

FEATURES

- Low cost crystal for mass market applications
- Surface mount version of HC49-4H crystal
- Comprehensive stockholding of standard frequencies
- Customized parts readily available
- Industry-standard package
- Low-profile versions available

DESCRIPTION

49USMX crystals are low profile surface mount crystals that have the same footprint as standard HC49 or HC49-4H crystals. 49USMD crystals are ideal for use in low cost, mass-market applications but are also able to be produced to close tolerances when required.

SPECIFICATION

| | |
|--------------------------------|--|
| Frequency Range: | 3.2MHz to 70MHz |
| Calibration Tolerance: | ±30ppm at 25°C standard ±10ppm available |
| Frequency Stability over Temp. | |
| AT-Cut: | ±30ppm over -10° ~ +60°* |
| BT-Cut: | ±100ppm over -10° ~ +60°C* |
| Operating Temperature Range: | -10° ~ +60°C to -40° ~ +85°C |
| Shunt Capacitance (C0): | 4pf typical, 7pF maximum |
| Load Capacitance (CL): | Series or from 8pF to 32pF (Customer specified) |
| Ageing: | ±3ppm maximum in first year ±1ppm per year thereafter (Ta = 25°C, drive 100µW) |
| Drive Level: | 100µW typical, 500µW maximum |
| Reflow Soldering: | 260°C, 10s maximum |
| Holder: | Hermetic seal, resistance weld |
| Packaging: | EIA 24mm tape and reel 1000 pieces per reel |
| RoHS Status: | Compliant |

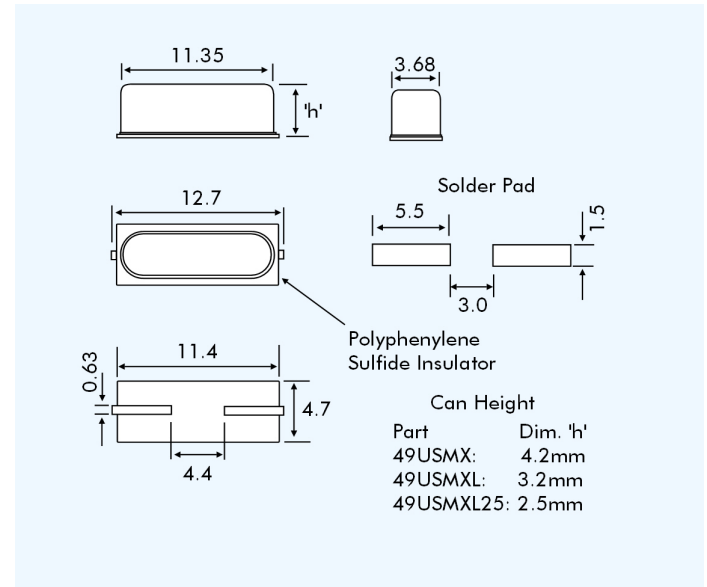
EQUIVALENT SERIES RESISTANCE

| Frequency Range MHz | Crystal Cut/ Mode | ESR Ohms Max. |
|---------------------|-------------------|---------------|
| 3.2~3.4 | AT-Fund. | 300 |
| 3.5~4.0 | AT-Fund. | 150 |
| 4.1~4.9 | AT-Fund. | 120 |
| 5.0~5.9 | AT-Fund. | 100 |
| 6.0~8.9 | AT-Fund. | 80 |
| 9.0~9.9 | AT-Fund. | 60 |
| 10.0~12.9 | AT-Fund. | 50 |
| 13.0~24.0 | AT-Fund. | 45 |
| 24.1~30.0 | AT-Fund. | 40 |
| 24.0~48.0 | BT-Fund. | 40 |
| 27.0~30.0 | AT-3rd OT | 150 |
| 30.0~50.0 | AT-3rd OT | 100 |
| 50.1~70.0 | AT-3rd OT | 80 |

49SMD Standard and Low Profile



OUTLINE & DIMENSIONS



PART NUMBER GENERATION

Example: 12.000MHz 49USMX/30/50/-20+70/18pF/ATF

Nominal Frequency

Package (height variants):
49USMX (4.2mm)
49USMXL (3.2mm)
49USMXL25 (2.5mm)

Calibration tolerance
at 25°C (±ppm)

Temperature Stability
over temp. range (±ppm)

Operating Temp. Range (°C)
(Lower and upper limits)

Load Capacitance
(Either SR for series or CL in pF)

Crystal Mode
ATF = AT-cut Fundamental
BTF = BT-cut Fundamental
AT3 = AT-cut 3rd Overtone