

**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

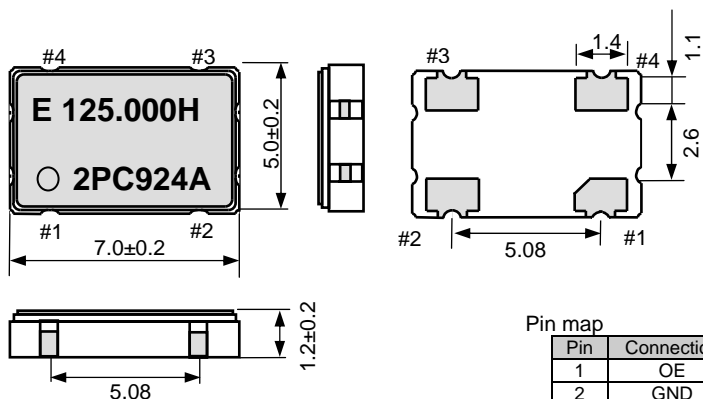
ⓐFrequency range(MHz)
P 125 to 170
D 62.5 to 124.999

ⓑ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

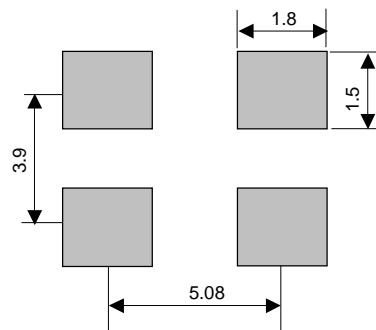
Pin	Connection
1	OE
2	GND
3	OUT
4	Vcc

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).

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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.

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	► 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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