



CRYSTAL OSCILLATOR SPXO

SG-210 S*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 t (mm) Typ.
- Operation temperature : +105 °C / +125 °C



Product Number (please contact us)
Q33210Bx0xxxx00



Actual size

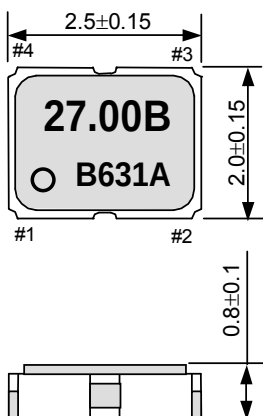


Specifications (characteristics)

Item		Symbol	Specifications				Remarks			
			SG-210SGB	SG-210SEB	SG-210SDB	SG-210SCB				
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				
Temperature range	Storage temperature	T _{stg}	-40 °C to +125 °C				Store as bare product after unpacking			
	Operating temperature	T _{use}	-40 °C to +85 °C / -40 °C to +105 °C / -40 °C to +125 °C							
Frequency tolerance		f _{tol}	F: ±20 × 10 ⁻⁶				-10 °C to +60 °C, f ₀ ≤ 32 MHz, V _{CC} ±10%, except reflow drift.			
			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			
			—	Y: ±50 × 10 ⁻⁶ , W: ±100 × 10 ⁻⁶			-40 °C to +105 °C			
			—	Z: ±100 × 10 ⁻⁶ , X: ±150 × 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 µA Max.	0.5 µA Max.	1.0 µA Max.	1.0 µA Max.	ST =GND			
			—	1.6 µA Max.	2.4 µA Max.	3.0 µA Max.	ST =GND +105 °C, +125 °C			
Symmetry		SYM	45 % to 55 %	45 % to 55 %	45 % to 55 %	45 % to 55 %	2 MHz≤f ₀ ≤16 MHz	50 % V _{CC} level L _{CMOS} ≤ 15 pF		
			40 % to 60 %				45 % to 55 %		16 MHz<f ₀ ≤32 MHz	
			—				40 % to 60 %		40 % to 60 %	32 MHz<f ₀ ≤60 MHz
			—				40 % to 60 %		+105 °C, +125 °C	
High output voltage		V _{OH}	90 % V _{CC} Min.				I _{OH} =-1 mA			
Low output voltage		V _{OL}	10 % V _{CC} Max.				I _{OL} = 1 mA			
Output load condition (CMOS)		L _{CMOS}	15 pF Max.							
Output enable / disable input voltage		V _{IH}	80 % V _{CC} Min.				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	20 % V _{CC} to 80 % V _{CC} level, L _{CMOS} =15 pF		
			—	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}	±3 × 10 ⁻⁶ / year Max.				+25 °C, First year, V _{CC} =1.5 V, 1.8 V, 2.5 V, 3.3 V			

External dimensions

(Unit:mm)



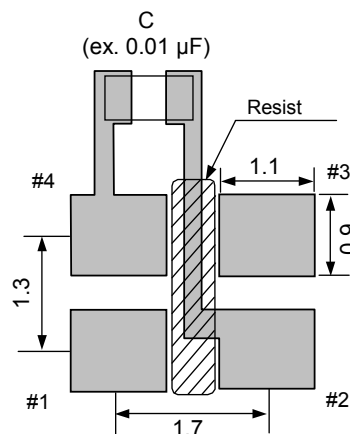
Note.
 $\overline{ST}$ pin = HIGH or "open" : Specified frequency output.
 $\overline{ST}$ pin = LOW : Output is high impedance, oscillation stops.

Pin map

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

Footprint (Recommended)

(Unit:mm)



To maintain stable operation, provide by-pass capacitor with more than 0.1 μ F at a location as near as possible to the power source terminal of the crystal products (between V_{CC} - GND).