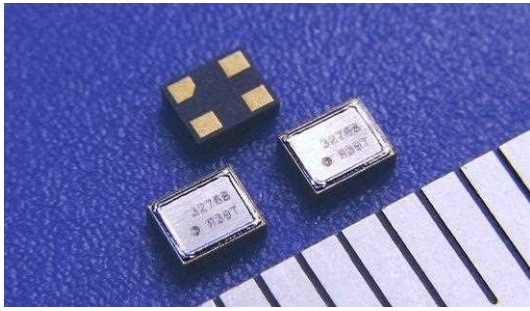


# SMD Crystal Oscillator

# FCXO-06C

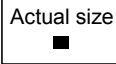


## ◆ FEATURES

- AT-cut, kHz crystal oscillator (22.000~ 87.000 kHz / 32.768 kHz Typ.)
- Compact package (2.0 × 1.6 × 0.8 mm Max. / 8.6 mg)
- Better freq.-vs.-temp. characteristics than tuning fork oscillators
- Wide operating temperature range (-40 ~ +105°C)
- Supports high supply voltage (up to 5.5 V)
- High-precision frequency (available from ±7ppm @25°C)
- High-reliable ceramic/metal package sealed with electron beam
- Specifications in conformity with AEC-Q200 available on request

## ◆ APPLICATIONS

- Smart-meters / wireless-modules



## ◆ STANDARD SPECIFICATIONS / ORDERING INFORMATION

Ordering Number (Sample): **X6C** — **32768** — **18** — **C Q3** — **H X ##**  
 (1) (2) (3) (4) (5) (6) (7) (8)

(1) Type <b>X6C</b>	(2) Nominal Frequency 32.768 kHz Typ. / 22.000 ~ 87.000 kHz e.g. 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> 5.0 ±0.50 V <b>50</b> Other: 1.60 ~ 5.50 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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*1/10 tolerance compared to tuning fork crystal oscillators*

Operating Temperature	Frequency versus Temperature Characteristics (Refer 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>
-40 ~ +105°C	-	-	-	<b>S4</b>	<b>S5</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)

\*1 Not applicable to packing materials

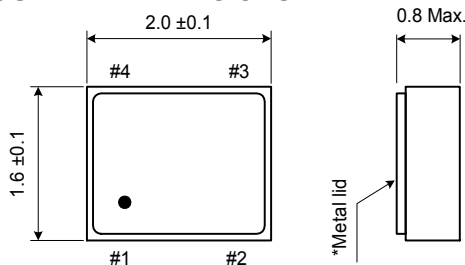
*1/200 startup time compared to tuning fork crystal oscillators*

Common Parameter	Specification	Unit	Note
Current Consumption	0.24 Max.	mA	F = 32.768 kHz, V <sub>DD</sub> = 3.0V, No load
Stand-by Current	10 Max.	µA	Stand-by = "L"
High-level Output Voltage	V <sub>DD</sub> -0.4 Min.	V	I <sub>OH</sub> = -1mA (up to +85°C) I <sub>OH</sub> = -0.8mA (up to +105°C)
Low-level Output Voltage	0.4 Max.	V	I <sub>OL</sub> = +1 mA (up to +85°C) I <sub>OL</sub> = +0.8 mA (up to +105°C)
Output Load	15 Max.	pF	-

Common Parameter	Specification	Unit	Note
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
Startup Time	2.0 Max.	ms	V <sub>DD</sub> = 3.3 V
	5.0 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

- "Ordering Number" codes are indicated in blue, and the corresponding specifications are described in black.
- Not all combinations of options are available as a standard specification.
- For "Overall Frequency-Tolerance" specifications, please select "N" for the "(4) Frequency Tolerance", and let our sales know your requirement.
- For specifications other than those above, please consult our sales or contact us via our website with your requirement.

## ◆ OUTLINE DIMENSIONS

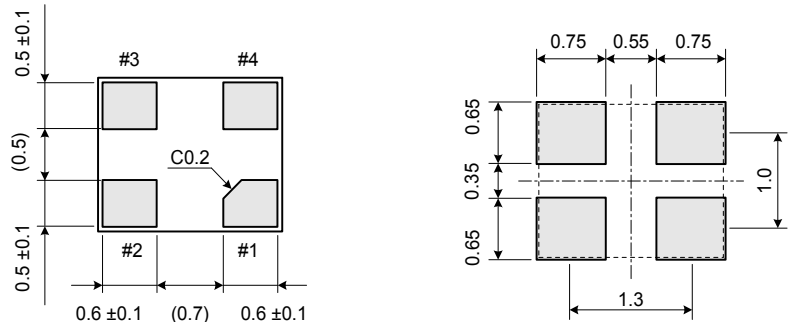


Pin	Function
#1	Stand-by
#2	Ground
#3	Output
#4	V <sub>DD</sub>

- "●" indicates Pin #1.
- Pin #2 is connected to the lid\*.

## ◆ LAND PATTERN

Unit: mm



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



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