CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS

Low Jitter

SG - 210 S*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

Pb Free RoHS Compliant

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	f_0	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^{-6}, C: ±100 × 10^{-6}			-20 °C to +70 °C	
		L: ±50 × 10^{-6}, M: ±100 × 10^{-6}			-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≤f_0≤125 MHz	
		8.0 mA Max.	9.0 mA Max.	11.0 mA Max.	No load condition,125 MHz<f_0≤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/ tf	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^{-6} / 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	L_CMOS ≤ 15 pF

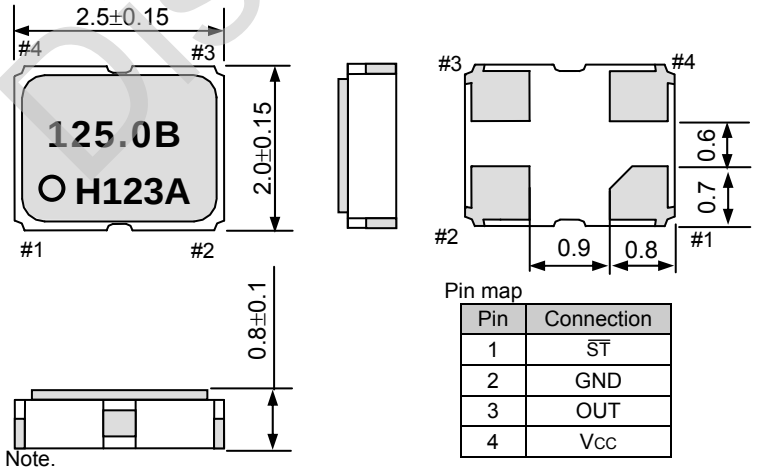
*1 Please contact us for requirements not listed in the specification.
*2 f_0 ≥ 157MHz: Vcc ± 5%
*3 Based on SIA-3100C signal integrity analyzer made from WAVECREST.

Product Name (Standard form): SG-210 S E H 125.000000MHz L
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^{-6} / -20 to +70°C
C	±100 × 10^{-6} / -20 to +70°C
L	±50 × 10^{-6} / -40 to +85°C
M	±100 × 10^{-6} / -40 to +85°C

External dimensions (Unit:mm)

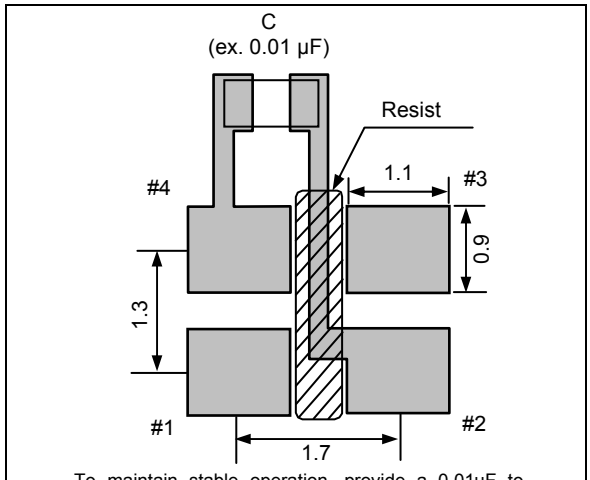


Pin map

Pin	Connection
1	$\overline{ST}$
2	GND
3	OUT
4	Vcc

Note.
$\overline{ST}$ pin = HIGH or "open": Specified frequency output.
$\overline{ST}$ pin = LOW : Output is high impedance, oscillation stops.

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.

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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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