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

EG - 2002CA

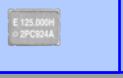
- Frequency range : 62.5 MHz to 170 MHz
- Operating voltage : 3.3 V
- Output : LV-TTL
- Function : Output enable (OE)
- External dimensions : 7.0 × 5.0 × 1.2 mm

- Very low jitter and low phase noise by SAW unit.

Pb Free RoHS Compliant

Product Number (please contact us)
Q3802CA00xxxx00

Actual size



Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks
Output frequency range	f_0	62.500 MHz to 170.000 MHz	Please contact us about available frequencies.
Supply voltage	V_{CC}	3.3 V ± 0.3 V	
Storage temperature	T_stg	-40 °C to +100 °C	Storage as single product.
Operating temperature	T_use	0 °C to +70 °C	
Frequency tolerance	f_tol	F,Z: ±50 × 10^{-6} , H,Y: ±100 × 10^{-6}	
Current consumption	I_{CC}	60 mA Max.	OE=V_{CC}, No load condition
Disable current	I_dis	25 mA Max.	OE=GND
Symmetry	SYM	45 % to 55 %	1.4 V level, L_CMOS ≤ Max.
Output voltage	V_{OH}	2.4 V Min.	I_{OH} = -8 mA
	V_{OL}	0.4 V Max.	I_{OL} = 8 mA
Output load condition (CMOS)	L_CMOS	25 pF Max.	f_0 = 62.5 MHz
		15 pF Max.	f_0 > 62.5 MHz
Input voltage	V_{IH}	70 % V_{CC} Min.	OE terminal
	V_{IL}	30 % V_{CC} Max.	
Rise time / Fall time	t_r / t_f	1.5 ns Max.	Between 0.8 V and 2.0 V level, L_CMOS ≤ Max.
Start-up time	t_str	10 ms Max.	Time at minimum supply voltage to be 0 s
Jitter *1	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
Phase Jitter	t_{PJ}	1 ps Max.	Offset frequency: 12 kHz to 20 MHz
Frequency aging	f_aging	± 5 × 10^{-6}/ year Max.	+25 °C, First year, V_{CC}=3.3 V

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

Product Name (Standard form): EG-2002 CA 125.000000MHz P C H (④⑤⑥: As for PCF only 125MHz is available, DCF is not available)

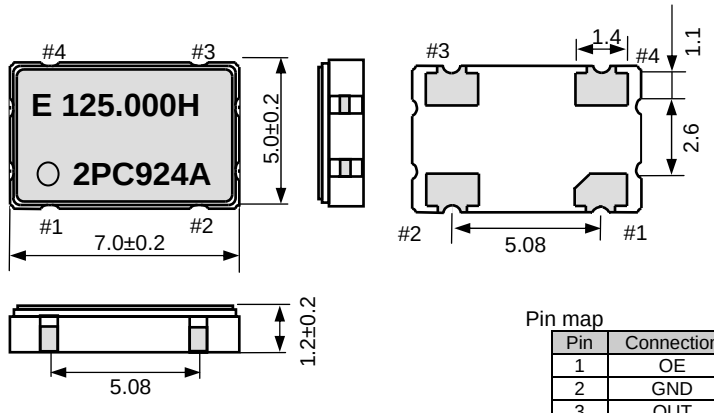
①Model ②Package type ③Frequency
④Frequency range(MHz)
⑤Supply voltage(C: 3.3 V Typ.)
⑥Frequency tolerance / Operating temperature

④Frequency range(MHz)	
P	125 to 170
D	62.5 to 124.999

⑥Frequency tolerance / Operating temperature	
H*2	±100 × 10^{-6} / 0 to +70°C
Y*3	±100 × 10^{-6} / 0 to +70°C
Z*4	±50 × 10^{-6} / 0 to +70°C
F*3	±50 × 10^{-6} / 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)



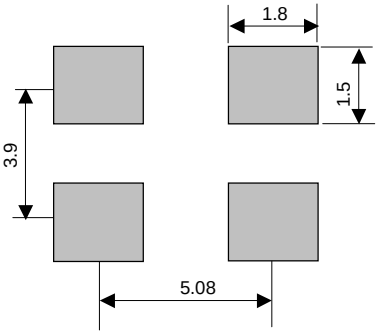
Pin map

Pin	Connection
1	OE
2	GND
3	OUT
4	Vcc

#2 is connected to the cover

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

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 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 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	►Pb free.
RoHS Compliant	►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.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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