

### 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

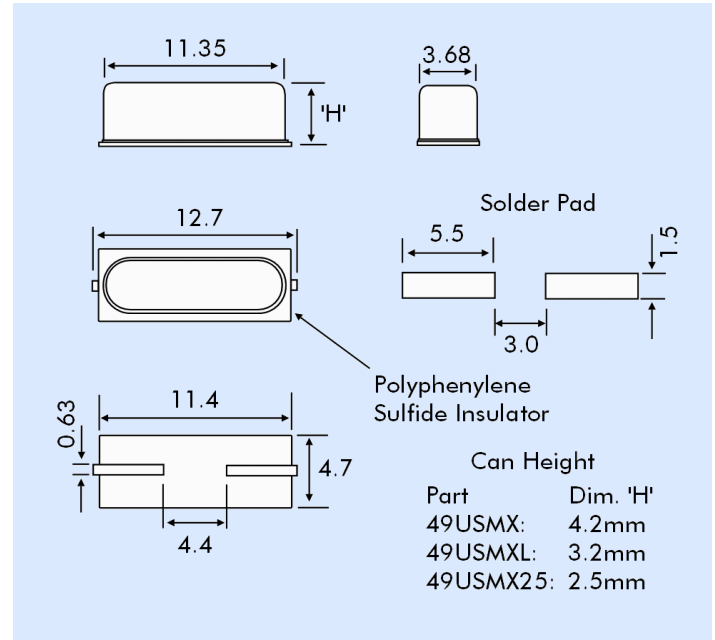
49USMX crystals are low profile surface mount crystals with the same footprint as standard HC49 and HC49-4H crystals. 49USMX crystals are ideal for use in low cost, mass-market applications but are also able to be produced to close tolerances when required.

### SPECIFICATION

|                                |   |
|--------------------------------|---|
| Frequency Range:               | 3.2MHz to 70MHz   |
| Calibration Tolerance:         | ±30ppm at 25°C standard<br>±10ppm available                   |
| Frequency Stability over Temp: | from ±10ppm over -10° ~ +60°<br>from ±15ppm over -40° ~ +85°C |
| Storage Temperature Range:     | -50° ~ +105°C   |
| Shunt Capacitance (C0):        | 4pF typical, 7pF maximum                                      |
| Load Capacitance (CL):         | Series or from 8pF to 32pF<br>(Customer specified)            |
| Ageing:                        | ±3ppm maximum<br>(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<br>1000 pieces per reel                |
| RoHS Status:                   | RoHS Compliant  |



### OUTLINE & DIMENSIONS



### EQUIVALENT SERIES RESISTANCE

| Frequency Range MHz | Crystal Cut/ Mode | ESR Ω Max. |
|---------------------|-------------------|------------|
| 3.2 ~ 3.4           | AT-Fund.          | 300        |
| 3.5 ~ 6.0           | AT-Fund.          | 120        |
| 6.1 ~ 10.0          | AT-Fund.          | 60         |
| 10.1~30.0           | AT-Fund.          | 40         |
| 24.0~48.0           | BT-Fund.          | 40         |
| 27.0 ~ 30.0         | AT-3rd OT         | 150        |
| 30.1 ~ 50.0         | AT-3rd OT         | 100        |
| 50.1 ~ 70.0         | AT-3rd OT         | 80         |

### 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