

**CRYSTAL OSCILLATOR (SPXO)**

OUTPUT : CMOS

Low Jitter

SG-210S*D

- Frequency range : 50.000 MHz to 80.000 MHz
- Supply voltage : 1.8 V Typ. / 2.5 V Typ. / 3.3 V Typ.
- Current consumption : 7.0 mA Max.
(SDD: 2.5 V No load condition 80 MHz)
- Function : Standby(\overline{ST})
- External dimensions : 2.5 x 2.0 x 0.8 mm

Product Number (please contact us)
X1G0029x1xxxx00

Actual size

**Specifications (characteristics)**

Item	Symbol	Specifications			Conditions / Remarks
		SG-210SED	SG-210SDD	SG-210SCD	
Output frequency range	f_0	50.000 MHz to 80.000 MHz			Please contact us about available frequencies.
Supply voltage	V_{CC}	1.8 V Typ. 1.6 V to 2.2 V	2.5 V Typ. 2.2 V to 3.0 V	3.3 V Typ. 2.7 V to 3.6 V	
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: $\pm 50 \times 10^{-6}$, C: $\pm 100 \times 10^{-6}$ L: $\pm 50 \times 10^{-6}$, M: $\pm 100 \times 10^{-6}$			-20 °C to +70 °C -40 °C to +85 °C
Current consumption	I_{CC}	6.0 mA Max.	7.0 mA Max.	8.0 mA Max.	No load condition
Stand-by current	I_{std}	10.0 μ A Max.			$\overline{ST} = GND$
Symmetry	SYM	45 % to 55 %			50 % V_{CC} level, $L_{CMOS} \leq 30$ pF
Output voltage	V_{OH} V_{OL}	$V_{CC} - 0.4$ V Min. 0.4 V Max.			$I_{OH} = -8$ mA(SCD,SDD), -4 mA(SED) $I_{OL} = 8$ mA(SCD,SDD), 4 mA(SED)
Output load condition (CMOS)	L_{CMOS}	30 pF Max.			
Input voltage	V_{IH} V_{IL}	70 % V_{CC} Min. 30 % V_{CC} Max.			\overline{ST} terminal
Rise time / Fall time	t_r / t_f	4 ns Max.			20 % V_{CC} to 80 % V_{CC} level, $L_{CMOS} \leq 30$ pF
Start-up time	t_{str}	2 ms Max.			$t=0$ at 90 % V_{CC}
Frequency aging	f_{aging}	$\pm 3 \times 10^{-9}$ /year Max.. $\pm 10 \times 10^{-6}$ / 10 years Max.			+25 °C, First year, $V_{CC} = 1.8$ V, 2.5 V, 3.3 V +25 °C, 10 years, $V_{CC} = 1.8$ V, 2.5 V, 3.3 V
Jitter *1	t_{DJ}	0.1 ps Typ.	0.1 ps Typ.		Deterministic Jitter
	t_{RJ}	3.2 ps Typ.	2.7 ps Typ.		Random Jitter
	t_{RMS}	30 ps Typ.	25 ps Typ.		Peak to Peak
Phase Jitter	t_{PJ}	1.0 ps Max.			Offset frequency: 12 kHz to 20 MHz

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

Product Name SG-210 S E D 50.000000MHz L
(Standard form) ① ②③ ④ ⑤

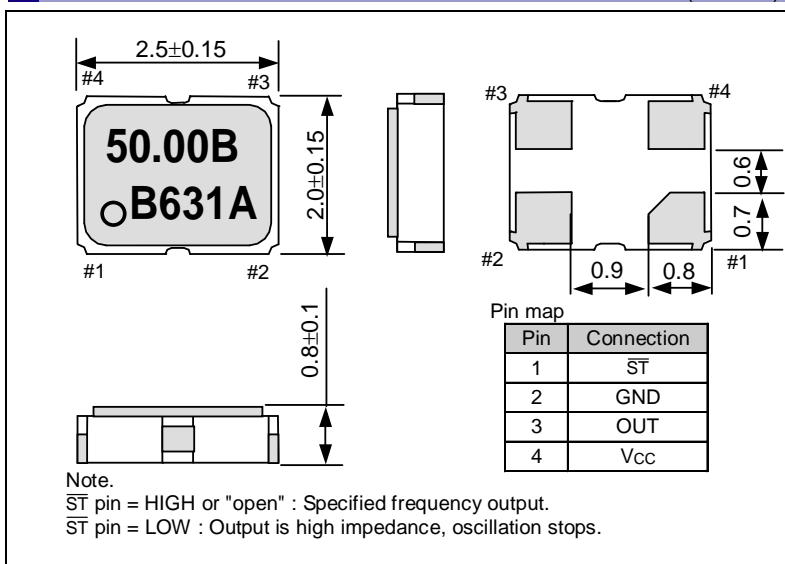
① Model ② Function (S:Standby) ③ Supply voltage
④ Frequency ⑤ Frequency tolerance

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

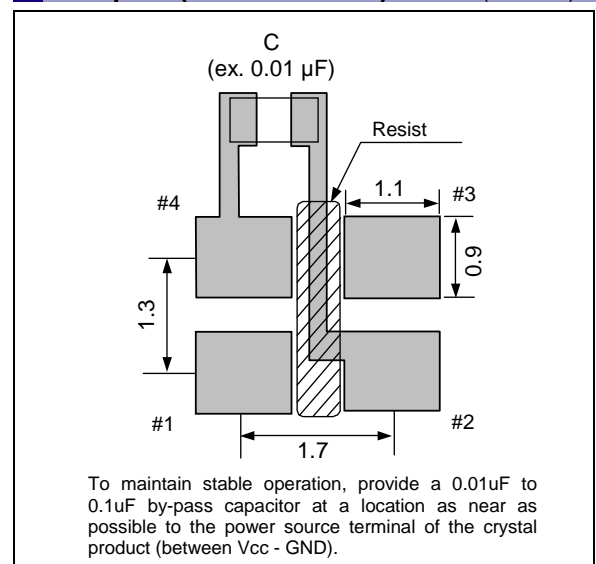
⑤ Frequency tolerance	
B	$\pm 50 \times 10^{-6}$ / -20 to +70 °C
C	$\pm 100 \times 10^{-6}$ / -20 to +70 °C
L	$\pm 50 \times 10^{-6}$ / -40 to +85 °C
M	$\pm 100 \times 10^{-6}$ / -40 to +85 °C

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

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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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