

The ultra-miniature ECX-12R is a very compact SMD Tuning Fork Crystal. The 2.0 x 1.2 x 0.6 mm ceramic package with reduced ESR is ideal for IOT and Wearable technology.

# ECX-12R

32.768 KHz  
SMD Tuning Fork Crystal  
Low ESR

## ECX-12R SMD CRYSTAL



- Low ESR 70K Ohms Max.
- 2.0 x 1.2 mm Footprint
- Low Power RTC Applications such as STM32 [AN2867](#)
- RoHS Compliant
- Applications: Metering, Automotive, Industrial, IOT and Wearables.

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS                   | CONDITIONS       | ECX-12R |        |        | UNITS               |
|------------------------------|------------------|---------|--------|--------|---------------------|
|                              |                  | MIN     | TYP    | MAX    |                     |
| Frequency                    |                  |         | 32.768 |        | KHz                 |
| Frequency Tolerance          | @ +25°C          |         |        | ± 20 * | ppm                 |
| Load Capacitance             | Specify in P/N   |         | 12.5   |        | pF                  |
| Drive Level                  | DL               |         |        | 1.0    | μW                  |
| Equivalent Series Resistance | R1               |         |        | 70K    | Ω                   |
| Turnover Temperature         |                  | +20     | +25    | +30    | °C                  |
| Temperature Coefficient      |                  | -0.03   | -0.033 | -0.036 | ppm/°C <sup>2</sup> |
| Shunt Capacitance            | Co               |         | 1.3    |        | pF                  |
| Aging (First Year)           | @ +25°C ±3°C     |         |        | ±3     | ppm                 |
| Operating Temperature        | T <sub>opr</sub> | -40     |        | +85    | °C                  |
| Storage Temperature          | T <sub>stg</sub> | -55     |        | +125   | °C                  |

## DIMENSIONS (mm)

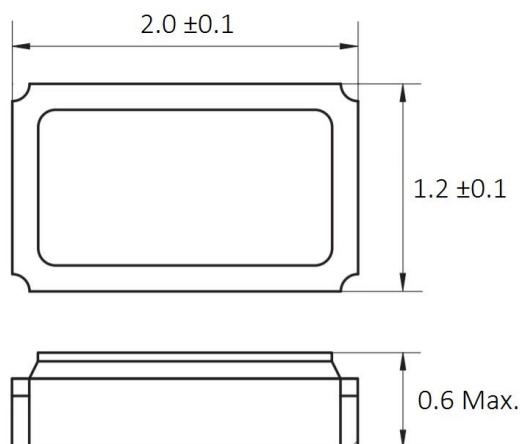


Figure 1) Top, Side, and Bottom views

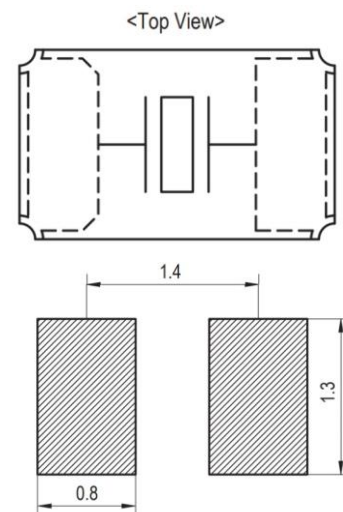
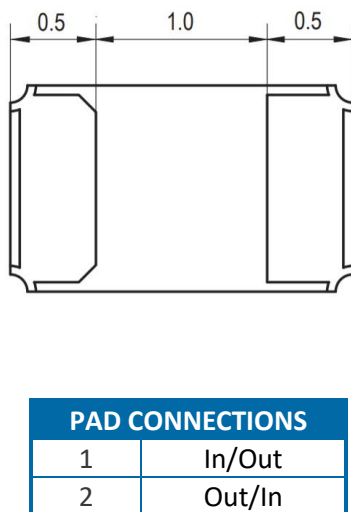


Figure 2) Suggested Land Pattern

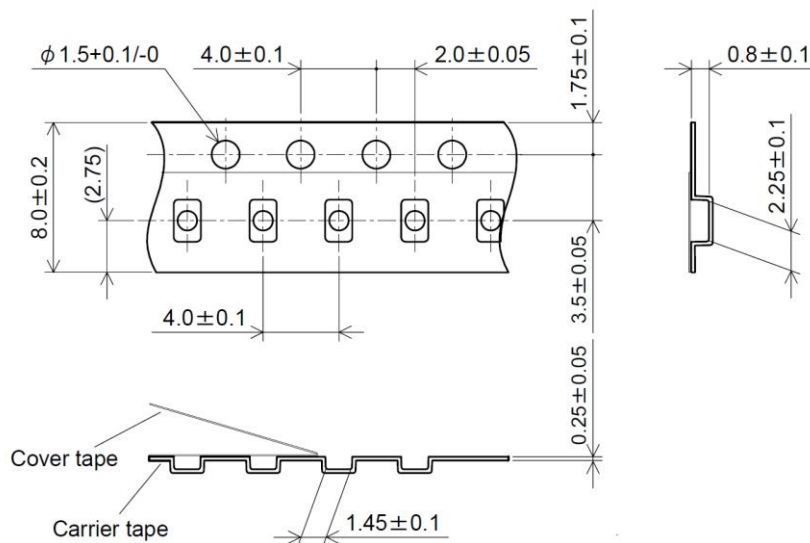
## PART NUMBERING GUIDE: Example ECS-.327-12.5-12R-TR

| ECS - FREQUENCY ABBREVIATION |                   | LOAD CAPACITANCE                                   | PACKAGE        | CUSTOM OPTIONS<br>Tolerance       | PACKAGING                   |
|------------------------------|-------------------|----------------------------------------------------|----------------|-----------------------------------|-----------------------------|
| ECS                          | .327 = 32.768 KHz | 12.5 = 12.5 pF<br>9 = 9 pF<br>7 = 7 pF<br>6 = 6 pF | -12R = ECX-12R | Blank = ±20 ppm<br>* C = ± 10 ppm | TR = Tape & Reel<br>3K/Reel |

\*Contact ECS for availability

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## POCKET TAPE DIMENSIONS (mm)



### SOLDER PROFILE

Peak solder Temp  $+260^{\circ}\text{C}$  Max 10 sec Max.

2 Cycles Max.

MSL 1, Lead Finish Au

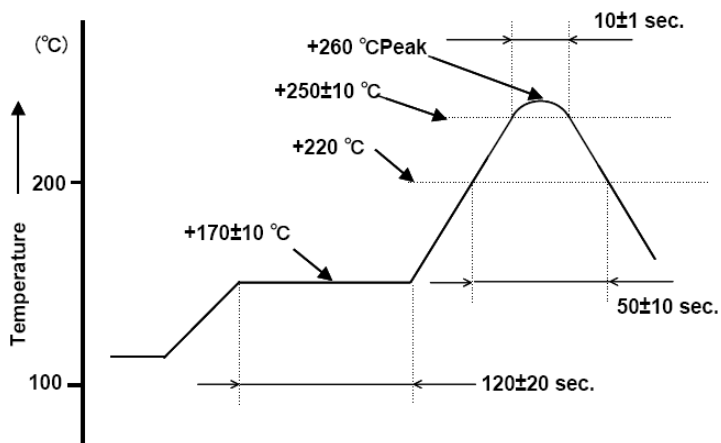


Figure 1) Suggested Reflow Profile