

**CRYSTAL OSCILLATOR  
SPXO**

**TCO - 708x series**

- Frequency range : 1.5 MHz to 160 MHz
- Supply voltage : 3.3 V / 5.0 V
- External dimensions: 7.0 × 5.0 × 1.6 mm
- Function : Standby (ST)



Product Number (please contact us)  
X1G0002x1xxxx00



Actual size



**Specifications (characteristics)**

Item	Symbol	TCO-708*X1A*	TCO-708*D1A*	Conditions / Remarks
Output frequency range	fo	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	Vcc	3.3 V	5.0 V	As per below description
Storage temperature range	T_stg	-55 °C to +125 °C		Store as bare product.
Operating temperature range	T_use	As per below description		
Frequency tolerance	f_tol	As per below description		
Current consumption	Icc	20 mA Max.	20 mA Max.	fo < 30 MHz, No load condition.
		50 mA Max.	40 mA Max.	30 MHz ≤ fo ≤ 75 MHz, No load condition.
Symmetry	SYM	40 % to 60 %		fo > 75 MHz < fo ≤ 160 MHz, No load condition.
		50 % Vcc level		
Output voltage	VOH	90 % Vcc Min.		IOH=-5mA(X1A) / -8mA(D1A)
	VOL	10 % Vcc Max.		IOL=+5mA(X1A) / +8mA(D1A)
Output load condition (CMOS)	L CMOS	15 pF Max.		
Input voltage	VIH	70 % Vcc Min.		VIH or OPEN : Enable
	VIL	30 % Vcc Max.		VIL or GND : Disable
Rise time / Fall time	tr / tf	6 ns Max.	10 ns Max.	fo ≤ 75 MHz,
		3 ns Max.	-	10 % Vcc to 90 % Vcc level
Start-up time	t_str	10 ms Max.		75 MHz < fo ≤ 160 MHz,
Frequency aging	f_aging	±5 × 10 <sup>-9</sup> / year Max.		10 % Vcc to 90 % Vcc level
				Time at minimum supply voltage to be 0 s
				+25 °C, First year

\* Part Number

**TCO - 708 1A**

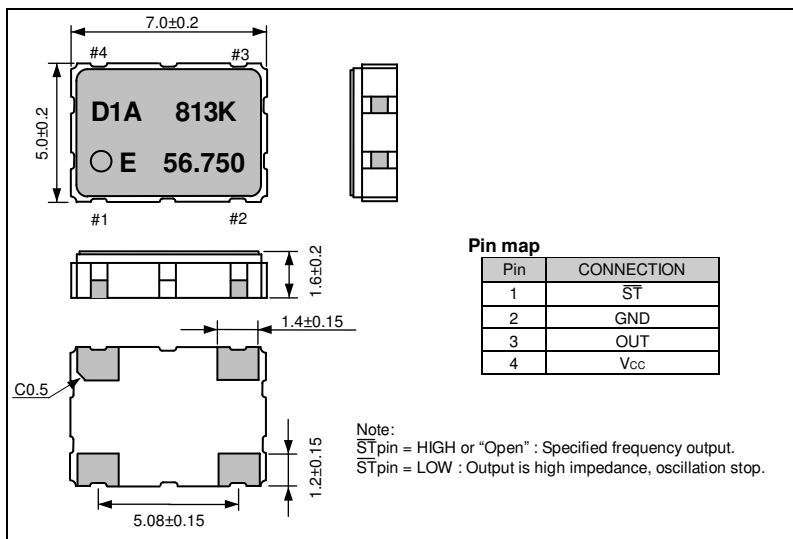
<Frequency tolerance / Vcc tolerance>  
 ±25 × 10<sup>-6</sup> Max. / Vcc ±5 % : 5  
 ±50 × 10<sup>-6</sup> Max. / Vcc ±10 % : 6  
 ±100 × 10<sup>-6</sup> Max. / Vcc ±10 % : 7

<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 : Vcc= 3.3 V / 1.5 MHz to 160 MHz  
 D : Vcc= 5.0 V / 1.5 MHz to 75 MHz

**External dimensions**

(Unit:mm)



**Footprint (Recommended)**

(Unit:mm)

