



CRYSTAL OSCILLATOR (SPXO)

OUTPUT : CMOS

SG-210S*B

- Frequency range : 2 MHz to 60 MHz
- Supply voltage : 1.5 V Typ. / 1.8 V Typ. / 2.5 V Typ. / 3.3 V Typ.
- Current consumption : 0.9 mA Typ.
(SEB: 1.8 V No load condition 48 MHz)
- Function : Standby(\overline{ST})
- External dimensions : 2.5 × 2.0 × 0.8 mm
- Operation temperature : +105 °C / +125 °C



Product Number (please contact us)
Q33210Bx0xxxx00



Actual size



Specifications (characteristics)

Item	Symbol	SG-210SGB	SG-210SEB	SG-210SDB	SG-210SCB	Conditions / Remarks
Output frequency range	f_0	2 MHz to 32 MHz	2 MHz to 60 MHz			
Supply voltage	V_{CC}	1.5 V Typ. 1.3 V to 1.7 V	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 / -40 °C to +105 °C / -40 °C to +125 °C				
Frequency tolerance	f_{tol}	F: $\pm 20 \times 10^{-6}$				-10 °C to +60 °C, $f_0 \leq 32$ MHz, $V_{CC} \pm 10\%$, except reflow drift.
		B: $\pm 50 \times 10^{-6}$, C: $\pm 100 \times 10^{-6}$				-20 °C to +70 °C
		L: $\pm 50 \times 10^{-6}$, M: $\pm 100 \times 10^{-6}$				-40 °C to +85 °C
		Y: $\pm 50 \times 10^{-6}$, W: $\pm 100 \times 10^{-6}$				-40 °C to +105 °C
		Z: $\pm 100 \times 10^{-6}$, X: $\pm 150 \times 10^{-6}$				-40 °C to +125 °C
Current consumption	I_{CC}	1.0 mA Max.	1.6 mA Max.	2.4 mA Max.	3.0 mA Max.	No load condition
		—	2.0 mA Max.	3.0 mA Max.	4.0 mA Max.	No load condition +105 °C, +125 °C
Stand-by current	I_{std}	0.3 μ A Max.	0.5 μ A Max.	1.0 μ A Max.	1.0 μ A Max.	$\overline{ST} = GND$
		—	1.6 μ A Max.	2.4 μ A Max.	3.0 μ A Max.	$\overline{ST} = GND$ +105 °C, +125 °C
Symmetry	SYM	45 % to 55 % 40 % to 60 %	45 % to 55 %	45 % to 55 %	45 % to 55 %	2 MHz $\leq f_0 \leq 16$ MHz 16 MHz $< f_0 \leq 32$ MHz 32 MHz $< f_0 \leq 60$ MHz +105 °C, +125 °C
		—	40 % to 60 %	40 % to 60 %	—	50 % V_{CC} level $L_{CMOS} \leq 15$ pF
		—	—	40 % to 60 %	—	—
		—	—	—	40 % to 60 %	—
Output voltage	V_{OH}	90 % V_{CC} Min.				$I_{OH} = -1$ mA
	V_{OL}	10 % V_{CC} Max.				$I_{OL} = 1$ mA
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	t_r / t_f	5 ns Max.	4 ns Max.	3 ns Max.		+85 °C
		—	—	7 ns Max.		+105 °C, +125 °C
Start-up time	t_{str}	3 ms Max.				$t=0$ at 90 % V_{CC} (+105 °C, +125 °C : 5 ms Max.)
Frequency aging	f_{aging}	$\pm 3 \times 10^{-6}$ / year Max.				+25 °C, First year, $V_{CC} = 1.5$ V, 1.8 V, 2.5 V, 3.3 V

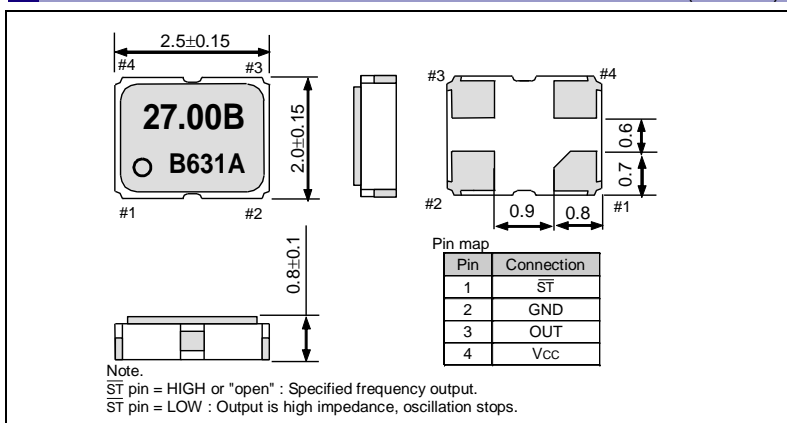
Product Name (Standard form) SG-210 S G B 27.000000MHz L
 ① Model ② Function (S: Standby)
 ③ Supply voltage ④ Frequency
 ⑤ Frequency tolerance

③ Supply voltage	
G	1.5 V Typ.
E	1.8 V Typ.
D	2.5 V Typ.
C	3.3 V Typ.

⑤ Frequency tolerance		*Except for SGB
F	$\pm 20 \times 10^{-6}$	-10 to +60 °C ($f_0 \leq 32$ MHz)
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
Y*	$\pm 50 \times 10^{-6}$	-40 to +105 °C
W*	$\pm 100 \times 10^{-6}$	-40 to +105 °C
Z*	$\pm 100 \times 10^{-6}$	-40 to +125 °C
X*	$\pm 150 \times 10^{-6}$	-40 to +125 °C

External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)

