

## Low Profile SMD Type Crystal Units



### FEATURES

- Low cost
- Industry standard
- Wide frequency range
- Excellent aging
- Surface mount
- Compliant to RoHS directive 2002/95/EC


**RoHS**  
COMPLIANT

This part is a miniature AT cut strip crystal unit packaged for surface mounting.

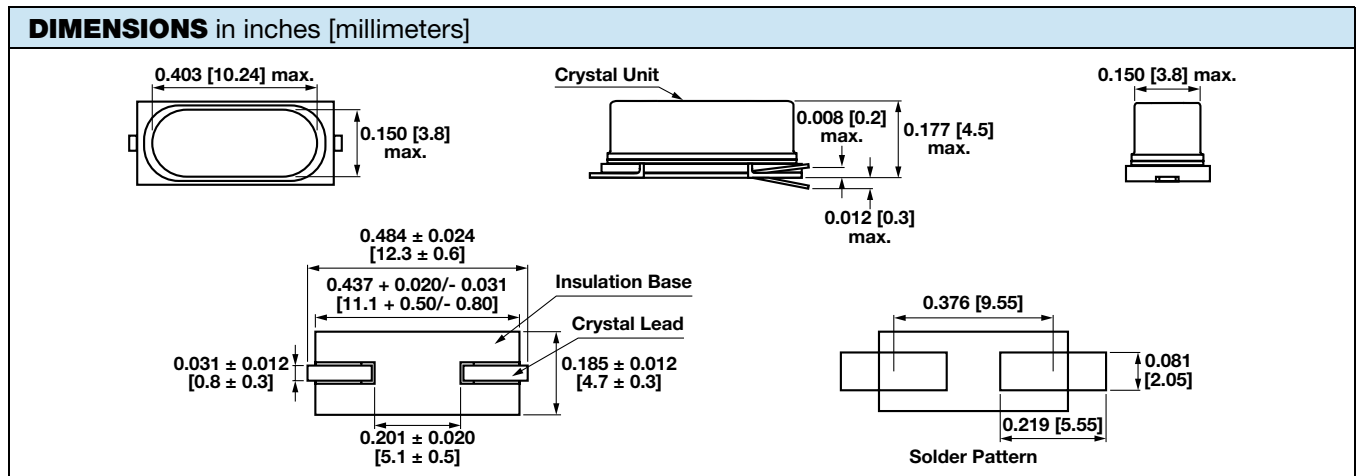
### STANDARD ELECTRICAL SPECIFICATIONS

| PARAMETER                   | SYMBOL         | CONDITION           | UNIT       | MIN.     | TYP. | MAX.   |
|-----------------------------|----------------|---------------------|------------|----------|------|--------|
| Frequency range             | $F_0$          |                     | MHz        | 3.579545 | -    | 66.000 |
| Frequency tolerance         | $\Delta F/F_0$ | at 25 °C            | ppm        | - 30     | -    | + 30   |
| Temperature stability       | $T_C$          | ref. to 25 °C       | ppm        | - 50     | -    | + 50   |
| Operating temperature range | $T_{OPR}$      |                     | °C         | - 10     | -    | + 70   |
| Storage temperature range   | $T_{STG}$      |                     | °C         | - 55     | -    | + 125  |
| Shunt capacitance           | $C_0$          |                     | pF         | -        | -    | 7      |
| Load capacitance            | $C_L$          | customer specified  | pF         | 10       | -    | series |
| Insulation resistance       | $I_R$          | 100 V <sub>DC</sub> | M $\Omega$ | 500      | -    | -      |
| Drive level                 | $D_L$          |                     | $\mu$ W    | -        | 100  | 500    |
| Aging                       | $F_a$          | at 25 °C, per year  | ppm        | - 5      | -    | + 5    |

