



# CRYSTAL OSCILLATOR SPXO

## TCO-710x series

- Frequency range : 1.5 MHz to 75 MHz
- Supply voltage : 2.5 V / 3.3 V
- External dimensions: 5.0 × 3.2 × 1.0 mm
- Function : Standby (ST)



Product Number (please contact us)  
X1G00xxx1xxxx00



Actual size



### Specifications (characteristics)

Item	Symbol	TCO-710*X3A*	TCO-710*X1A*	Conditions / Remarks
Output frequency range	f <sub>o</sub>	1.500 MHz to 75.000 MHz		Please contact us for inquiries regarding the available frequencies.
Supply voltage	V <sub>cc</sub>	2.5 V ±0.25 V	3.3 V ±0.33 V	
Storage temperature range	T <sub>stg</sub>	-55 °C to +125 °C		Store as bare product..
Operating temperature range	T <sub>use</sub>	As per below description		
Frequency tolerance	f <sub>tol</sub>	As per below description.		
Current consumption	I <sub>cc</sub>	15 mA Max.	20 mA Max.	No load condition
Symmetry	SYM	40 % to 60 %		50 % V <sub>cc</sub> level
Output voltage	V <sub>OH</sub>	90 % V <sub>cc</sub> Min.		
	V <sub>OL</sub>	10 % V <sub>cc</sub> Max.		
Output load condition (CMOS)	L <sub>CMOS</sub>	15 pF Max.		
Input voltage	V <sub>IH</sub>	70 % V <sub>cc</sub> Min.		V <sub>IH</sub> or OPEN : Enable
	V <sub>IL</sub>	30 % V <sub>cc</sub> Max.		V <sub>IL</sub> or GND : Disable
Rise time / Fall time	t <sub>r</sub> / t <sub>f</sub>	7 ns Max.	6 ns Max.	10 % V <sub>cc</sub> to 90 % V <sub>cc</sub> level
Start-up time	t <sub>str</sub>	10 ms Max.		Time at minimum supply voltage to be 0 s
Frequency aging	f <sub>aging</sub>	±5 × 10 <sup>-6</sup> / year Max.		+25 °C, First year

\* Part Number

## TCO - 7 1 0 A

<Frequency tolerance / V<sub>cc</sub> tolerance>  
 ±50 × 10<sup>-6</sup> Max. / V<sub>cc</sub> ±10 % : 6  
 ±100 × 10<sup>-6</sup> Max. / V<sub>cc</sub> ±10 % : 7

<Operating temperature range>  
 BLANK : 0 °C ~ +70 °C  
 1 : -10 °C ~ +70 °C  
 2 : -20 °C ~ +70 °C  
 4 : -40 °C ~ +85 °C

< Supply voltage >  
 X1 : V<sub>cc</sub>=3.3 V  
 X3 : V<sub>cc</sub>=2.5 V

### External dimensions

(Unit:mm)

Pin map

Pin	Connection
1	ST
2	GND
3	OUT
4	V <sub>cc</sub>

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

### Footprint (Recommended)

(Unit:mm)

To maintain stable operation, provide a 0.01uF to 0.1uF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between V<sub>cc</sub> - GND).