

- AT-cut crystal oscillator / 32.768 kHz.
- 1.6 × 1.2 × 0.7 mm Max. / 4.1mg (the smallest package in its class).
- 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.
- One of the best-selling models of our products.

◆ APPLICATIONS

- Smart-meters, wireless-modules.

◆ 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		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

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

(8) RIVER Use Only (As needed)

*1 Not applicable to packing materials

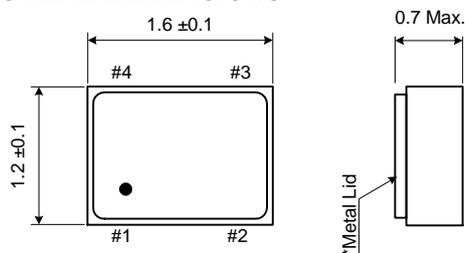
Common Parameter	Specification	Unit	Note
Operating Supply Current	0.03 Max.	mA	F = 32.768 kHz, V _{DD} = 3.0V, No load
Stand-by Supply Current	3 Max.	µA	Stand-by = "L"
High-level Output Voltage	0.9V _{DD} Min.	V	I _{OH} = -1 mA
Low-level Output Voltage	0.1V _{DD} Max.	V	I _{OL} = +1 mA
Output Load	15 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

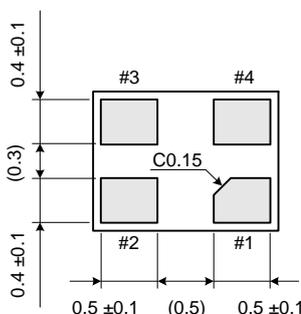
Common Parameter	Specification	Unit	Note
Startup Time	7.0 Max.	ms	V _{DD} = 3.3 V
	10.0 Max.	ms	V _{DD} = 1.8 V
Stand-by (pin #1) Function	(High)	0.7V _{DD} Min.	V Output (pin #3) enabled
	(Low)	0.3V _{DD} Max.	V Output (pin #3) disabled : High-Z

- 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

