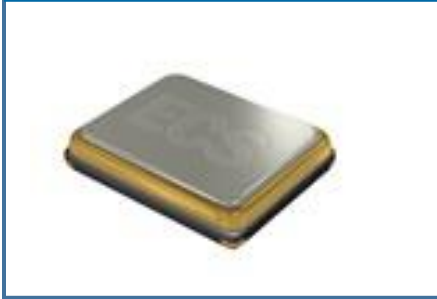


## CSM-8Q SMD CRYSTAL



- Compact and Low Profile
- 7.0 x 5.0 mm Footprint
- RoHS Compliant
- AEC-Q200 Qualified

## DIMENSIONS (mm)

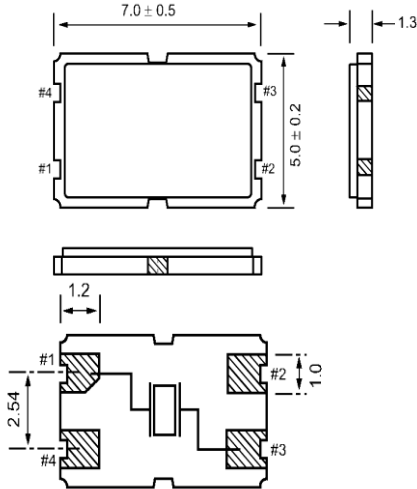


Figure 1) Top, Side, and Bottom

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

## Pad Connections

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

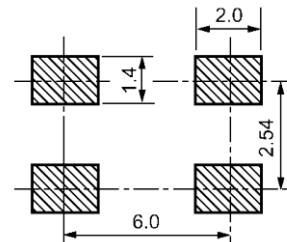


Figure 2) Suggested land

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS             | CONDITIONS                      | CSM-8Q |     |        | UNITS |
|------------------------|---------------------------------|--------|-----|--------|-------|
|                        |                                 | MIN    | TYP | MAX    |       |
| Frequency              |                                 | 8.000  |     | 36.000 | 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                  | 10     | 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   |

| Frequency (MHz) | ESR Ω Max. |
|-----------------|------------|
| 8.000 ~ 15.999  | 60         |
| 16.000 ~ 36.000 | 40         |

## PART NUMBERING GUIDE: Example ECS-200-20-20BQ-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 | 20 = 20 pF<br>S = Series | 20BQ =<br>CSM-8Q | Blank = Std<br>A = ± 25 ppm<br>J = ± 20 ppm<br>R = ± 15 ppm<br>C = ± 10 ppm | Blank= Std<br>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 † | Blank= Std<br>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 =<br>Tape<br>& Reel<br>1K/Reel |

\* Specify available options in P/N.

† Contact ECS for availability over extended temp range.

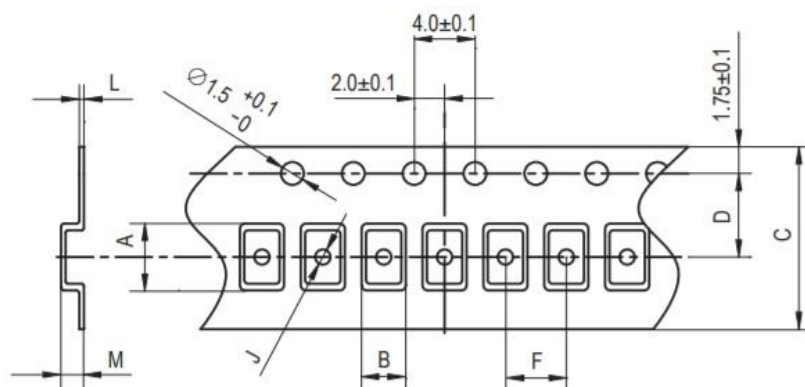
Rev.2017

\* Specify available options in P/N.

† Contact ECS for availability over extended temp range.

Rev.2017

## POCKET TAPE DIMENSIONS (mm)



| A   | B   | C    | D   | F   | J   | L   | M   | Reel Dia. | Qty/Reel |
|-----|-----|------|-----|-----|-----|-----|-----|-----------|----------|
| 7.3 | 5.3 | 16.0 | 7.5 | 8.0 | 1.5 | 0.3 | 1.9 | 178       | 1000pcs  |

### SOLDER PROFILE

Peak solder Temp +260°C Max 10 sec Max.

2 Cycles Max.

MSL 1, Lead Finish Au

### DEVELOPED FREQUENCIES

| Abbreviation | Frequency (MHZ) |
|--------------|-----------------|
| 080          | 8.000           |
| 098.3        | 9.83040         |
| 100          | 10.000          |
| 110.5        | 11.0592         |
| 120          | 12.000          |
| 150          | 15.000          |
| 160          | 16.000          |
| 200          | 20.000          |
| 240          | 24.000          |
| 250          | 25.000          |

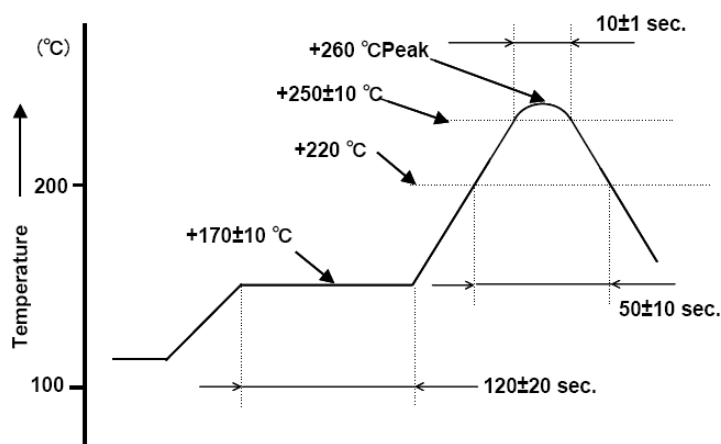


Figure 1) Suggested Reflow Profile