

**NEW**



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

**CRYSTAL OSCILLATOR  
 LOW-JITTER SPXO**

**SG-210S\*H**

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



Actual size



**Specifications (characteristics)**

| Item                         | Symbol               | Specifications   |             |             | Conditions / Remarks   |
|------------------------------|----------------------|--|-------------|-------------|--|
|                              |                      | SG-210SEH  | SG-210SDH   | SG-210SCH   |  |
| Output frequency range       | $f_o$                | 80.000 MHz to 170.000 MHz<br>100MHz, 106.25MHz, 125MHz, 133.33MHz, 150MHz, 156.25MHz                                 |             |             | Standard frequency. *1   |
| Supply voltage               | $V_{cc}$             | 1.8 V ± 10%  | 2.5 V ± 10% | 3.3 V ± 10% | *2   |
| Storage temperature          | $T_{stg}$            | -40 °C to +125 °C  |             |             | Store as bare product.   |
| Operating temperature        | $T_{use}$            | -40 °C to +85 °C   |             |             |  |
| Frequency tolerance          | $f_{tol}$            | B: $\pm 50 \times 10^{-6}$ , C: $\pm 100 \times 10^{-6}$<br>L: $\pm 50 \times 10^{-6}$ , M: $\pm 100 \times 10^{-6}$ |             |             | -20 °C to +70 °C<br>-40 °C to +85 °C                           |
| Current consumption          | $I_{cc}$             | 6.0 mA Max.  | 7.0 mA Max. | 9.0 mA Max. | No load condition, 80 MHz ≤ $f_o$ ≤ 125 MHz                    |
| Stand-by current             | $I_{std}$            | 10.0 μA Max.   |             |             | $\overline{ST}$ = GND  |
| Symmetry                     | SYM                  | 45 % to 55 %   |             |             | 50 % $V_{cc}$ level, $L_{CMOS} \leq 15$ pF                     |
| Output voltage               | $V_{OH}$<br>$V_{OL}$ | 90 % $V_{cc}$ Min.<br>10 % $V_{cc}$ Max.   |             |             | $I_{OH} = -4$ mA<br>$I_{OL} = 4$ mA                            |
| Output load condition (CMOS) | $L_{CMOS}$           | 15 pF Max.   |             |             |  |
| Input voltage                | $V_{IH}$<br>$V_{IL}$ | 80 % $V_{cc}$ Min.<br>20 % $V_{cc}$ Max.   |             |             | $\overline{ST}$ terminal                                       |
| Rise time / Fall time        | $t_r / t_f$          | 3 ns Max.  | 2 ns Max.   |             | 20 % $V_{cc}$ to 80 % $V_{cc}$ level,<br>$L_{CMOS} \leq 15$ pF |
| Start-up time                | $t_{str}$            | 5 ms Max.  |             |             | T=0 at 90 % $V_{cc}$   |
| 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:<br>12kHz to 20MHz                            |
| Frequency aging              | $f_{aging}$          | $\pm 5 \times 10^{-6}$ / year Max.   |             |             | +25 °C, First year   |

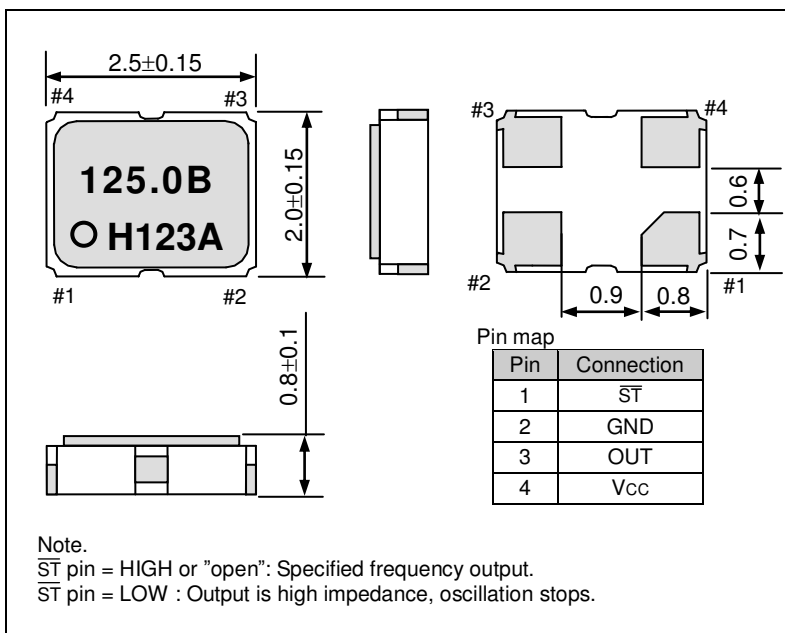
\*1 Please contact us for inquiries regarding non-standard frequencies.

\*2  $f_o \geq 157$  MHz:  $V_{cc} \pm 5\%$

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

**External dimensions**

(Unit:mm)



**Footprint (Recommended)**

(Unit:mm)

