



# CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS

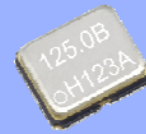
Low Jitter

## SG-210S\*H

- Frequency range : 80.000 MHz to 170.000 MHz  
Fundamental mode oscillator
- Supply voltage : 1.8 V Typ. / 2.5 V Typ. / 3.3 V Typ.
- Output : CMOS
- Function : Standby( $\overline{ST}$ )
- External dimensions : 2.5 × 2.0 × 0.8 mm



Product Number (please contact us)  
 SG-210SCH: X1G003931xxxx00  
 SG-210SDH: X1G003941xxxx00  
 SG-210SEH: X1G003951xxxx00



Actual size



### Specifications (characteristics)

Item	Symbol	Specifications			Conditions / Remarks
		SG-210SEH	SG-210SDH	SG-210SCH	
Output frequency range	fo	80.000 MHz to 170.000 MHz			Please contact us about available frequencies.
		100MHz, 106.25MHz, 125MHz, 133.33MHz, 150MHz, 156.25MHz			Standard frequency. *1
Supply voltage	Vcc	1.8 V ± 10%	2.5 V ± 10%	3.3 V ± 10%	*2
Storage temperature	T_stg	-40 °C to +125 °C			Storage as single product.
Operating temperature	T_use	-40 °C to +85 °C			
Frequency tolerance	f_tol	B: ±50 × 10 <sup>-6</sup> , C: ±100 × 10 <sup>-6</sup>			-20 °C to +70 °C
		L: ±50 × 10 <sup>-6</sup> , M: ±100 × 10 <sup>-6</sup>			-40 °C to +85 °C
Current consumption	Icc	6.0 mA Max.	7.0 mA Max.	9.0 mA Max.	No load condition, 80 MHz ≤ fo ≤ 125 MHz
		8.0 mA Max.	9.0 mA Max.	11.0 mA Max.	No load condition, 125 MHz < fo ≤ 170 MHz
Stand-by current	I_std	10.0 µA Max.			$\overline{ST}$ = GND
Symmetry	SYM	45 % to 55 %			50 % Vcc level, L_CMOS ≤ 15 pF
Output voltage	VoH	90 % Vcc Min.			IoH = -4mA
	VoL	10 % Vcc Max.			IoL = 4mA
Output load condition (CMOS)	L_CMOS	15 pF Max.			
Input voltage	ViH	80 % Vcc Min.			$\overline{ST}$ terminal
	ViL	20 % Vcc Max.			
Rise time / Fall time	tr/ tr	3 ns Max.	2 ns Max.		20 % Vcc to 80 % Vcc level, L_CMOS ≤ 15 pF
Start-up time	t_str	5 ms Max.			T=0 at 90 % Vcc
Frequency aging	f_aging	±5 × 10 <sup>-6</sup> / year Max.			+25 °C, First year
Jitter *3	tp-p	22 ps Typ.	20 ps Typ.		Peak to Peak
Phase Jitter	tpj	0.7 ps Max.	0.6 ps Max.		Offset frequency: 12kHz to 20MHz

\*1 Please contact us for requirements not listed in the specification.

\*2 fo ≥ 157MHz: Vcc ± 5%

\*3 Based on SIA-3100C signal integrity analyzer made from WAVECREST.

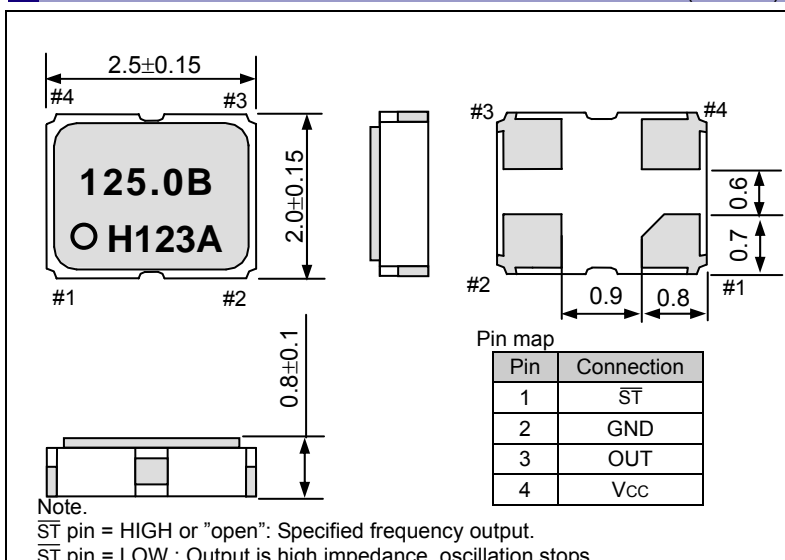
Product Name SG-210 S E H 125.000000MHz L  
 (Standard form) ① ②③ ④ ⑤  
 ①Model ②Function (S:Standby) ③Supply voltage  
 ④Frequency ⑤Frequency tolerance

③Supply voltage	
E	1.8 V Typ.
D	2.5 V Typ.
C	3.3 V Typ.

⑤Frequency tolerance	
B	±50 × 10 <sup>-6</sup> / -20 to +70°C
C	±100 × 10 <sup>-6</sup> / -20 to +70°C
L	±50 × 10 <sup>-6</sup> / -40 to +85°C
M	±100 × 10 <sup>-6</sup> / -40 to +85°C

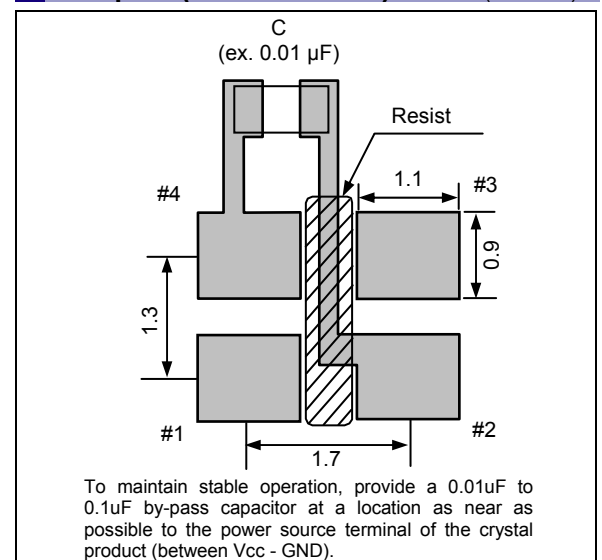
### External dimensions

(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.)

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