>	-		150 mV Max.				
Output load condition (ECL) / (LVDS)	L <sub>ECL</sub>	50 Ω		-		Terminated to V <sub>CC</sub> -2.0 V		
	L <sub>LVDS</sub>	-		100 Ω		Connected between OUT to $\overline{\text{OUT}}$		
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	tr / tf	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>0</sub> < 150 MHz		
		0.22 ps Max.		0.24 ps Max.		150 MHz ≤ f <sub>0</sub> < 200 MHz		
		0.21 ps Max.		0.23 ps Max.		200 MHz ≤ f <sub>0</sub> < 300 MHz		
		0.18 ps Max.		0.19 ps Max.		300 MHz ≤ f <sub>0</sub> < 400 MHz		
		0.16 ps Max.		0.16 ps Max.		400 MHz ≤ f <sub>0</sub> < 500 MHz		
		0.14 ps Max.		0.14 ps Max.		500 MHz ≤ f <sub>0</sub> < 600 MHz		
0.10 ps Max.		0.10 ps Max.		600 MHz ≤ f <sub>0</sub> ≤ 700 MHz		Offset frequency: 12 kHz to 20 MHz		
Frequency aging	f <sub>aging</sub>	± 10 × 10 <sup>-6</sup> / year Max.					+25 °C, First year, V <sub>CC</sub> =2.5 V, 3.3 V	

Product Name **EG-2121 CB 212.500000MHz P H P A** (ⓐⓑⓒ: GRA, GSA are not available)

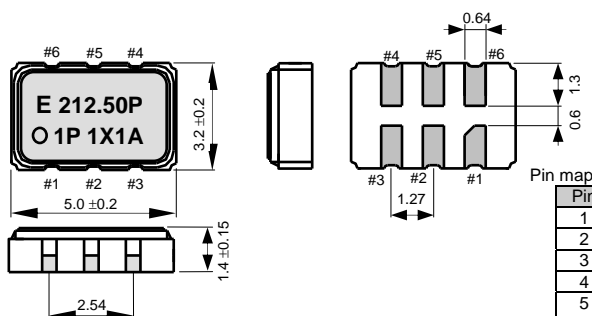
- (Standard form) ① ② ③ ④ⓐⓑⓒ
- ①Model ②Package type ③Frequency  
 ④Output(P:LV-PECL, L:LVDS)  
 ⑤Frequency tolerance ⑥Operating temperature  
 ⑦Frequency aging (A\*1: Frequency tolerance include aging, N\*2: Frequency tolerance exclude aging)

ⓐFrequency tolerance		ⓐOperating temp.	
G	±50 × 10 <sup>-6</sup>	P	0 to +70°C
H	±100 × 10 <sup>-6</sup>	R	-5 to +85°C
		S	-20 to +70°C

\*1 This includes initial frequency tolerance, temperature variation, supply voltage variation, reflow drift, and aging(+25 °C, 10 years).  
 \*2 This includes initial frequency tolerance, temperature variation, supply voltage variation, and reflow drift (except aging).

**External dimensions**

(Unit:mm)

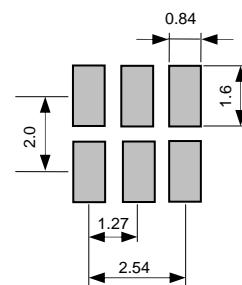


OE pin = HIGH : Specified frequency output.  
 OE pin = LOW : Output is high impedance  
 #2 and #3 are connected to the cover.

\*) Standby function built-in.

**Footprint (Recommended)**

(Unit:mm)



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.

## WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs,

Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

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

### ► Explanation of the mark that are using it for the catalog

	► 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.)

## Notice

- This material is subject to change without notice.
- Any part of this material may not be reproduced or duplicated in any form or any means without the written permission of Seiko Epson.
- The information about applied circuitry, software, usage, etc. written in this material is intended for reference only. Seiko Epson does not assume any liability for the occurrence of infringing on any patent or copyright of a third party. This material does not authorize the licensing for any patent or intellectual copyrights.
- When exporting the products or technology described in this material, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
- You are requested not to use the products (and any technical information furnished, if any) for the development and/or manufacture of weapon of mass destruction or for other military purposes. You are also requested that you would not make the products available to any third party who may use the products for such prohibited purposes.
- These products are intended for general use in electronic equipment. When using them in specific applications that require extremely high reliability, such as the applications stated below, you must obtain permission from Seiko Epson in advance.  
/ Space equipment (artificial satellites, rockets, etc.) / Transportation vehicles and related (automobiles, aircraft, trains, vessels, etc.) / Medical instruments to sustain life / Submarine transmitters / Power stations and related / Fire work equipment and security equipment / traffic control equipment / and others requiring equivalent reliability.
- All brands or product names mentioned herein are trademarks and/or registered trademarks of their respective.