

The ultra-miniature ECX-12RR 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-12RR

32.768 KHz  
SMD Tuning Fork Crystal  
Low ESR



- Low ESR 50K 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-12RR |        |        | 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               |          | 0.1    | 0.5    | μW                  |
| Equivalent Series Resistance | R1               |          | 35K    | 50K    | Ω                   |
| Turnover Temperature         |                  | +20      | +25    | +30    | °C                  |
| Temperature Coefficient      |                  |          | -0.030 | -0.040 | ppm/°C <sup>2</sup> |
| Shunt Capacitance            | Co               |          | 1.7    | 2.0    | 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> | -40      |        | +85    | °C                  |

## DIMENSIONS (mm)

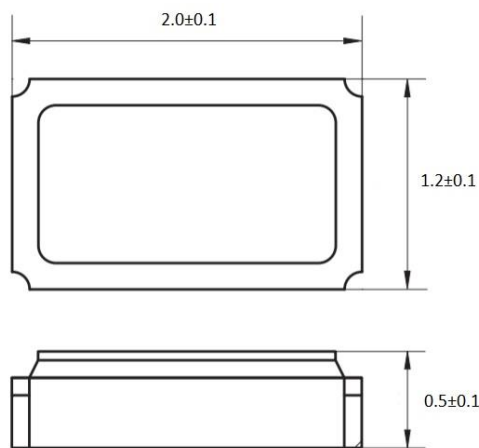
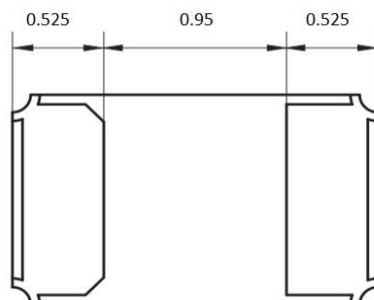


Figure 1) Top, Side, and Bottom views



| PAD CONNECTIONS |        |
|-----------------|--------|
| 1               | In/Out |
| 2               | Out/In |

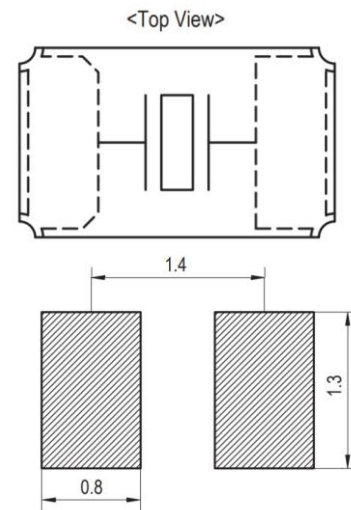
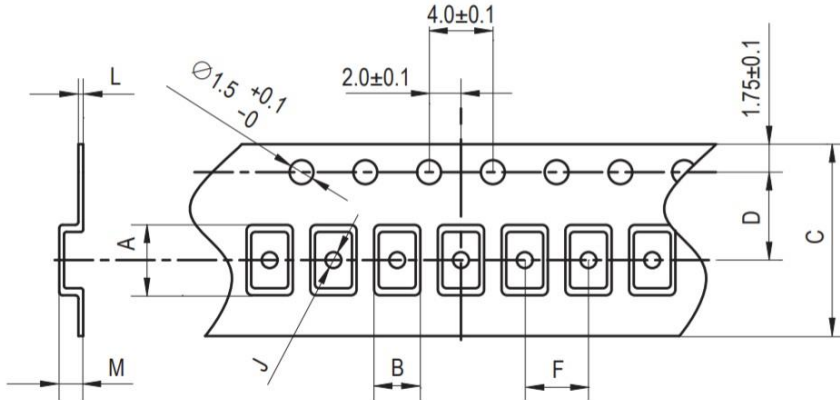


Figure 2) Suggested Land Pattern

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

| ECS | FREQUENCY ABBREVIATION | LOAD CAPACITANCE                       | PACKAGE          | PACKAGING                   |
|-----|------------------------|--|------------------|-----------------------------|
| ECS | .327 = 32.768 KHz      | 12.5 = 12.5 pF<br>9 = 9 pF<br>6 = 6 pF | -12RR = ECX-12RR | TR = Tape & Reel<br>3K/Reel |

**POCKET TAPE DIMENSIONS (mm)**



| A    | B    | C   | D   | F   | J   | L    | M    | Reel Dia. | Qty/Reel |
|------|------|-----|-----|-----|-----|------|------|-----------|----------|
| 2.25 | 1.45 | 8.0 | 3.5 | 4.0 | 1.0 | 0.25 | 0.75 | 180       | 3000pcs  |

| SOLDER PROFILE                          |
|---|
| Peak solder Temp +260°C Max 10 sec Max. |
| 2 Cycles Max.                           |
| MSL 1, Lead Finish Au                   |

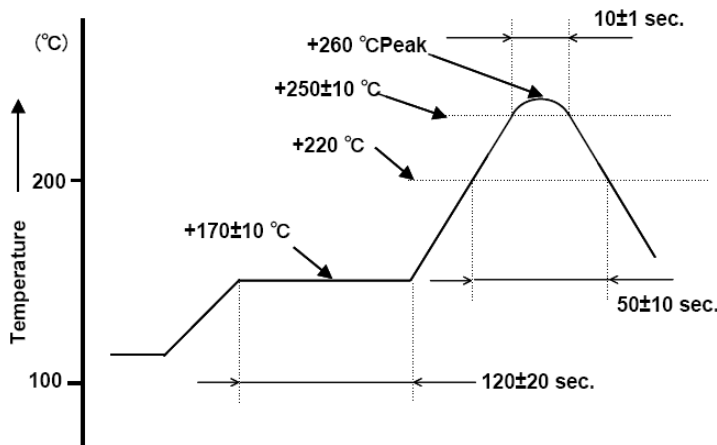


Figure 1) Suggested Reflow Profile

# Mouser Electronics

Authorized Distributor

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[ECS:](#)

[ECS-.327-9-12RR-TR](#) [ECS-.327-12.5-12RR-TR](#) [ECS-.327-6-12RR-TR](#)