



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 (\overline{ST})



Product Number (please contact us)
X1G00xxx1xxx00



Actual size



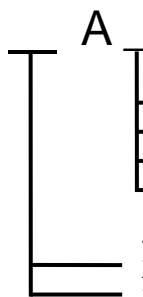
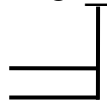
Specifications (characteristics)

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

* Part Number

TCO - 7 1 0

<Frequency tolerance / V_{cc} tolerance>
 ±50 × 10⁻⁶ Max. / V_{cc} ±10 % : 6
 ±100 × 10⁻⁶ Max. / V_{cc} ±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_{cc}=3.3 V
 X3 : V_{cc}=2.5 V

External dimensions

(Unit:mm)

Pin map

Pin	Connection
1	\overline{ST}
2	GND
3	OUT
4	V _{cc}

Note.
 \overline{ST} pin = HIGH or "open" : Specified frequency output.
 \overline{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_{cc} - GND).

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.




WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs,

Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

► Explanation of the mark that are using it for the catalog

	<p>► Pb free.</p>
	<p>► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)</p>
	<p>► The products have been designed for high reliability applications such as Automotive.</p>

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