LOW-JITTER SAW OSCILLATOR (SPSO)

OUTPUT : LV-PECL, LVDS

Pb Free RoHS Compliant

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	fo	100 MHz to 700 MHz				Please contact us about available frequencies.	
Supply voltage	Vcc	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_stg	-55 C to +125 C				Storage as single product.	
Operating temperature	T_use	P: 0 C to +70 C, R: -5 C to +85 C, S: -20 C to +70 C					
Frequency tolerance	f_tol	G: ± 50 × 10^{-6}, H: ±100 × 10^{-6}					
Current consumption	Icc	60 mA Max.		30 mA Max.		OE=Vcc, L ECL=50 Ω or L LVDS=100 Ω	
Disable current	I_dis	2 mA Max.		15 mA Max.		OE=GND	
Symmetry	SYM	45 % to 55 %				At outputs crossing point	
Output voltage (LV-PECL)	VOH	1.55 V Typ.	2.35 V Typ.	–		DC characteristics	
		Vcc-1.025 V to Vcc-0.88 V		–			
	VOL	0.80 V Typ.	1.60 V Typ.	–			
		Vcc-1.81 V to Vcc-1.62 V		–			
Output voltage (LVDS)	VOD	–		350 mV Typ, 247 mV to 454 mV		VOD1, VOD2	DC characteristics
	dVOD	–		50 mV Max.		dVOD = | VOD1-VOD2 |	
	VOS	–		1.25 V Typ, 1.125 V to 1.375 V		VOS1, VOS2	
	dVOS	–		150 mV Max.		dVOS = | VOS1-VOS2 |	
Output load condition (ECL) / (LVDS)	L_ECL	50 Ω		–		Terminated to Vcc -2.0 V	
	L_LVDS	–		100 Ω		Connected between OUT to $\overline{OUT}$	
Input voltage	VIH	70 % Vcc Min.				OE terminal	
	VIL	30 % Vcc Max.					
Rise time / Fall time	tr / tf	400 ps Max.				Between 20 % and 80 % of (VOH-VOL). Between 20 % and 80 %of Differential Output Peak to Peak voltage	
Start-up time	t_str	10 ms Max.				Time at minimum supply voltage to be 0 s	
Phase Jitter	tPJ	0.23 ps Max.		0.27 ps Max.		100 MHz ≤ fo < 150 MHz	Offset frequency: 12 kHz to 20 MHz
		0.22 ps Max.		0.24 ps Max.		150 MHz ≤ fo < 200 MHz	
		0.21 ps Max.		0.23 ps Max.		200 MHz ≤ fo < 300 MHz	
		0.18 ps Max.		0.19 ps Max.		300 MHz ≤ fo < 400 MHz	
		0.16 ps Max.		0.16 ps Max.		400 MHz ≤ fo < 500 MHz	
		0.14 ps Max.		0.14 ps Max.		500 MHz ≤ fo < 600 MHz	
		0.10 ps Max.		0.10 ps Max.		600 MHz ≤ fo ≤ 700 MHz	
Frequency aging	f_age	± 10 × 10^{-6} / year Max.				+25 C, First year, Vcc=2.5 V, 3.3 V	

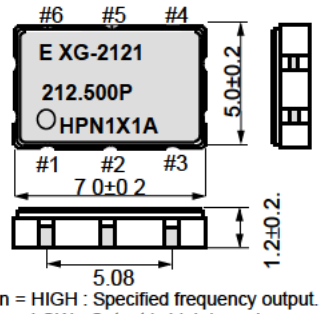
Product Name (Standard form): XG-2121 CA 212.500000MHz P H P A (⑤⑥⑦: GRA, GSA are not available)
① ② ③ ④⑤⑥⑦
①Model ②Package type ③Frequency
④Output (P:LV-PECL, L:LVDS)
⑤Frequency tolerance ⑥Operating temperature
⑦Frequency aging (A*1: Frequency tolerance include aging, N*2: Frequency tolerance exclude aging)

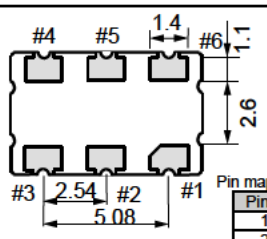
⑤Frequency tolerance	
G	±50 × 10^{-6}
H	±100 × 10^{-6}

⑥Operating 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)





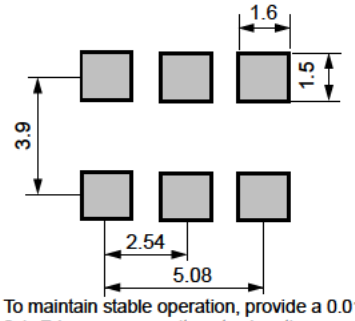
Pin map

Pin	Connection
1	OE *
2	N.C.
3	GND
4	OUT
5	$\overline{OUT}$
6	Vcc

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

*) Standby function built-in.
(Only LV-PECL output model)

Footprint (Recommended) (Unit:mm)



To maintain stable operation, provide a 0.01 µF to 0.1µF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - 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 IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 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).

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