

LOW-JITTER SAW OSCILLATOR (SPSO)

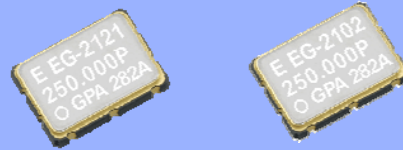
OUTPUT : LV-PECL, LVDS, HCSL

EG-2121 / 2102CA

- Frequency range : 53.125 MHz to 700 MHz
- Supply voltage : 2.5 V ... EG-2121CA
3.3 V ... EG-2102CA
- Output : LV-PECL or LVDS or HCSL
- Function : Output enable (OE)
- External dimensions : 7.0 × 5.0 × 1.2 mm
- Very low jitter and low phase noise by SAW unit.



Product Number (please contact us)
 EG-2121CA: Q3805CAx0xxx00
 : X1M000101xxxx00
 EG-2102CA: Q3806CA00xxx00
 : X1M000091xxxx00



Actual size

EG-2121CA

EG-2102CA



Specifications (characteristics)

► Differential LV-PECL Output

Item	Symbol	EG-2121CA	EG-2102CA	Conditions / Remarks
		LV-PECL		
Output frequency range	f _o	53.125 MHz to 500 MHz	100 MHz to 700 MHz	Please contact us about available frequencies.
Supply voltage	V _{cc}	2.5 V ±0.125 V	3.3 V ±0.3 V	
Storage temperature	T _{stg}	-40 °C to +100 °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	I _{cc}	80 mA Max.	100 mA Max.	OE=V _{cc} , L_ECL=50 Ω
Disable current	I _{dis}	20 mA Max.	32 mA Max.	OE=GND
Symmetry	SYM	P:40 % to 60 % (f _o > 350 MHz)	P:45 % to 55 %	at outputs crossing point
		P:45 % to 55 % (f _o ≤ 350 MHz)		
		D:48 % to 52 % (f _o ≤ 175 MHz)		
Output voltage	V _{OH}	1.55 V Typ.	2.35 V Typ.	DC characteristics
		V _{cc} -1.025 V to V _{cc} -0.88 V		
		0.8 V Typ.	1.6 V Typ.	
Output load condition (ECL)	L _{ECL}	V _{cc} -1.81 V to V _{cc} -1.62 V		Terminated to V _{cc} -2.0 V
		50 Ω		
Input voltage	V _{IH}	70 % V _{cc} Min.		OE terminal
	V _{IL}	30 % V _{cc} Max.		
Rise time / Fall time	t _r / t _f	400 ps Max.		Between 20% and 80% of (V _{OH} -V _{OL})
Start-up time	t _{str}	10 ms Max.		Time at minimum supply voltage to be 0 s
Phase Jitter	tp _J	0.8 ps Max.		f _o < 100 MHz
		0.5 ps Max.		100 MHz ≤ f _o < 200 MHz
		0.3 ps Max.		200 MHz ≤ f _o
Frequency aging	f _{aging}	± 10 × 10 ⁻⁶ / year Max.		+25 °C, First year, V _{cc} =2.5 V,3.3 V

► LVDS Output

Item	Symbol	EG-2121CA	EG-2102CA	Conditions / Remarks
		LVDS		
Output frequency range	f _o	53.125 MHz to 700 MHz		Please contact us about available frequencies.
Supply voltage	V _{cc}	2.5 V ±0.125 V	3.3 V ±0.3 V	
Storage temperature	T _{stg}	-40 °C to +100 °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	I _{cc}	30 mA Max.	45 mA Max.	OE=V _{cc} , L_LVDS= 100 Ω
Disable current	I _{dis}	20 mA Max.	30 mA Max.	OE=GND
Symmetry	SYM	L:40 % to 60 % (f _o > 350 MHz)	L:40 % to 60 % (f _o > 350 MHz)	at outputs crossing point
		L:45 % to 55 % (f _o ≤ 350 MHz)	L:45 % to 55 % (f _o ≤ 350 MHz)	
		V:48 % to 52 % (f _o ≤ 175 MHz)	V:48 % to 52 % (f _o ≤ 175 MHz)	
Output voltage	V _{OD}	350 mV Typ. 247 mV to 454 mV		DC characteristics
	dV _{OD}	50 mV Max.		
	V _{OS}	1.25 V Typ. 1.125 V to 1.375 V		
	dV _{OS}	150 mV Max.		
Output load condition (LVDS)	L _{LVDS}	100 Ω		Connected between OUT to $\overline{\text{OUT}}$
Input voltage	V _{IH}	70 % V _{cc} Min.		OE terminal
	V _{IL}	30 % V _{cc} Max.		
Rise time / Fall time	t _r / t _f	400 ps Max.		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	tp _J	0.8 ps Max.		f _o < 100 MHz
		0.5 ps Max.		100 MHz ≤ f _o < 200 MHz
		0.3 ps Max.		200 MHz ≤ f _o
Frequency aging	f _{aging}	± 10 × 10 ⁻⁶ / year Max.		+25 °C, First year, V _{cc} =2.5 V,3.3 V

