



# CRYSTAL OSCILLATOR (SPXO)

## OUTPUT : CMOS

# SG-310 series

- Frequency range : 2 MHz to 80 MHz
- Supply voltage : 1.8 V Typ. / 2.5 V Typ. / 3.3 V Typ.
- Current consumption : 1.5 mA Typ.  
(SEF: 1.8 V No load condition 48 MHz)
- Function : Standby( $\overline{ST}$ )
- External dimensions : 3.2 × 2.5 × 1.05 mm



Product Number (please contact us)  
Q33310xx0xxx00



Actual size

Actual size

### Specifications (characteristics)

Item	Symbol	SG-310 SEF	SG-310 SDF	SG-310 SCF	SG-310 SDN	SG-310 SCN	Conditions / Remarks	
Output frequency range	$f_0$	2.000 MHz to 48.000 MHz			3.000 MHz to 80.000 MHz			
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	2.5 V Typ. 2.2 V to 2.7 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	
		-			D: $\pm 20 \times 10^{-6}$ , S: $\pm 25 \times 10^{-6}$		-40 °C to +85 °C	
		-			R: $\pm 25 \times 10^{-6}$ , P: $\pm 20 \times 10^{-6}$		-20 °C to +70 °C	
		-			J: $\pm 25 \times 10^{-6}$		-30 °C to +85 °C	
		-					-40 °C to +85 °C	
Current consumption	$I_{CC}$	1.5 mA Max.	1.5 mA Max.	1.5 mA Max.	4.0 mA Max.	5.0 mA Max.	No load condition, 2 MHz $\leq f_0 \leq$ 4 MHz	
		1.5 mA Max.	1.5 mA Max.	2.0 mA Max.			No load condition, 4 MHz $\leq f_0 \leq$ 8 MHz	
		1.5 mA Max.	2.0 mA Max.	2.5 mA Max.			No load condition, 8 MHz $\leq f_0 \leq$ 16 MHz	
		2.0 mA Max.	2.0 mA Max.	2.5 mA Max.			No load condition, 16 MHz $\leq f_0 \leq$ 25 MHz	
		2.0 mA Max.	2.5 mA Max.	3.5 mA Max.			No load condition, 25 MHz $\leq f_0 \leq$ 33 MHz	
		3.0 mA Max.	3.5 mA Max.	4.5 mA Max.			No load condition, 33 MHz $\leq f_0 \leq$ 48 MHz	
Stand-by current	$I_{std}$	0.7 $\mu$ A Max. (0.2 $\mu$ A Typ.)	1.5 $\mu$ A Max. (0.5 $\mu$ A Typ.)	2.0 $\mu$ A Max. (1.0 $\mu$ A Typ.)	6.0 mA Max. / 7.0 mA Max.		No load condition, 48 MHz $\leq f_0 \leq$ 80 MHz	
Symmetry	SYM	45 % to 55 %	45 % to 55 %	45 % to 55 %	45 % to 55 %		2 MHz $\leq f_0 \leq$ 16 MHz	
		40 % to 60 %					16 MHz $\leq f_0 \leq$ 40 MHz	50 % $V_{CC}$ level $L_{CMOS} \leq 15$ pF
							40 MHz $\leq f_0 \leq$ 80 MHz	
Output voltage	$V_{OH}$	90 % $V_{CC}$ Min.				$I_{OH} = -3$ mA		
	$V_{OL}$	10 % $V_{CC}$ Max.				$I_{OL} = 3$ mA		
Output load condition (CMOS)	$L_{CMOS}$	15 pF Max.						
Input voltage	$V_{IH}$	80 % $V_{CC}$ Min.			70 % $V_{CC}$ Min.		$\overline{ST}$ terminal	
	$V_{IL}$	20 % $V_{CC}$ Max.			30 % $V_{CC}$ Max.			
Rise time / Fall time	$t_r / t_f$	4 ns Max.					20 % $V_{CC}$ to 80 % $V_{CC}$ level, $L_{CMOS} = 15$ pF	
Start-up time	$t_{str}$	10 ms Max.			2 ms Max.		$t=0$ at 90 % $V_{CC}$	
Frequency aging	$f_{aging}$	$\pm 5 \times 10^{-6}$ / year Max.			$\pm 3 \times 10^{-6}$ / year Max.		+25 °C, First year, $V_{CC} = 1.8$ V, 2.5 V, 3.3 V	
		-			$\pm 10 \times 10^{-6}$ Max.		+25 °C, 10 years	

Product Name  
(Standard form)

SG-310 S E F 25.000000MHz L

① ② ③ 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

\*Only SDN, SCN are available

B  $\pm 50 \times 10^{-6}$  / -20 to +70 °C

D\*  $\pm 20 \times 10^{-6}$  / -20 to +70 °C

C  $\pm 100 \times 10^{-6}$  / -20 to +70 °C

S\*  $\pm 25 \times 10^{-6}$  / -20 to +70 °C

L  $\pm 50 \times 10^{-6}$  / -40 to +85 °C

R\*  $\pm 25 \times 10^{-6}$  / -30 to +85 °C

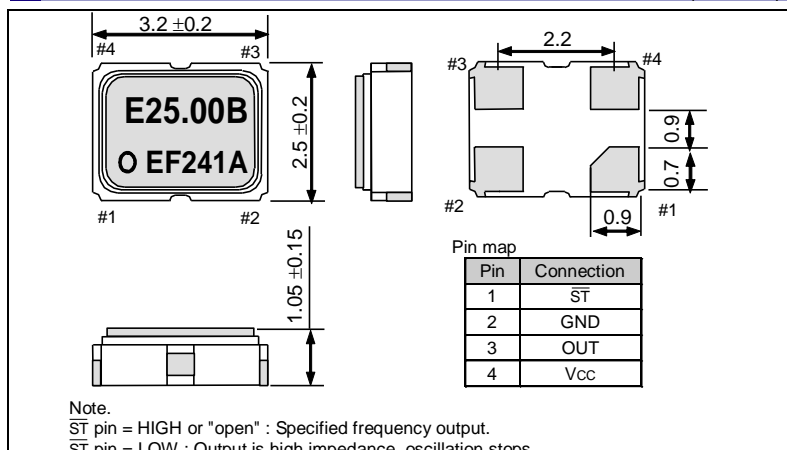
M  $\pm 100 \times 10^{-6}$  / -40 to +85 °C

P\*  $\pm 20 \times 10^{-6}$  / -30 to +85 °C

J\*  $\pm 25 \times 10^{-6}$  / -40 to +85 °C

### External dimensions

(Unit:mm)



### Footprint (Recommended)

(Unit:mm)

