

SMD Crystal Clock Oscillator (SPXO)

Low consumption / 2.0 x 1.6 mm / 32.768 kHz / CMOS / 1.8 ~ 3.3 V

FCXO-06D

FEATURES

- 32.768 kHz CMOS oscillator with low current consumption of 0.03 mA Max.
- Frequency tolerance of ± 7 ppm (@25°C) available
- Better electrical performance than oscillators using tuning fork crystals:
 - 1/100 start-up time (7.0 ms Max. @3.3V)
 - Temperature characteristics of ± 10 ppm (-30 ~ +85°C) available (1/10 frequency tolerance of the tuning fork oscillators)
- Robust ceramic package with metal lid sealed by electron beam



(2.0 × 1.6 × 0.8 mm)



APPLICATIONS

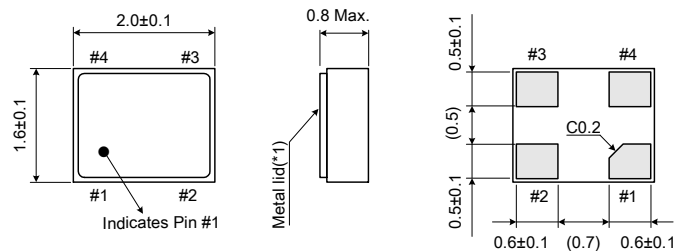
- Smart-meters / wireless-modules / replacement for tuning fork oscillators

STANDARD SPECIFICATIONS

Item	Specifications	Conditions / Remarks
Nominal frequency	32.768 kHz	-
Frequency tolerance	± 7 ppm ~	@25°C See below for more options
Storage temperature	-55 ~ +125°C	-
Operating temperature	-40 ~ +85°C	See below for more options
Frequency/temperature characteristics	± 10 ppm (-30 ~ +85°C) ± 15 ppm (-40 ~ +85°C)	Refer to 25°C See below for more options
Supply voltage	1.8 \pm 0.18 ~ 3.3 \pm 0.33 V	Rated voltage
Current consumption	0.03 mA Max.	F = 32.768 kHz, V _{DD} = 3.0V, No load
Stand-by current	3 μ A Max.	Stand-by = "L"
Output voltage	V _{OH} : 0.9 V _{DD} Min. V _{OL} : 0.1 V _{DD} Max.	I _{OH} = -1 mA I _{OL} = +1 mA
Output load	15 pF Max.	-
Output level	CMOS	-
Symmetry (Duty Cycle)	50 \pm 5%	-
Rise time / Fall time	200 ns Max.	10% V _{DD} to 90% V _{DD} level
Start-up time	7.0 ms Max.	V _{DD} = 3.3 V
	10.0 ms Max.	V _{DD} = 1.8 V
Stand-by function (Pin #1)	V _{IH} : 0.7 V _{DD} Min.	Output (Pin #3) enabled
	V _{IL} : 0.3 V _{DD} Max.	Output (Pin #3) disabled = High-Z
Tape and reel	3000 pcs/reel	Reel diameter: ϕ 180 mm

OUTLINE DIMENSIONS

(Unit: mm)

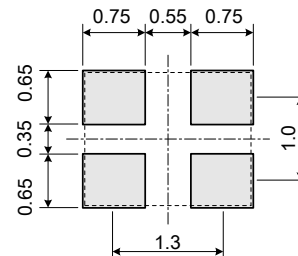


Pin	Function
#1	Stand-by
#2	Ground
#3	Output
#4	V _{DD}

• Pin #2 is connected to the metal lid (*1)

RECOMMENDED LAND PATTERN

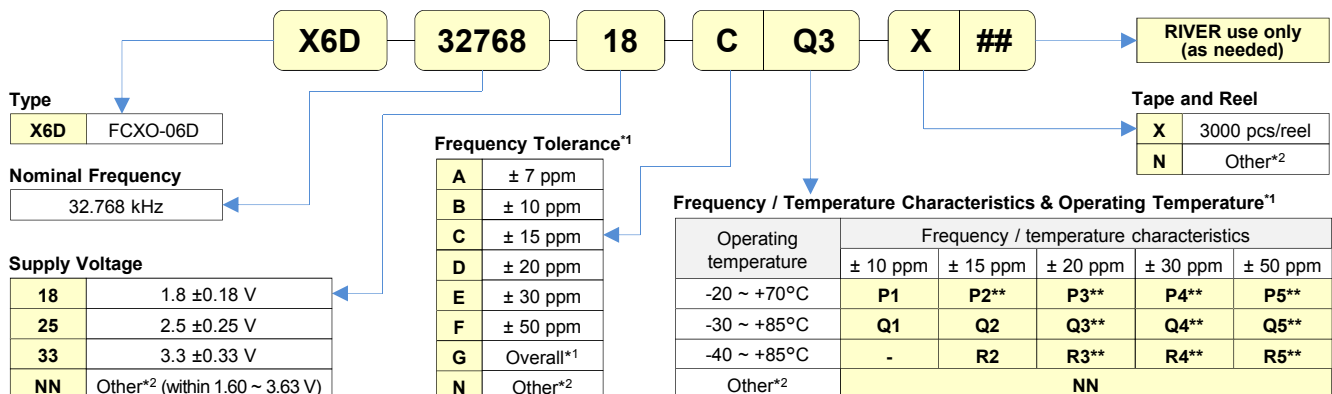
(Unit: mm)



GENERAL NOTES

- Certain combinations of standard options may be classified as high-spec models.
- Please consult us for specifications that do not match the standard specifications.
- The information in this document is subject to change without notice.
- For operational stability, a 0.01 μ F bypass capacitor should be placed between VDD (Pin #4) and Ground (Pin #2) as close as possible to the product.

ORDERING NUMBER GUIDE



1. For overall frequency stability inclusive of stability at 25°C and an operating temp. range, please select "G (Overall)" from the table "Frequency Tolerance" followed by a code that is with "" from the table "Freq./Temp. Characteristics & Operating Temp.". (e.g. GP2 = Overall ± 15 ppm (-20 ~ +70°C))

*2. Please consult us for your requirements.