► HCSL Output

Item	Symbol	EG-2121CA		EG-2102CA		Conditions / Remarks
		HCSL				
Output frequency range	f _o	100 MHz to 350 MHz				Please contact us about available frequencies.
Supply voltage	V _{cc}	2.5 V ±0.125 V		3.3 V ±0.3 V		
Storage temperature	T _{stg}	-40 °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				OE=V _{cc} ,L _{HCSL} =50 Ω
Current consumption	I _{cc}	80 mA Max.		85 mA Max.		
Disable current	I _{dis}	20 mA Max.		35 mA Max		OE=GND
Symmetry	SYM	45 % to 55 %				at outputs crossing point
Output Voltage	V _{OH}	0.75 V Typ.				DC characteristics
	V _{OL}	-0.3 V Typ.				
Output load condition (HCSL)	L _{HCSL}	50 Ω				Terminated to GND
Input voltage	V _{IH}	70 % V _{cc} Min.				OE terminal
	V _{IL}	30 % V _{cc} Max.				
Rise time / Fall time	t _r / t _f	500 ps Max.				Between 0.175 V and 0.525 V of output
Start-up time	t _{str}	10 ms Max.				Time at minimum supply voltage to be 0 s
Phase Jitter	t _{pj}	0.8 ps Max.				f _o < 100 MHz
		0.5 ps Max.				100 MHz ≤ f _o < 200 MHz
		0.3 ps Max.				200 MHz ≤ f _o
Frequency aging *2	f _{aging}	± 10 × 10 ⁻⁶ / year Max.				+25 °C, First year, V _{cc} =2.5 V,3.3 V

Product Name EG-2121 CA 250.000000MHz P G P A

(Standard form) ① ② ③ ④⑤⑥⑦

- ①Model ②Package type ③Frequency
- ④Output/Symmetry ⑤Frequency tolerance ⑥Operating temperature
- ⑦Frequency aging (A*1: Frequency tolerance include aging, N*2: Frequency tolerance exclude aging)

*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).

(⑤⑥⑦: GRA, GSA are not available)

(⑤⑥: As for LV-PECL and LVDS output, for 53.125 MHz ≤ f_o < 100 MHz only HP is available)

④	Output	Symmetry	
		EG-2121CA	EG-2102CA
P	LV-PECL	40 % to 60 % (f _o > 350 MHz) 45 % to 55 % (f _o ≤ 350 MHz)	45 % to 55 %
D	LV-PECL	48 % to 52 % (f _o ≤ 175 MHz)	48 % to 52 % (f _o ≤ 350 MHz)
L	LVDS	40 % to 60 % (f _o > 350 MHz) 45 % to 55 % (f _o ≤ 350 MHz)	
V	LVDS	48 % to 52 % (f _o ≤ 175 MHz)	
H	HCSL	45 % to 55 %	

