



# CRYSTAL OSCILLATOR SPXO

## TCO - 708x series

- Frequency range : 1.5 MHz to 160 MHz
- Supply voltage : 3.3 V or 5 V
- Thickness : 1.6 mm Typ.
- Function : Standby ( $\overline{ST}$ )



Actual size



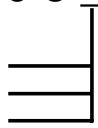
### Specifications (characteristics)

Item	Symbol	TCO-708*X1A*	TCO-708*D1A*	Remarks
Output frequency range	f <sub>o</sub>	1.500 MHz to 160.000 MHz	1.500 MHz to 75.000 MHz	Please contact us for inquiries regarding the available frequencies.
Supply voltage	V <sub>cc</sub>	3.3 V	5.0 V	As per below description
Storage temperature range	T <sub>stg</sub>	-40 °C to +85 °C		Store as bare product after unpacking
Operating temperature range	T <sub>use</sub>	As per below description		
Frequency tolerance	f <sub>tol(osc)</sub>	As per below description		
Current consumption	I <sub>cc</sub>	50 mA Max.		No load condition.
Symmetry	SYM	40 % to 60 %		50 % V <sub>cc</sub> level
High output voltage	V <sub>OH</sub>	90 % V <sub>cc</sub> Min.		
Low output voltage	V <sub>OL</sub>	10 % V <sub>cc</sub> Max.		
Output load condition (CMOS)	L <sub>CMOS</sub>	15 pF Max.		
Output enable / disable input voltage	V <sub>IH</sub> V <sub>IL</sub>	70 % V <sub>cc</sub> Min. 30 % V <sub>cc</sub> Max.		V <sub>IH</sub> or OPEN : Enable V <sub>IL</sub> or GND : Disable
Rise time / Fall time	t <sub>r</sub> / t <sub>f</sub>	6 ns Max. / 1.5MHz to 75MHz 3 ns Max. / 75MHz to 160MHz	10 ns Max.	10 % V <sub>cc</sub> to 90 % V <sub>cc</sub> level
Oscillation start up time	t <sub>osc</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 - 708 1A

<Frequency tolerance / V<sub>cc</sub> tolerance>  
 ±25 × 10<sup>-6</sup> Max. / V<sub>cc</sub> ±5 % : 5  
 ±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>

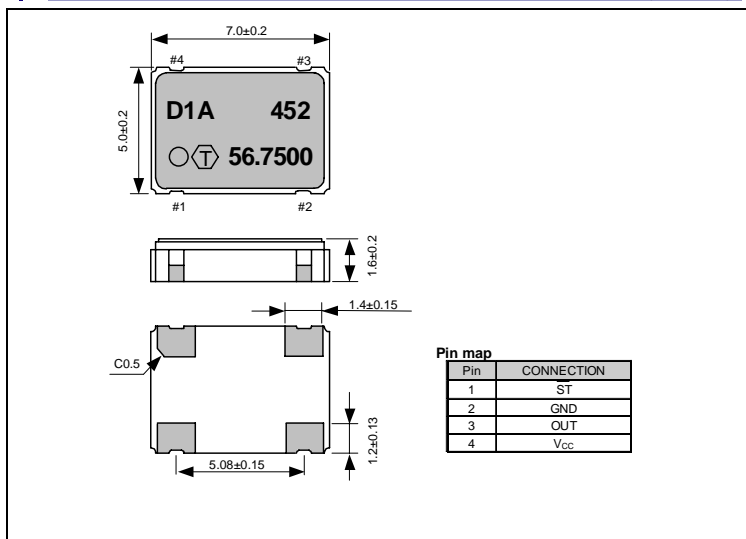
- BLANK: 0 °C to +70 °C
- 1: -10 °C to +70 °C
- 2: -20 °C to +70 °C
- 4: -40 °C to +85 °C (±50, ±100 × 10<sup>-6</sup> only)



< Supply voltage / Frequency range>  
 X : V<sub>cc</sub>= 3.3 V / 1.5 MHz to 160 MHz  
 D : V<sub>cc</sub>= 5.0 V / 1.5 MHz to 75 MHz

### External dimensions

(Unit:mm)



### Footprint (Recommended)

(Unit:mm)

