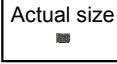
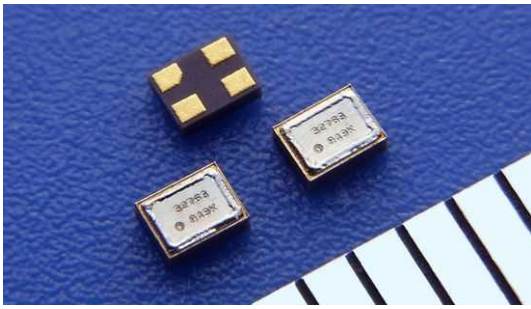


# SMD Crystal Oscillator

# FCXO-07D



## ◆ FEATURES

- AT-cut, 32.768 kHz crystal oscillator
- Smallest X'tal oscillator in the world (1.6 × 1.2 × 0.7 mm Max./4.1mg)
- Ultra-low current consumption (0.03 mA Max)
- Better freq.-vs.-temp. characteristics than tuning fork oscillators
- High-precision frequency (available from ±7ppm @25°C)
- High-reliable ceramic/metal package sealed with electron beam
- One of our best-selling models

## ◆ APPLICATIONS

- Smart-meters / wireless-modules
- Applications that require more accurate clock sources

## ◆ STANDARD SPECIFICATIONS / ORDERING INFORMATION

Ordering Number (Sample): **X7D** — **32768** — **18** — **C Q3** — **H X ##**  
 (1) (2) (3) (4) (5) (6) (7) (8)

(1) Type
X7D

(2) Nominal Frequency
32.768 kHz
32768

(3) Supply Voltage	
1.8 ±0.18 V	18
2.5 ±0.25 V	25
3.3 ±0.33 V	33
Other: 1.60 ~ 3.63 V	NN

(4) Frequency Tolerance @ 25°C			
±7 ppm	A	±20 ppm	D
±10 ppm	B	±30 ppm	E
±15 ppm	C	±50 ppm	F
Other		Other	N

**1/10 tolerance compared to tuning fork crystal oscillators**

(5) Operating Temperature	Frequency versus Temperature Characteristics (Refer to 25°C)				
	±10 ppm	±15 ppm	±20 ppm	±30 ppm	±50 ppm
-20 ~ +70°C	P1	P2	P3	P4	P5
-30 ~ +85°C	Q1	Q2	Q3	Q4	Q5
-40 ~ +85°C	-	R2	R3	R4	R5
Other					NN

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

\*1 Not applicable to packing materials

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

(8) RIVER Use Only (As needed)

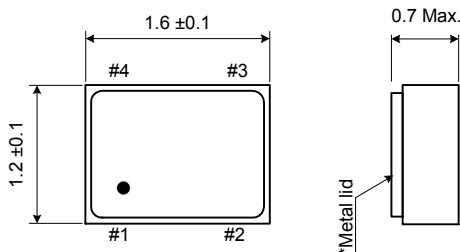
**1/100 startup time compared to tuning fork crystal oscillators**

Common Parameter	Specification	Unit	Note
Current Consumption	0.03 Max.	mA	F = 32.768 kHz, VDD = 3.0V, No load
Stand-by Current	3 Max.	µA	Stand-by = "L"
High-level Output Voltage	0.9VDD Min.	V	I <sub>OH</sub> = -1 mA
Low-level Output Voltage	0.1VDD 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% VDD to 90% VDD level

Common Parameter	Specification	Unit	Note
Startup Time	7.0 Max.	ms	VDD = 3.3 V
	10.0 Max.	ms	VDD = 1.8 V
Stand-by (pin #1) Function	(High)	0.7VDD Min.	V Output (pin #3) enabled
	(Low)	0.3VDD 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 DEMENSIONS

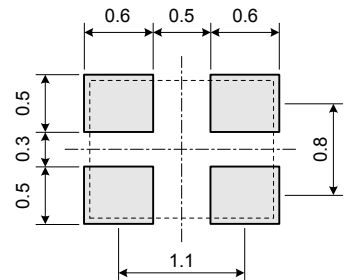
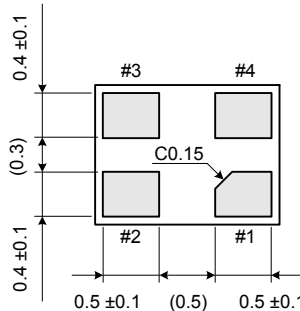


Pin	Function
#1	Stand-by
#2	Ground
#3	Output
#4	VDD

- "●" 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 VDD (Pin #4) and Ground (Pin #2) as close as possible to the product.

**RIVER RIVER ELETEC CORPORATION**

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