### EQUIVALENT SERIES RESISTANCE (ESR) AND MODE OF VIBRATION (MODE)

| FREQUENCY RANGE (MHz) | MAX. ESR ( $\Omega$ ) | MODE           | FREQUENCY RANGE (MHz) | MAX. ESR ( $\Omega$ ) | MODE                     |
|-----------------------|-----------------------|----------------|-----------------------|-----------------------|--------------------------|
| 3.579 to 3.999        | 200                   | fundamental/AT | 10.000 to 13.999      | 80                    | fundamental/AT           |
| 4.000 to 4.999        | 150                   | fundamental/AT | 14.000 to 39.999      | 50                    | fundamental/AT           |
| 5.000 to 5.999        | 120                   | fundamental/AT | 40.000 to 66.999      | 80                    | 3 <sup>rd</sup> overtone |
| 6.000 to 9.999        | 100                   | fundamental/AT |                       |                       |                          |

### DIMENSIONS in inches [millimeters]





| ORDERING INFORMATION  |   |   |                             |   |
|-----------------------|---|---|-----------------------------|---|
| <b>XT49M</b><br>MODEL | <b>R</b><br>OTR<br>blank = standard<br>R = - 40 °C to + 85 °C | <b>-20</b><br>LOAD<br>blank = series<br>-20 = 20 pF<br>-30 = 30 pF<br>-32 = 32 pF | <b>20M</b><br>FREQUENCY/MHz | <b>e2</b><br>JEDEC LEAD (Pb)-FREE<br>STANDARD |

| GLOBAL PART NUMBER |      |              |   |   |
|--------------------|------|--------------|---|---|
| X                  | T    | 9            | M |   |
| MODEL              |      |              |   |   |
|                    | 2    | 0            |   |   |
|                    | LOAD |              |   |   |
|                    |      | A            |   |   |
|                    |      | PACKAGE CODE |   |   |
|                    |      | N            | A |   |
|                    |      | OPTION       |   |   |
|                    |      | 2            | 0 | M |
|                    |      | FREQUENCY    |   |   |

| GLOBAL PART NUMBERING                        |   |  |   |   |
|--|---|--|---|---|
| X  | T   | 9  | S |   |
| MODEL NUMBER                                 |   |  |   |   |
| XT9S = XT49S<br>XT9M = XT49M<br>XTU1 = XTUM1 |   |  |   |   |
|  | 2   | 0  |   |   |
|  | LOAD CAPACITANCE  |  |   |   |
|  | 18 = 18 pF<br>20 = 20 pF<br>NL = series<br>to be specified by<br>customer |  |   |   |
|  |   | A  |   |   |
|  |   | PACKAGE CODE   |   |   |
|  |   | <b>Tape and reel</b><br>G = RF5 (XT9S)<br>H = RF7 (XT9M)<br><br><b>Bulk</b><br>A = B04<br>(all models)                             |   |   |
|  |   | N  | A |   |
|  |   | OPTIONS  |   |   |
|  |   | NA = no additional<br>options<br>RR = extended<br>temperature<br>of - 40 °C to + 85 °C<br>Contact factory for<br>all other options |   |   |
|  |   | 4  | 0 | M |
|  |   | FREQUENCY  |   |   |
|  |   | 4M = 4 MHz<br>40M = 40 MHz<br>100M = 100 MHz<br>12M288 = 12.288 MHz<br>M is used as<br>decimal place<br>holder in frequency        |   |   |
| Example: XT49S-20 40M                        |   |  |   |   |
| X  | T   | 3  | 6 |   |
| MODEL NUMBER                                 |   |  |   |   |
| XT46 = XT46C<br>XT36 = XT36C                 |   |  |   |   |
|  | 2   | 0  |   |   |
|  | LOAD CAPACITANCE  |  |   |   |
|  | 18 = 18 pF<br>20 = 20 pF<br>NL = series<br>to be specified by<br>customer |  |   |   |
|  |   | A  |   |   |
|  |   | PACKAGE CODE   |   |   |
|  |   | <b>Tape and reel</b><br>H = RF7<br><br><b>Bulk</b><br>A = B04<br>(all models)  |   |   |
|  |   | 1  | 2 | M |
|  |   | FREQUENCY  |   |   |
|  |   | 4M = 4 MHz<br>40M = 40 MHz<br>100M = 100 MHz<br>12M288 = 12.288 MHz<br>M is used as<br>decimal place<br>holder in frequency        |   |   |
| Example: XT36C-20 12M                        |   |  |   |   |



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