

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

**EG - 2021 / 2001CA**

- Frequency range : 62.5 MHz to 250 MHz
- Supply voltage : 2.5 V ... EG-2021CA  
3.3 V ... EG-2001CA
- Output : CMOS
- 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-2021CA: Q3807CA00xxxx00  
EG-2001CA: Q3801CA00xxxx00



Actual size

EG-2021CA

EG-2001CA

**Specifications (characteristics)**

Item	Symbol	Specifications		Conditions / Remarks	
		EG-2021CA	EG-2001CA		
Output frequency range	f <sub>0</sub>	62.500 MHz to 170.000MHz	170.001MHz to 250.000MHz	106.250 MHz to 170.000 MHz	Please contact us about available frequencies.
Supply voltage	V <sub>cc</sub>	2.5 V ± 0.125 V		3.3 V ± 0.3 V	
Storage temperature	T <sub>stg</sub>	-40 °C to +100 °C			Storage as single product.
Operating temperature	T <sub>use</sub>	P: 0 °C to +70 °C R: -5 °C to +85 °C		0 °C to +70 °C	
Frequency tolerance	f <sub>tol</sub>	G: ± 50 × 10 <sup>-6</sup> H: ± 100 × 10 <sup>-6</sup>		Z: ± 50 × 10 <sup>-6</sup> Y,H: ± 100 × 10 <sup>-6</sup>	
Current consumption	I <sub>cc</sub>	25 mA Max.	30 mA Max.	50 mA Max.	OE=V <sub>cc</sub> , No load condition
Disable current	I <sub>dis</sub>	600 μA Max.		10 μA Max.	OE=GND
Symmetry	SYM	45 % to 55 %	40 % to 60 %	45 % to 55 %	50 % V <sub>cc</sub> level, L <sub>CMOS</sub> ≤ Max.
Output voltage	V <sub>OH</sub>	V <sub>cc</sub> -0.35 V Min.		V <sub>cc</sub> -0.4 V Min.	I <sub>OH</sub> = -8 mA
	V <sub>OL</sub>	0.35 V Max.		0.4 V Max.	I <sub>OL</sub> = 8 mA
Output load condition (CMOS)	L <sub>CMOS</sub>	15 pF Max.			
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>	2 ns Max.			Between 20% V <sub>cc</sub> and 80% V <sub>cc</sub> level, L <sub>CMOS</sub> ≤ Max.
Start-up time	t <sub>str</sub>	10 ms Max.			Time at minimum supply voltage to be 0 s
	t <sub>dj</sub>	0.2 ps Typ.			Deterministic Jitter
	t <sub>rj</sub>	3 ps Typ.			Random Jitter
	t <sub>rms</sub>	3 ps Typ.			σ (RMS of total distribution)
	t <sub>p-p</sub>	25 ps Typ.			Peak to Peak
	t <sub>acc</sub>	4 ps Typ.			Accumulated Jitter(σ) n=2 to 50000 cycles
Phase Jitter	t <sub>pj</sub>	1 ps Max.			Offset frequency: 12 kHz to 20 MHz
Frequency aging	f <sub>aging</sub>	± 10 × 10 <sup>-6</sup> / year Max.		± 5 × 10 <sup>-6</sup> / year Max.	+25 °C, First year, V <sub>cc</sub> =2.5 V,3.3 V

\*1 Tested using a DTS-2075 Digital timing system made by WAVECREST with jitter analysis software VISI6.

Product Name **EG-2021 CA 125.000000MHz C H P A** (ⓐⓑⓒⓓⓔⓕⓖⓗⓘⓙⓚⓛⓜⓝⓞⓟⓠⓡⓢ⓴⓵⓶⓷⓸⓹⓺⓻⓼⓽⓾⓿ⓠⓡⓢ⓴⓵⓶⓷⓸⓹⓺⓻⓼⓽⓾⓿)

(Standard form)

- ① Model
- ② Package type
- ③ Frequency
- ④ Output(C:CMOS)

- ⑤ Frequency tolerance
- ⑥ Operating temperature

- ⑦ Frequency aging (A\*2: Frequency tolerance include aging, N\*3: Frequency tolerance exclude aging)

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

ⓑ Operating temp.	
P	0 to +70°C
R	-5 to +85°C

Product Name **EG-2001 CA 125.000000MHz P C H**

(Standard form)

- ① Model
- ② Package type
- ③ Frequency
- ④ Symmetry (P: 50±5%)
- ⑤ Supply voltage
- ⑥ Frequency tolerance / Operating temperature

ⓐ Supply voltage	
C	3.3 V Typ.

ⓑ Frequency tolerance / Operating temperature	
H*2	±100 × 10 <sup>-6</sup> / 0 to +70°C
Y*3	±100 × 10 <sup>-6</sup> / 0 to +70°C
Z*4	±50 × 10 <sup>-6</sup> / 0 to +70°C

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

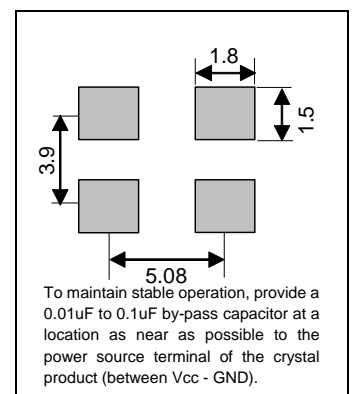
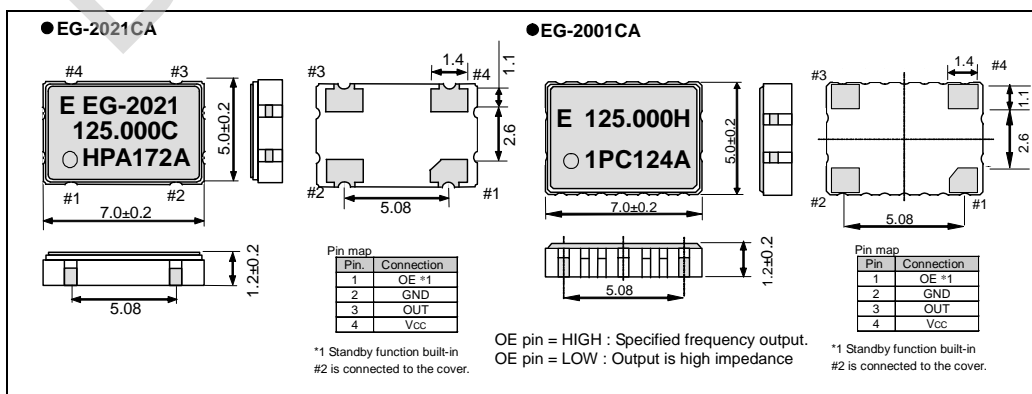
\*3 This includes initial frequency tolerance, temperature variation, supply voltage variation, load variation, and reflow drift.(except aging)

\*4 This includes initial frequency tolerance, and temperature variation.(except reflow drift, supply voltage variation, load variation and aging)

**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

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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.)

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