⑤Frequency tolerance	
G	±50 × 10 ⁻⁶
H	±100 × 10 ⁻⁶

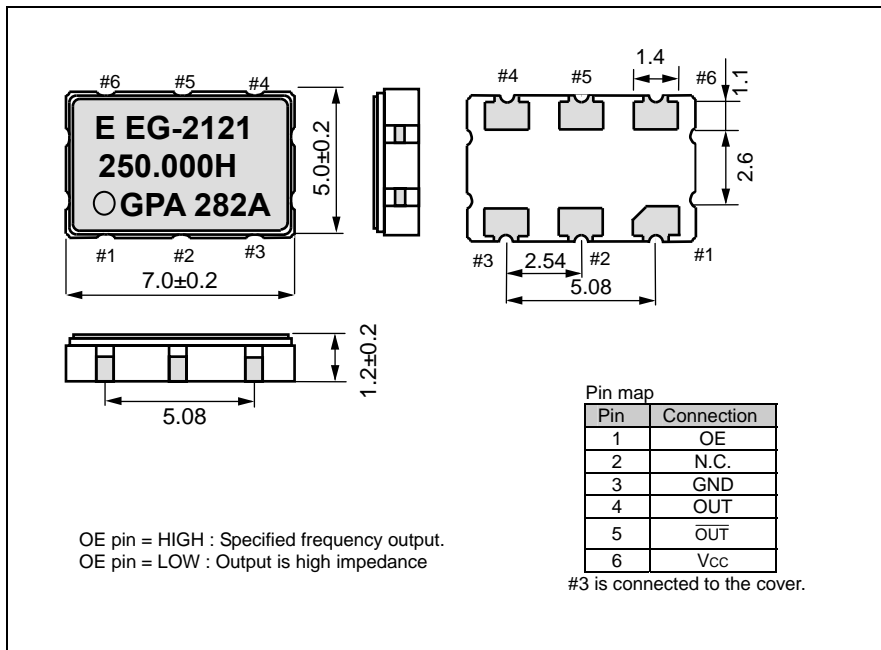
⑥Operating temperature	
P	0 to +70°C
R	-5 to +85°C
S	-20 to +70°C

Table 2 Jitter

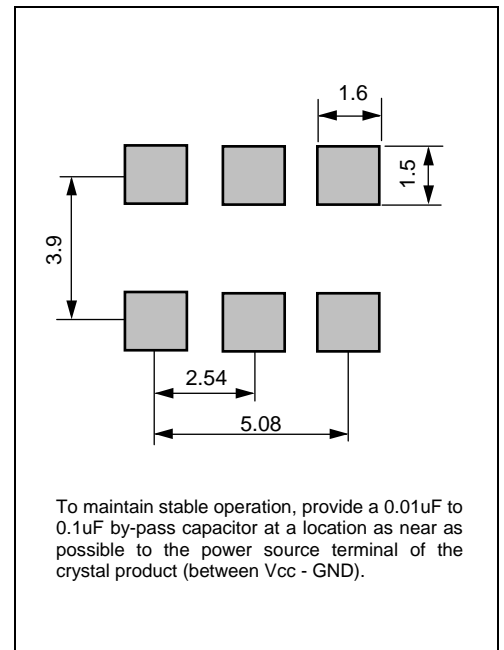
Item	Symbol	Specifications	Remarks
Jitter *	t _{DJ}	0.2 ps Typ.	Deterministic Jitter
	t _{RJ}	3 ps Typ.	Random Jitter
	t _{RMS}	3 ps Typ.	σ (RMS of total distribution)
	t _{p-p}	25 ps Typ.	Peak to Peak
	t _{acc}	4 ps Typ.	Accumulated Jitter(σ) n=2 to 50000 cycles

* Tested using a DTS-2075 Digital timing system made by WAVECREST with jitter analysis software VISI6. : Differential LV-PECL, LVDS output
 * Based on SIA-3100C signal integrity analyzer made from WAVECREST. : HCSL output

External dimensions (Unit:mm)



Footprint (Recommended) (Unit:mm)



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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Epson:

