

actual size

# Quartz Crystal · HC49/U

## Through Hole Quartz Crystal

### Features

- RoHS compliant
- wide frequency range

### General Data

| type                         | S (HC49/U)   |
|------------------------------|--|
| frequency range              | 0.92160 / 1.000 MHz (fund. SL-cut)                   |
|                              | 1.8432 ~ 40.0 MHz (fund. AT-cut)                     |
|                              | 20.0 ~ 105.0 MHz (3rd OT AT-cut)                     |
|                              | 50.0 ~ 175.0 MHz (5th OT AT-cut)                     |
|                              | 70.0 ~ 250.0 MHz (7th OT AT-cut) (9th OT on request) |
| frequency tolerance at 25 °C | ± 3 ppm ~ ± 50 ppm                                   |
| load capacitance $C_L$       | 8 pF ~ 32 pF or series                               |
| shunt capacitance $C_0$      | < 7 pF   |
| storage temperature          | -55 °C ~ +125 °C                                     |
| drive level max.             | 1.0 mW   |
| aging                        | < ±5 ppm first year                                  |

### ESR (series resistance Rs)

| frequency in MHz | vibration mode | ESR max. in $\Omega$ | ESR typ. in $\Omega$ |
|------------------|----------------|----------------------|----------------------|
| 0.92 / 1.000     | fund.- SL      | 3000                 | 800                  |
| 1.8432           | fund.- AT      | 800                  | 400                  |
| 2.00 ~ 2.999     | fund.- AT      | 400                  | 200                  |
| 3.00 ~ 3.4999    | fund.- AT      | 150                  | 50                   |
| 3.57 ~ 6.9999    | fund.- AT      | 60                   | 20                   |
| 7.00 ~ 12.999    | fund.- AT      | 30                   | 15                   |
| 13.0 ~ 40.000    | fund.- AT      | 20                   | 10                   |
| 20.0 ~ 29.999    | 3rd OT - AT    | 80                   | 35                   |
| 30.0 ~ 105.00    | 3rd OT - AT    | 60                   | 30                   |
| 50.0 ~ 175.00    | 5th OT - AT    | 150                  | 70                   |

### Frequency Stability vs. Temperature

|                  |      | ± 3 ppm | ± 5 ppm | ± 10 ppm | ± 30 ppm | ± 50 ppm | ±100 ppm | ±150 ppm |
|------------------|------|---------|---------|----------|----------|----------|----------|----------|
| 0 °C ~ +60 °C    |      | ○       | ○       | ○        |          |          |          |          |
| -20 °C ~ +70 °C  | STD. |         | ○       | ○        | ●        |          |          |          |
| -40 °C ~ +85 °C  | T1   |         |         | ○        | ○        | ●        |          |          |
| -40 °C ~ +90 °C  | T4   |         |         |          | ○        | ○        | ○        |          |
| -40 °C ~ +105 °C | T2   |         |         |          | ○        | ○        | ○        |          |
| -40 °C ~ +125 °C | T3   |         |         |          |          |          | ○        | ○        |

● standard ○ on request

### Marking

|                                 |
|---------------------------------|
| frequency                       |
| company code / load capacitance |
| data code / internal code       |

### Option Table

|                        |                 |
|------------------------|-----------------|
| TP = top pin           | MP = middle pin |
| TR = taped             | KIS = spacer    |
| IS = insulation spacer | SMC = SMD clip  |
| LL = lead length in mm |                 |

### Order Information

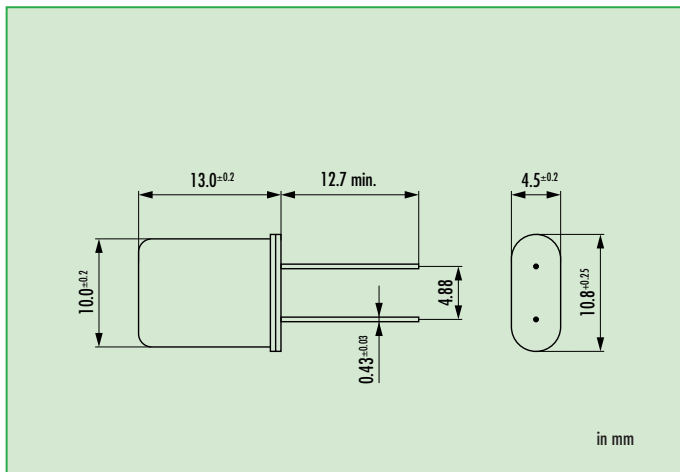
| Q      | frequency in MHz   | type | load capacitance in pF                          | stability at 25 °C in ppm                | stability vs. temp. range in ppm                          | option   |
|--------|--------------------|------|---|--|---|--|
| Quartz | 0.9216 ~ 250.0 MHz | S    | 30 pF standard<br>12 pF ~ 32 pF<br>S for series | ± 50 ppm ≤ 1.0 MHz<br>± 30 ppm ≥ 1.8 MHz | ± 100 ppm SL-cut<br>± 50 ppm < 3.5 MHz<br>other see table | blank = -20°C ~ +70°C<br>FU = fundamental AT-cut<br>30T = 3rd overtone AT-cut<br>50T = 5th overtone AT-cut<br>T1 = -40°C~+85°C<br>T2 = -40°C~+105°C<br>T3 = -40°C~+125°C<br>T4 = -40°C~+90°C<br>other see option table<br>LF = Pb free contact pins / pads |

