

The ECX-33Q is a miniature SMD Crystal with a 3.2 x 2.5 mm footprint. AEC-Q200 Qualified.

# ECX-33Q SMD CRYSTAL

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## ECX-33Q SMD CRYSTAL



- Low Profile
- 3.2 x 2.5 mm Footprint
- RoHS Compliant
- AEC-Q200 Qualified

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS             | CONDITIONS                      | ECX-33Q |     |        | UNITS |
|------------------------|---------------------------------|---------|-----|--------|-------|
|                        |                                 | MIN     | TYP | MAX    |       |
| Frequency              |                                 | 8.000   |     | 54.000 | MHz   |
| Mode of Oscillation    | Fundamental                     |         |     |        |       |
| Frequency Tolerance*   | @ +25°C                         |         |     | ± 30   | ppm   |
| Frequency Stability*   | -55 ~ +125°C<br>(DU Option)     |         |     | ± 100  | ppm   |
| Shunt Capacitance      | Co                              |         |     | 7      | pF    |
| Load Capacitance       | Specify in P/N                  | 6       | 20  | Series | pF    |
| Drive Level            | DL                              |         |     | 100    | μW    |
| Operating Temperature* | T <sub>opr</sub><br>(DU Option) | -55     |     | +125   | °C    |
| Storage Temperature    | T <sub>stg</sub>                | -55     |     | +125   | °C    |
| Aging (First Year)     | @ +25°C ±3°C                    |         |     | ±5     | ppm   |

## DIMENSIONS (mm)

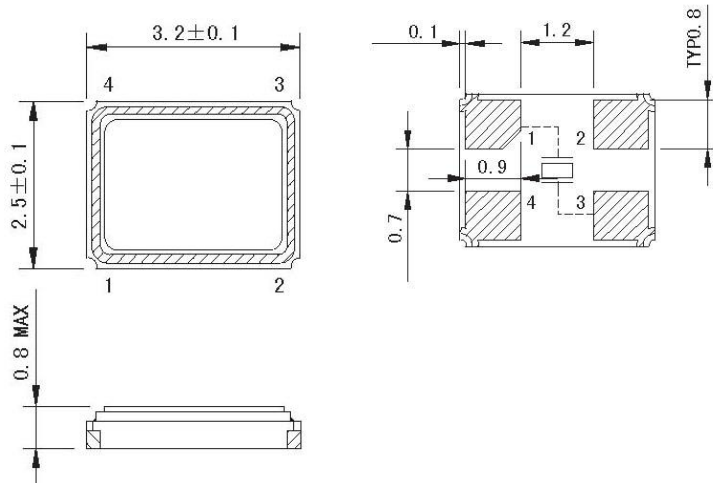


Figure 1) Top, Side, and Bottom

Crystal is symmetrical, pads 1 & 3 are interchangeable. Chamfer on the bottom pad has no electrical significance.

| Frequency (MHz) | ESR Ω Max. |
|-----------------|------------|
| 8.000 ~ 9.999   | 500        |
| 10.000 ~ 15.999 | 100        |
| 16.000 ~ 19.999 | 80         |
| 20.000 ~ 23.999 | 60         |
| 24.000 ~ 54.000 | 40         |

### Pad Connections

|   |        |
|---|--------|
| 1 | In/Out |
| 2 | Gnd    |
| 3 | Out/In |
| 4 | Gnd    |

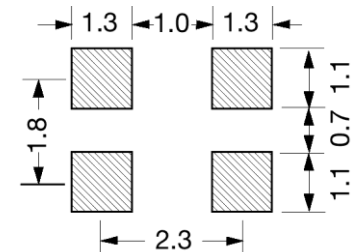


Figure 2) Suggested land

## PART NUMBERING GUIDE: Example ECS-200-20-33Q-DU-TR

| ECS - FREQUENCY ABBREVIATION | LOAD CAPACITANCE                  | PACKAGE          | AVAILABLE OPTIONS   |   |  | PACKAGING                         |
|------------------------------|-----------------------------------|------------------|---|---|--|-----------------------------------|
|                              |                                   |                  | Tolerance   | Stability   | Temp Range   |                                   |
| ECS                          | 200 = 20.000 MHz<br>See P/N Guide | 33Q =<br>ECX-33Q | Blank = ±30 ppm<br>A = ± 25 ppm<br>J = ± 20 ppm<br>R = ± 15 ppm<br>C = ± 10 ppm | D = ±100 ppm<br>E = ± 50 ppm<br>G = ± 30 ppm<br>H = ± 25 ppm<br>T = ± 20 ppm †<br>W = ±15 ppm †<br>K = ± 10 ppm † | L = -10 ~ +70°C<br>M = -20 ~ +70°C<br>Y = -30 ~ +85°C<br>N = -40 ~ +85°C<br>P = -40 ~ +105°C<br>S = -40 ~ +125°C<br>U = -55 ~ +125°C | TR = 1K††<br>TR3 = 3K<br>Qty/Reel |

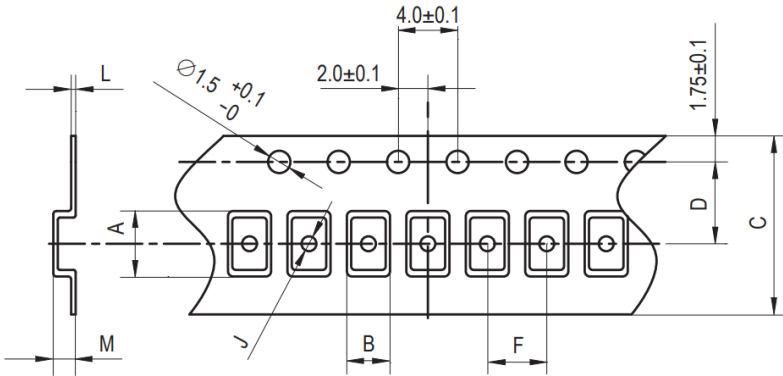
\* Specify available options in P/N.

† Contact ECS for availability over extended temp range.

†† JES-TR & JEN-TR 3K/Reel

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**POCKET TAPE DIMENSIONS (mm)**



| A   | B   | C   | D   | F   | J   | L    | M   | Reel Dia. | Qty/Reel                 |
|-----|-----|-----|-----|-----|-----|------|-----|-----------|--------------------------|
| 3.5 | 2.8 | 8.0 | 3.5 | 4.0 | 1.1 | 0.25 | 1.0 | 180       | -TR=1K<br>JES/JEN/TR3=3K |

**SOLDER PROFILE**

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



Figure 1) Suggested Reflow Profile

**DEVELOPED FREQUENCIES**

| Abbreviation | Frequency (MHZ) |
|--------------|-----------------|
| 80           | 8.000           |
| 100          | 10.000          |
| 120          | 12.000          |
| 122.8        | 12.288          |
| 130          | 13.000          |
| 135.6        | 13.560          |
| 143          | 14.31818        |
| 147.4        | 14.7456         |
| 160          | 16.000          |
| 163.8        | 16.384          |
| 166.666      | 16.6666         |
| 184          | 18.432          |
| 196.6        | 19.6608         |
| 200          | 20.000          |
| 221          | 22.1184         |
| 240          | 24.000          |
| 245.7        | 24.576          |
| 250          | 25.000          |
| 260          | 26.000          |
| 270          | 27.000          |
| 286.3        | 28.63636        |
| 300          | 30.000          |
| 320          | 32.000          |
| 330          | 33.000          |
| 400          | 40.000          |