[EG-2121CA 425.0000M-LGPA](#) [EG-2102CA 100.0000M-HGSNL3](#) [EG-2102CA 100.0000M-LGPAL3](#) [EG-2102CA 100.0000M-LGPNB](#) [EG-2102CA 100.0000M-VHPNB](#) [EG-2102CA 106.2500M-LGPAB](#) [EG-2102CA 124.4160M-VGPN](#) [EG-2102CA 125.0000M-LHPNB](#) [EG-2102CA 125.0000M-PGPAL3](#) [EG-2102CA 125.0000M-PHPAB](#) [EG-2102CA 125.0000M-VGRNB](#) [EG-2102CA 125.0000M-VGRNL3](#) [EG-2102CA 150.0000M-PGPAB](#) [EG-2102CA 150.0000M-PGPAL3](#) [EG-2102CA 150.0000M-PHPAB](#) [EG-2102CA 155.5200M-PHPAB](#) [EG-2102CA 156.2500M-LGPAB](#) [EG-2102CA 156.2500M-LHPAB](#) [EG-2102CA 156.2500M-LHRAL3](#) [EG-2102CA 156.2500M-PGPAL3](#) [EG-2102CA 156.2500M-PGPNB](#) [EG-2102CA 156.2500M-PGRNB](#) [EG-2102CA 156.2500M-PHPAB](#) [EG-2102CA 156.2500M-PHPAL3](#) [EG-2102CA 200.0000M-LGPAB](#) [EG-2102CA 200.0000M-PHPAB](#) [EG-2102CA 212.5000M-LHPAB](#) [EG-2102CA 212.5000M-PGPAB](#) [EG-2102CA 250.0000M-LGPAB](#) [EG-2102CA 250.0000M-LHPAB](#) [EG-2102CA 311.0400M-LGPAB](#) [EG-2102CA 312.5000M-LGRNL3](#) [EG-2102CA 312.5000M-LHPAB](#) [EG-2102CA 312.5000M-PHPAB](#) [EG-2102CA 350.0000M-LGPAB](#) [EG-2102CA 400.0000M-LGPNL3](#) [EG-2102CA 425.0000M-PGPAB](#) [EG-2102CA 644.53125M-PGPAB](#) [EG-2102CA 644.53125M-PGPNB](#) [EG-2102CA 700.0000M-PHPAB](#) [EG-2102CA 80.0000M-LHPAB](#) [EG-2121CA 100.0000M-DHPAL3](#) [EG-2121CA 100.0000M-DHPNB](#) [EG-2121CA 100.0000M-HGPAL3](#) [EG-2121CA 100.0000M-LGPAB](#) [EG-2121CA 100.0000M-LHRAB](#) [EG-2121CA 100.0000M-PGPAB](#) [EG-2121CA 100.0000M-PGRNB](#) [EG-2121CA 100.0000M-PHPAB](#) [EG-2121CA 100.0000M-VGRNB](#) [EG-2121CA 100.0000M-VHPAB](#) [EG-2121CA 106.2500M-DHRAB](#) [EG-2121CA 120.0000M-LHPAB](#) [EG-2121CA 125.0000M-LGPNB](#) [EG-2121CA 125.0000M-LGRNB](#) [EG-2121CA 125.0000M-LHPAB](#) [EG-2121CA 125.0000M-LHRAB](#) [EG-2121CA 125.0000M-PGPAL3](#) [EG-2121CA 125.0000M-PGPNB](#) [EG-2121CA 125.0000M-PGRNB](#) [EG-2121CA 125.0000M-PHPAB](#) [EG-2121CA 125.0000M-PHPAL3](#) [EG-2121CA 125.0000M-VGPNB](#) [EG-2121CA 125.0000M-VGRNB](#) [EG-2121CA 125.0000M-VHRAB](#) [EG-2121CA 133.0000M-VHPAB](#) [EG-2121CA 150.0000M-LGPAB](#) [EG-2121CA 150.0000M-LHPAB](#) [EG-2121CA 150.0000M-LHPAL3](#) [EG-2121CA 150.0000M-LHRAB](#) [EG-2121CA 150.0000M-PGPAB](#) [EG-2121CA 150.0000M-PHPAB](#) [EG-2121CA 155.5200M-LGRNB](#) [EG-2121CA 156.2500M-LGPAB](#) [EG-2121CA 156.2500M-LHPAB](#) [EG-2121CA 156.2500M-LHRAB](#) [EG-2121CA 156.2500M-PGPAB](#) [EG-2121CA 156.2500M-PGPAL3](#) [EG-2121CA 156.2500M-VGRNB](#) [EG-2102CA 125.0000M-PHPAL3](#) [EG-2102CA 212.5000M-PHPAL3](#) [EG-2102CA 312.5000M-PHPAL3](#) [EG-2121CA 100.0000M-LGPAL3](#) [EG-2121CA 125.0000M-LHPAL3](#) [EG-2121CA 156.2500M-LHPAL3](#) [EG-2121CA 200.0000M-LHPAL3](#) [EG-2121CA 200.0000M-PHPAL3](#) [EG-2121CA 200.0000M-LGPAL3](#) [EG-2121CA 200.0000M-LGPNL3](#) [EG-2121CA 250.0000M-LGPAL3](#) [EG-2121CA 312.5000M-LGPAL3](#) [EG-2102CA 100.0000M-PGPNL3](#) [EG-2102CA 100.0000M-PHPAB](#) [EG-2102CA 100.0000M-PHPAL3](#) [EG-2102CA 106.2500M-PGPAL3](#) [EG-2102CA 106.2500M-PGPNB](#) [EG-2102CA 106.2500M-PGPNL3](#) [EG-2102CA](#)