

Low Profile SMD Type Crystal Units



FEATURES

- Low cost
- Industry standard
- Wide frequency range
- Excellent aging
- Surface-mount
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

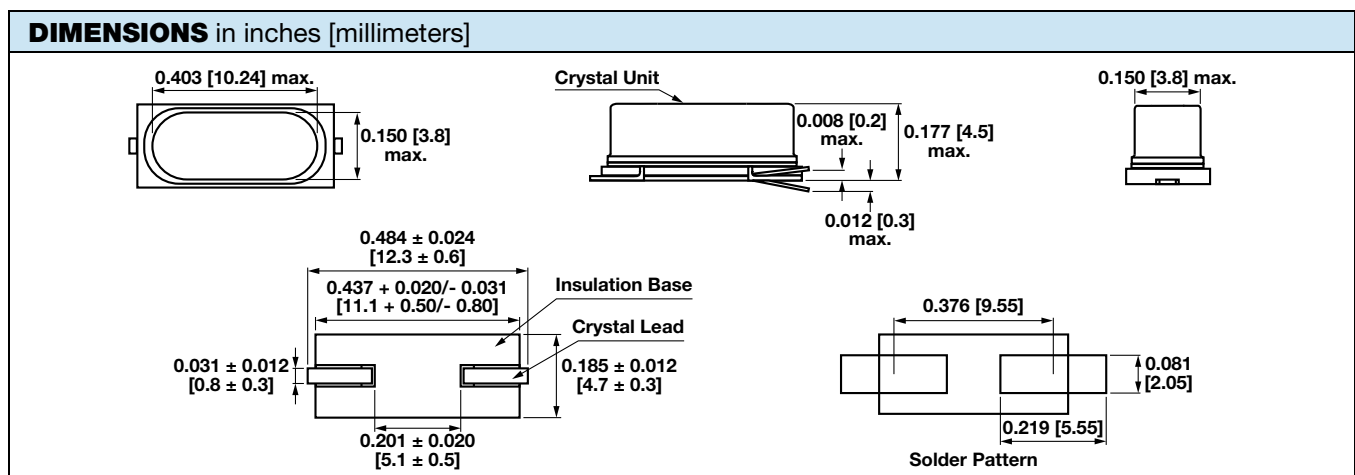

RoHS
COMPLIANT

Note

- Not compatible with vapor phase reflow mounting
- 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 | - | $\pm 10, \pm 15, \pm 20, \pm 25, \pm 30$ | - |
| Temperature stability | T_C | Ref. to 25 °C | ppm | - | $\pm 20, \pm 25, \pm 30, \pm 35, \pm 50, \pm 100$ | - |
| 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 _{DC} | MΩ | 500 | - | - |
| Drive level | D_L | | μW | - | 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 (Ω) | MODE | FREQUENCY RANGE (MHz) | MAX. ESR (Ω) | 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 rd overtone |
| 6.000 to 9.999 | 100 | Fundamental / AT | | | |





PART NUMBER CONFIGURATIONS (to be used on all New Designs)

| | | | | | | | | | | | | | | | | |
|----------|----------|-----------------------------|----------|---|----------|--|--|---|--|---|--|----------|----------|----------|----------|---|
| X | T | 9 | M | 2 | 0 | H | J | R | G | X | 8 | M | 1 | 9 | 2 | E |
| Crystal | | Package / Size 9M | | Load Cap. 20 = std. SE = series | | Pack Code A = bulk H = tape and reel | Freq. Tolerance G = ± 30 ppm E = ± 25 ppm H = ± 20 ppm I = ± 15 ppm J = ± 10 ppm | Operating Temp. S = -10 °C to +70 °C R = -40 °C to +85 °C | Temp. Stability C = ± 100 ppm D = ± 50 ppm F = ± 35 ppm G = ± 30 ppm E = ± 25 ppm H = ± 20 ppm | Options X = no options Contact factory for available options | Frequency Use "M" as decimal place holder Frequency must be five digits - complete with "0" at the end | | | | | Lead (Pb)-free E = lead (Pb)-free |

Previous / legacy part number information: still valid for existing designs;
all New Designs should use the new part configuration above

PREVIOUS / LEGACY GLOBAL PART NUMBERING

| | | | | | | | | | | | | |
|-------------------------------------|----------|----------|----------|--|----------|--|----------|--|----------|---|----------|--|
| X | T | 9 | M | 2 | 0 | A | N | A | 4 | 0 | M | |
| MODEL NUMBER XT9M = XT49M | | | | LOAD CAPACITANCE 18 = 18 pF 20 = 20 pF NL = series to be specified by customer | | PACKAGE CODE Tape and reel H = RF7 (XT9M) Bulk A = B04 (all models) | | OPTIONS NA = no additional options RR = extended temperature of -40 °C to +85 °C Contact factory for all other options | | FREQUENCY 4M = 4 MHz 40M = 40 MHz 100M = 100 MHz 12M288 = 12.288 MHz "M" is used as decimal place holder in frequency | | |
| XT49M MODEL | | | | R OTR blank = standard R = -40 °C to +85 °C | | -20 LOAD blank = series -20 = 20 pF standard -30 = 30 pF -32 = 32 pF | | 12M FREQUENCY/MHz | | e2 JEDEC® LEAD (Pb)-FREE STANDARD | | |



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