Example: Q 28.0-S-30-30/30-FU

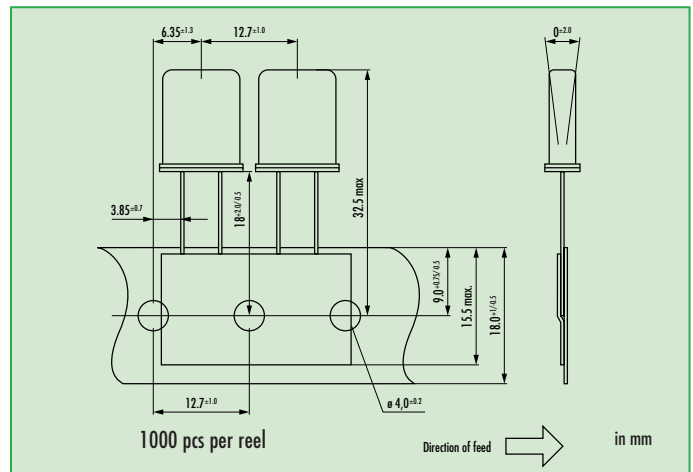


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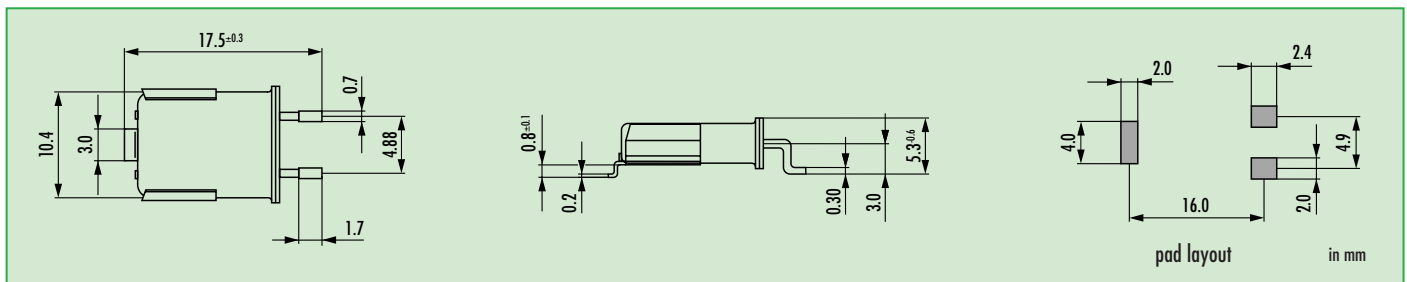
## Dimensions



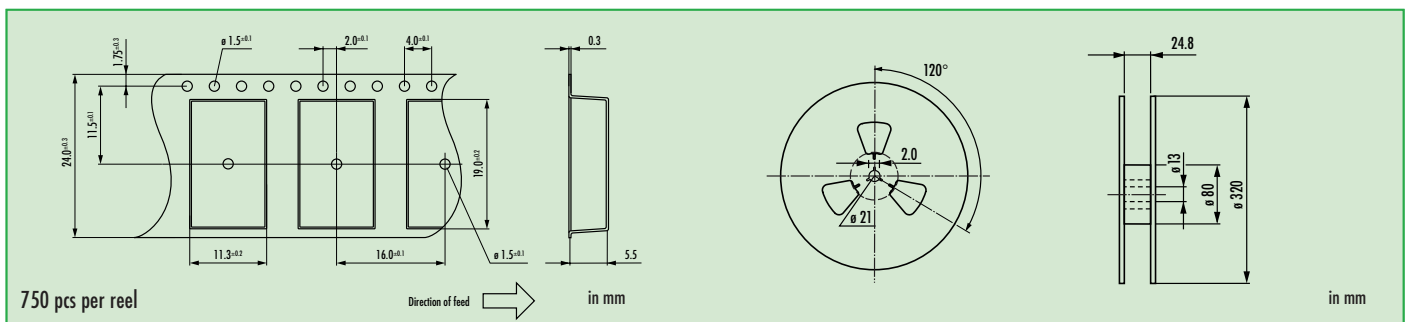
## Taping Specification Through Hole Version



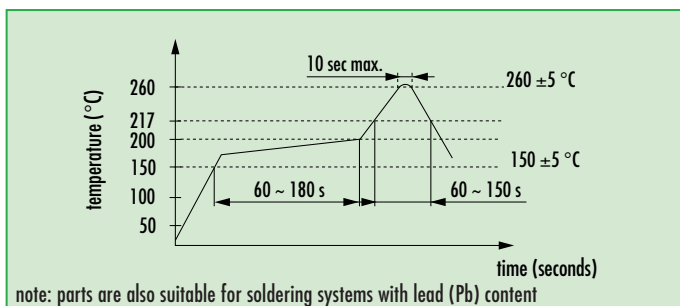
## Dimensions SMD Version



## Taping Specification SMD Version



## Reflow Soldering Profile



## Wave Soldering Profile

