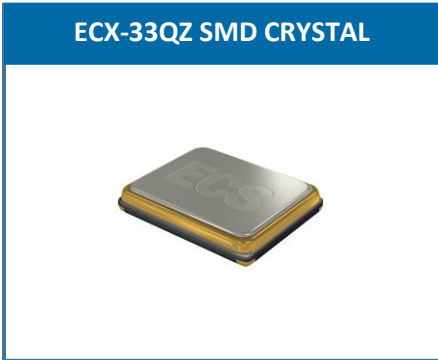


The ultra-miniature rugged ECX-33QZ compact SMD Crystal. The 3.2 x 2.5 x 0.8 mm ceramic package is ideal for harsh environments such as TPMS applications.



- Low Profile
- 3.2 x 2.5 mm Footprint
- Extended Temp. Range
- AEC-Q200 Qualified
- Automotive/TPMS Applications

DIMENSIONS (mm)

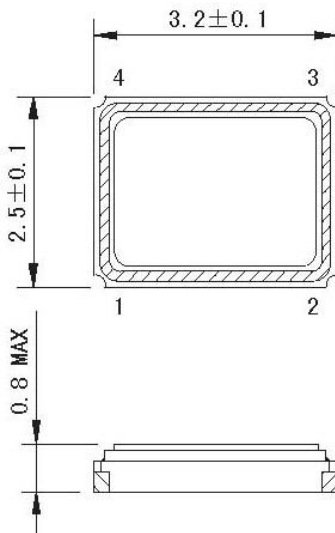
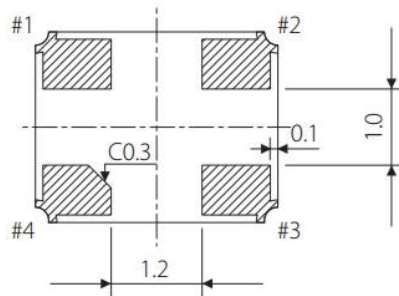


Figure 1) Top, Side, and Bottom views

OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS | CONDITIONS | ECX-33QZ | | | UNITS |
|------------------------------------|----------------------------|----------|-----|--------|-------|
| | | MIN | TYP | MAX | |
| Frequency | | 13.000 | | 26.000 | MHz |
| Frequency Tolerance | @ +25°C (Standard) | | | ± 15 | ppm |
| Frequency Stability | -40 ~ +125°C (Standard) | | | ± 50 | ppm |
| Equivalent Series Resistance (ESR) | 13 ~ 19.999 MHz | | | 120 | Ω |
| | 20 ~ 26.000 MHz | | | 80 | Ω |
| Shunt Capacitance | Co | | | 5 | pF |
| Load Capacitance | Specify in P/N | | 10 | | pF |
| Drive Level | DL | | 10 | 100 | μW |
| Operating Temperature | Topr | -40 | | +125 | °C |
| Storage Temperature | Tstg | -40 | | +125 | °C |
| Aging (First Year) | @ +25°C ±3°C | | | ±3 | ppm |



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

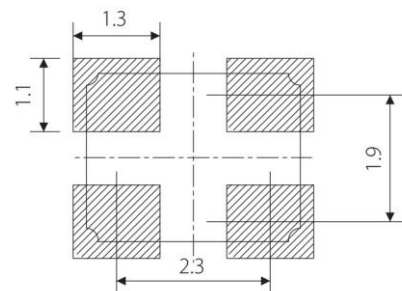


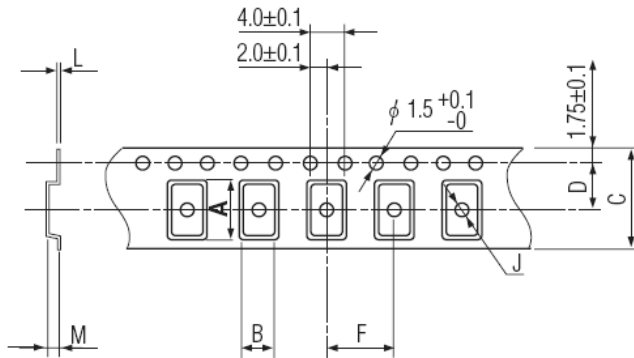
Figure 2) Suggested Land Pattern

PART NUMBERING GUIDE: Example ECS-260-10-33QZ-TR

| ECS - FREQUENCY ABBREVIATION | LOAD CAPACITANCE | PACKAGE | CUSTOM OPTIONS | | | PACKAGING |
|------------------------------|--|--------------------|--|---|---|--------------------------------|
| | | | Tolerance | Stability | Temp Range | |
| ECS | 260 = 26.000 MHz *See Developed Frequencies Pg. 2 | 33QZ = ECX-33QZ | Blank=Standard A = ± 25 ppm J = ± 20 ppm R = ± 15 ppm C = ± 10 ppm | Blank=Standard D = ± 100 ppm E = ± 50 ppm G = ± 30 ppm | Blank=Standard N = -40 ~ +85°C P = -40 ~ +105°C S = -40 ~ +125°C | TR = Tape & Reel 1K/Reel |

*Contact ECS for availability of non-developed frequencies.

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 | 1000 |

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

| DEVELOPED FREQUENCIES | |
|-----------------------|-----------------|
| Abbreviation | Frequency (MHZ) |
| 135.6 | 13.560 |
| 180.8 | 18.080 |
| 196.875 | 19.6875 |
| 260 | 260.000 |

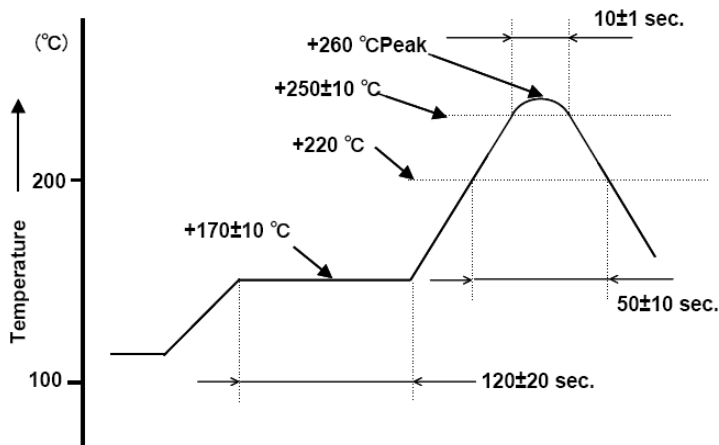


Figure 1) Suggested Reflow Profile