

CRYSTAL OSCILLATOR (SPXO)
OUTPUT : CMOS

SG-210 STF

- Frequency range : 1 MHz to 75 MHz
- Supply voltage : 1.8 V to 3.3 V Typ.
- Function : Standby(\overline{ST})
- External dimensions : 2.5 × 2.0 × 0.8 mm
- Operation temperature : -40 °C to +105 °C



Product Number (please contact us)
X1G004171xxxx00



Actual size

Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks													
Output frequency range	f_o	1 MHz to 75 MHz	Please contact us about available frequencies.													
Supply voltage	V_{CC}	1.60 V to 3.63 V	1 MHz $\leq f_o \leq$ 60 MHz, $T_{use} = +105^\circ\text{C}$ Max.													
		1.71 V to 3.63 V	60 MHz $< f_o \leq$ 75 MHz, $T_{use} = +85^\circ\text{C}$ Max.													
		2.25 V to 3.63 V	60 MHz $< f_o \leq$ 75 MHz, $T_{use} = +105^\circ\text{C}$ Max.													
Storage temperature	T_{stg}	-40 °C to +125 °C	Storage as single product.													
Operating temperature	T_{use}	-40 °C to +85 °C / -40 °C to +105 °C	See of figure *1													
Frequency tolerance	f_{tol}	S: $\pm 25 \times 10^{-6}$	-20 °C to +70 °C													
		L: $\pm 50 \times 10^{-6}$	-40 °C to +85 °C													
		Y: $\pm 50 \times 10^{-6}$, W: $\pm 100 \times 10^{-6}$	-40 °C to +105 °C													
Current consumption	I_{CC}	$V_{CC} = 1.8 \text{ V} \pm 10\%$	$V_{CC} = 2.5 \text{ V} \pm 10\%$	$V_{CC} = 3.3 \text{ V} \pm 10\%$	No load condition, 1 MHz $< f_o \leq$ 20 MHz											
		1.5 mA Max.	1.6 mA Max.	1.8 mA Max.	No load condition, 20 MHz $< f_o \leq$ 40 MHz											
		1.8 mA Max.	2.0 mA Max.	2.2 mA Max.	No load condition, 40 MHz $< f_o \leq$ 60 MHz											
		2.1 mA Max.	2.4 mA Max.	2.6 mA Max.	No load condition, 60 MHz $< f_o \leq$ 75 MHz											
		2.4 mA Max.	2.8 mA Max.	3.0 mA Max.	$\overline{ST} = \text{GND}$											
Stand-by current	I_{std}	2.1 μA Max.	2.5 μA Max.	2.7 μA Max.												
Symmetry	SYM	45 % to 55 %	50 % V_{CC} level, $L_{CMOS} \leq 15 \text{ pF}$													
Output voltage	V_{OH}	$V_{CC} - 0.4 \text{ V Min.}$	<table border="1"> <tr> <td></td> <td>1.8 V $\pm 10\%$</td> <td>2.5 V $\pm 10\%$</td> <td>3.3 V $\pm 10\%$</td> </tr> <tr> <td>I_{OH}</td> <td>-3 mA</td> <td>-4 mA</td> <td>-6 mA</td> </tr> <tr> <td>I_{OL}</td> <td>3 mA</td> <td>4 mA</td> <td>6 mA</td> </tr> </table>			1.8 V $\pm 10\%$	2.5 V $\pm 10\%$	3.3 V $\pm 10\%$	I_{OH}	-3 mA	-4 mA	-6 mA	I_{OL}	3 mA	4 mA	6 mA
		1.8 V $\pm 10\%$	2.5 V $\pm 10\%$	3.3 V $\pm 10\%$												
I_{OH}	-3 mA	-4 mA	-6 mA													
I_{OL}	3 mA	4 mA	6 mA													
V_{OL}	0.4 V Max.															
Output load condition (CMOS)	L_{CMOS}	15 pF Max.														
Input voltage	V_{IH}	80 % V_{CC} Min.	\overline{ST} terminal													
	V_{IL}	20 % V_{CC} Max.														
Rise time and Fall time	tr/ tf	3 ns Max.	20 % V_{CC} to 80 % V_{CC} level, $L_{CMOS} = 15 \text{ pF}$													
		3.5 ns Max. (@1.8 V $\pm 10\%$)														
Start-up time	t_{str}	3 ms Max.	$t = 0$ at 90 % V_{CC}													
Frequency aging	f_{aging}	$\pm 3 \times 10^{-6}$ / year Max.	+25 °C, First year													
Phase noise	C/N	-145 dBc/Hz Typ.	@1 kHz, $f_o = 48 \text{ MHz}$													
		-158 dBc/Hz Typ.	@100 kHz, $f_o = 48 \text{ MHz}$													
		-161 dBc/Hz Typ.	@Floor Lv.													

