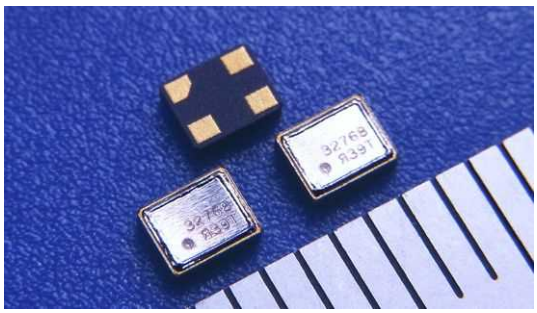
# SMD Crystal Oscillator FCXO-05D



RoHS Compliant  Pb Free

Actual size ■

## ◆ FEATURES

- AT-cut crystal oscillator / 32.768 kHz.
- 2.5 × 2.0 × 0.9 mm Max. /13 mg.
- Frequency tolerance ±7 ppm available.
- Operating supply current 0.01 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):** X5D — 32768 — 18 — C Q3 — H X ##

(1) (2) (3) (4) (5) (6) (7) (8)

| (1) Type |
|---|
| X5D |

| (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 | N |

*1/10 of the tolerance of typical tuning-fork oscillators*

| (5) Operating Temperature | Frequency Temperature Characteristics (with reference 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)

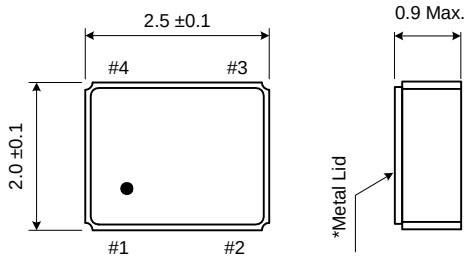
| Common Parameter | Specification | Unit | Note |
|---|---|---|---|
| Operating Supply Current | 0.01 Max. | mA | F = 32.768 kHz, $V_{DD}$ = 3.0V, No load |
| Stand-by Supply Current | 3 Max. | μA | Stand-by = "L" |
| High-level Output Voltage | 0.9$V_{DD}$ Min. | V | $I_{OH}$ = -1 mA |
| Low-level Output Voltage | 0.1$V_{DD}$ Max. | V | $I_{OL}$ = +1 mA |
| Output Load | 15 Max. | pF | - |
| Output Level | CMOS | - | - |
| Duty Cycle | 50 ±5 | % | - |
| Rise / Fall Time | 200 Max. | ns | 10% $V_{DD}$ to 90% $V_{DD}$ level |

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

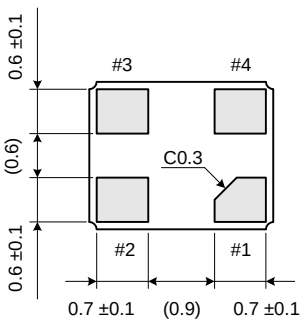
| Common Parameter | | Specification | Unit | Note |
|---|---|---|---|---|
| Startup Time | | 7.0 Max. | ms | $V_{DD}$ = 3.3 V |
| | | 10.0 Max. | ms | $V_{DD}$ = 1.8 V |
| Stand-by (pin #1) Function | (High) | 0.7$V_{DD}$ Min. | V | Output (pin #3) enabled |
| | (Low) | 0.3$V_{DD}$ Max. | V | Output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

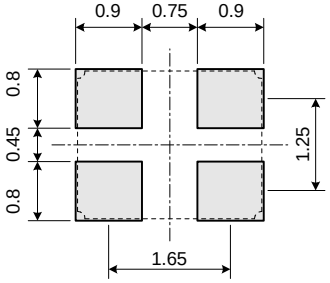



Pinout:
Pin #1. Stand-by (Marked with "●")
Pin #2. Ground & Metal Lid*
Pin #3. Output
Pin #4. $V_{DD}$




## ◆ LAND PATTERN

Unit: mm




- For operational stability, a 0.01 μF bypass capacitor should be placed between *$V_{DD}$ (Pin #4)* and *GND (Pin #2)* as close as possible to the product.

RIVER