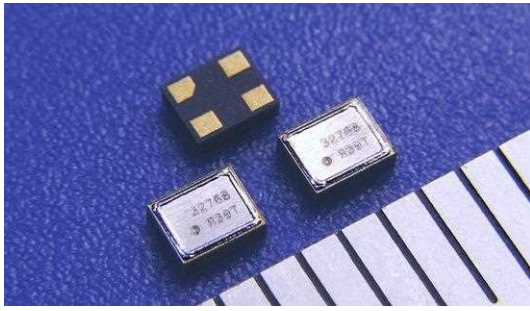


# SMD Crystal Oscillator

# FCXO-06D

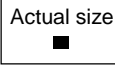


## ◆ FEATURES

- AT-cut crystal oscillator / 32.768 kHz.
- 2.0 × 1.6 × 0.8 mm Max / 8.6 mg.
- Frequency tolerance ±7 ppm available.
- Operating supply current 0.03 mA Max. (the lowest in its class).
- Ceramic with metal lid sealed by patented Electron-Beam-Soldering.

## ◆ APPLICATIONS

- Smart-meters, wireless-modules.



## ◆ STANDARD SPECIFICATIONS / ORDERING INFORMATION

Ordering Number (Sample): **X6D** — **32768** — **18** — **C Q3** — **H X ##**  
 (1) (2) (3) (4) (5) (6) (7) (8)

(1) Type <b>X6D</b>	(2) Nominal Frequency 32.768 kHz <b>32768</b>	(3) Supply Voltage 1.8 ±0.18 V <b>18</b> 2.5 ±0.25 V <b>25</b> 3.3 ±0.33 V <b>33</b> Other: 1.60 ~ 3.63 V <b>NN</b>	(4) Frequency Tolerance @ 25°C ±7 ppm <b>A</b> ±20 ppm <b>D</b> ±10 ppm <b>B</b> ±30 ppm <b>E</b> ±15 ppm <b>C</b> ±50 ppm <b>F</b> Other <b>N</b>
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(5) Operating Temperature	Frequency Temperature Characteristics (with reference to 25°C)				
	±10 ppm	±15 ppm	±20 ppm	±30 ppm	±50 ppm
-20 ~ +70°C	<b>P1</b>	<b>P2</b>	<b>P3</b>	<b>P4</b>	<b>P5</b>
-30 ~ +85°C	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
-40 ~ +85°C	-	<b>R2</b>	<b>R3</b>	<b>R4</b>	<b>R5</b>
Other	<b>NN</b>				

(6) Storage Temperature*1	
-40 ~ +85°C	<b>G</b>
-40 ~ +105°C	<b>H</b>
-55 ~ +125°C	<b>J</b>
Other	<b>N</b>

(7) Tape & Reel (φ180 mm)	
3000 pcs/reel	<b>X</b>
Other	<b>N</b>

(8) RIVER Use Only (As needed)

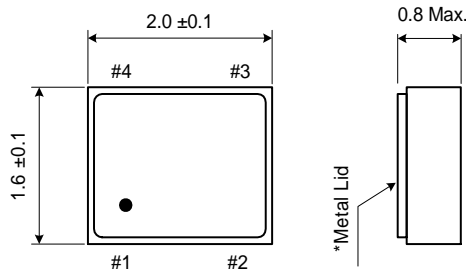
Common Parameter	Specification	Unit	Note
Operating Supply Current	0.03 Max.	mA	F = 32.768 kHz, V <sub>DD</sub> = 3.0V, No load
Stand-by Supply Current	3 Max.	μA	Stand-by = "L"
High-level Output Voltage	0.9V <sub>DD</sub> Min.	V	I <sub>OH</sub> = -1 mA
Low-level Output Voltage	0.1V <sub>DD</sub> Max.	V	I <sub>OL</sub> = +1 mA
Output Load	15 Max.	pF	-
Output Level	CMOS	-	-
Duty Cycle	50 ±5	%	-
Rise / Fall Time	200 Max.	ns	10% V <sub>DD</sub> to 90% V <sub>DD</sub> level

**1/100 of the startup time of typical tuning fork oscillators**

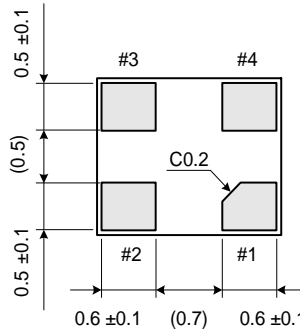
Common Parameter	Specification	Unit	Note
Startup Time	7.0 Max.	ms	V <sub>DD</sub> = 3.3 V
	10.0 Max.	ms	V <sub>DD</sub> = 1.8 V
Stand-by (pin #1) Function	(High)	0.7V <sub>DD</sub> Min.	V    Output (pin #3) enabled
	(Low)	0.3V <sub>DD</sub> Max.	V    Output (pin #3) disabled: High-Z

- The codes for the Ordering Number are indicated in blue, and the specifications are described in black.
- Not all combinations of options are available as standard.
- For specifications that include "Overall Frequency-Tolerance", please select "N" for the (4) Frequency Tolerance and let us know your specific requirements.
- For specifications other than those above, please contact our sales / website and let us know your specific requirements.

## ◆ OUTLINE DIMENSIONS

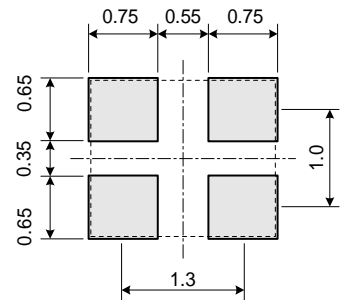


Pinout:  
 Pin #1. Stand-by (Marked with "●")  
 Pin #2. Ground & Metal Lid\*  
 Pin #3. Output  
 Pin #4. V<sub>DD</sub>



## ◆ LAND PATTERN

Unit: mm



• For operational stability, a 0.01 μF bypass capacitor should be placed between V<sub>DD</sub> (Pin #4) and GND (Pin #2) as close as possible to the product.