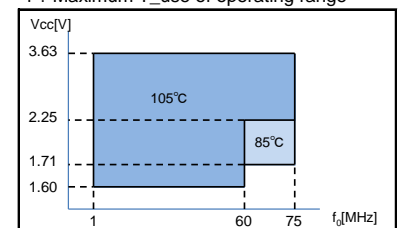
Product Name
(Standard form)

SG-210 S T F 25.000000MHz L
 ① Model ② Function (S:Standby)
 ③ Supply voltage ④ Frequency
 ⑤ Frequency tolerance

③ Supply voltage	
T	1.60 to 3.63 V See of figure *1

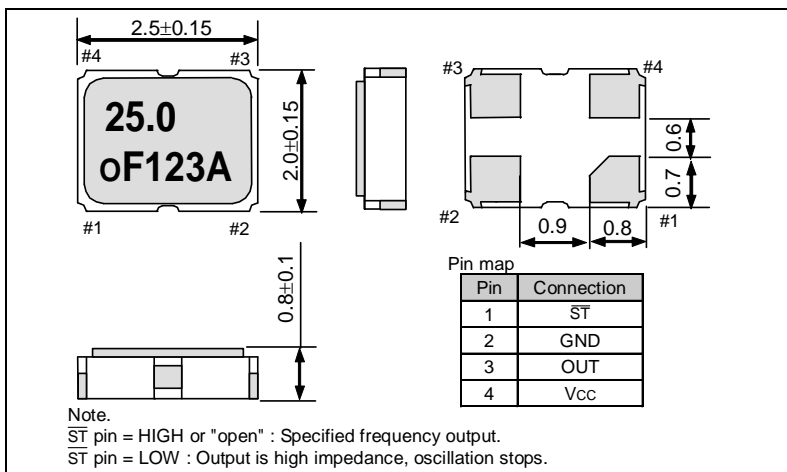
⑤ Frequency tolerance	
S	$\pm 25 \times 10^{-6}$ / -20 °C to +70 °C
L	$\pm 50 \times 10^{-6}$ / -40 °C to +85 °C
Y	$\pm 50 \times 10^{-6}$ / -40 °C to +105 °C
W	$\pm 100 \times 10^{-6}$ / -40 °C to +105 °C

*1 : Maximum T_{use} of operating range



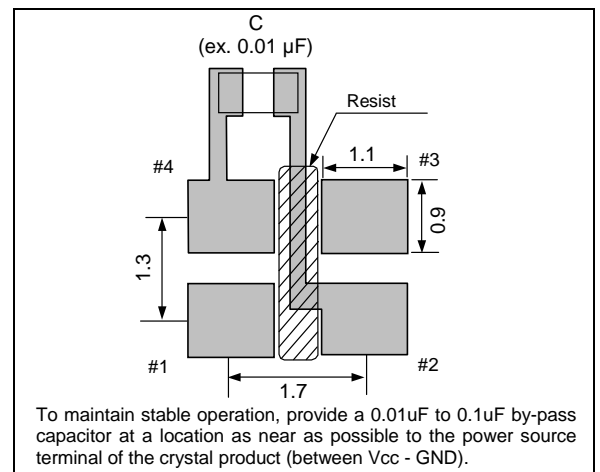
External dimensions

(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.

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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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JONHON

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