

**LOW-JITTER SAW OSCILLATOR (SPSO)**  
OUTPUT : LV-TTL

**EG - 2002CA**

- Frequency range : 62.5 MHz to 170 MHz
- Operating voltage : 3.3 V
- Output : LV-TTL
- 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)  
Q3802CA00xxxx00



Actual size



**Specifications (characteristics)**

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	f <sub>o</sub>	62.500 MHz to 170.000 MHz	Please contact us about available frequencies.
Supply voltage	V <sub>cc</sub>	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>	0 °C to +70 °C	
Frequency tolerance	f <sub>tol</sub>	F,Z: ±50 × 10 <sup>-6</sup> , H,Y: ±100 × 10 <sup>-6</sup>	
Current consumption	I <sub>cc</sub>	60 mA Max.	OE=V <sub>cc</sub> , No load condition
Disable current	I <sub>dis</sub>	25 mA Max.	OE=GND
Symmetry	SYM	45 % to 55 %	1.4 V level, L <sub>CMOS</sub> ≤ Max.
Output voltage	V <sub>OH</sub>	2.4 V Min.	I <sub>OH</sub> = -8 mA
	V <sub>OL</sub>	0.4 V Max.	I <sub>OL</sub> = 8 mA
Output load condition (CMOS)	L <sub>CMOS</sub>	25 pF Max.	f <sub>o</sub> = 62.5 MHz
		15 pF Max.	f <sub>o</sub> > 62.5 MHz
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>	1.5 ns Max.	Between 0.8 V and 2.0 V 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
Jitter *1	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>	± 5 × 10 <sup>-6</sup> / year Max.	+25 °C, First year, V <sub>cc</sub> =3.3 V

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

Product Name **EG-2002 CA 125.000000MHz P C H** (ⓐⓑⓒⓓ: As for PCF only 125MHz is available, DCF is not available)

(Standard form)

- ① Model    ② Package type    ③ Frequency
- ④ Frequency range(MHz)
- ⑤ Supply voltage(C: 3.3 V Typ.)
- ⑥ Frequency tolerance / Operating temperature

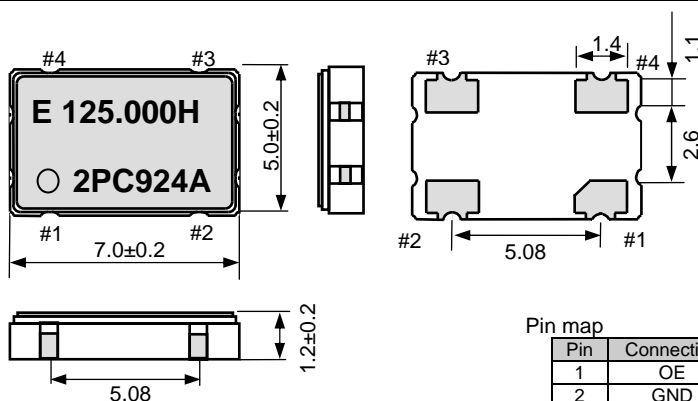
ⓐ	Frequency range(MHz)
P	125 to 170
D	62.5 to 124.999

ⓑ	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
F*3	±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 10 years 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 supply voltage variation, load variation, reflow drift, and aging).

**External dimensions**

(Unit:mm)



Pin map

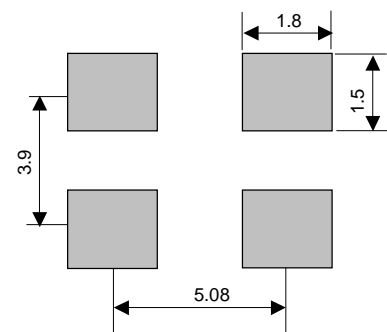
Pin	Connection
1	OE
2	GND
3	OUT
4	V <sub>cc</sub>

OE pin = HIGH : Specified frequency output.  
OE pin = LOW : Output is high impedance

#2 is connected to the cover

**Footprint (Recommended)**

(Unit:mm)



To maintain stable operation, provide a 0.01uF to 0.1uF 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.

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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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