

## 49SSM SURFACE-MOUNT CRYSTAL

### FEATURES

- SMD package , 2 pad version
- Low cost, short delivery.
- Wide Frequency Range
- Applications: Computers, Modem, Microprocessor Crystal,...

11.4 x 4.7 x 3.2 mm



| Item                         | Symbol | Specification                                                                                                                                                              |
|------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range              | Fo     | 3.2 MHz ~ 70.0 MHz                                                                                                                                                         |
| Operation Mode               |        | 3.2 MHz ~ 48.0 MHz Fundamental / AT-cut (see options)<br>27.0 MHz ~ 70.0 MHz 3rd-overtone / AT-cut (see options)<br>24.0 MHz ~ 54.0 MHz Fundamental / BT-cut (see options) |
| Operating temperature Range  | To     | -20° to +70°C (see options)                                                                                                                                                |
| Frequency Tolerance at 25°C  | Δf/F   | ± 50ppm max. (see options)                                                                                                                                                 |
| Temperature Stability        | Δf/F   | ± 50ppm max. (see options)                                                                                                                                                 |
| Load Capacitance (CL)        | CL     | series or 8 pF to 50 pF (see options)                                                                                                                                      |
| Equivalent Series Resistance | ESR    | See Table 1                                                                                                                                                                |
| Shunt Capacitance (Co)       | Co     | 7pF Max                                                                                                                                                                    |
| Insulation Resistance        | Ri     | 500 MΩ min. (at 100Vdc)                                                                                                                                                    |
| Drive Level                  | DL     | 100μW typical , 500μW max.                                                                                                                                                 |
| Aging                        | Δf/F   | ±5ppm max (at 25°C, first year)                                                                                                                                            |
| Packing Unit                 |        | 1000pcs / reel                                                                                                                                                             |
| Soldering Condition          |        | 260°C, 10 sec x2 max                                                                                                                                                       |
|                              |        | <b>Customer specifications on request</b>                                                                                                                                  |

### TABLE 1: Standard ESR

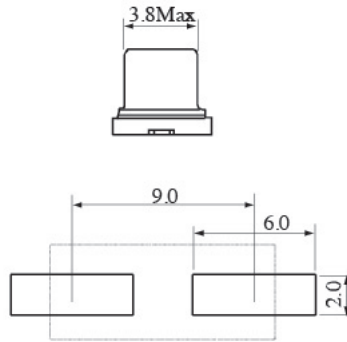
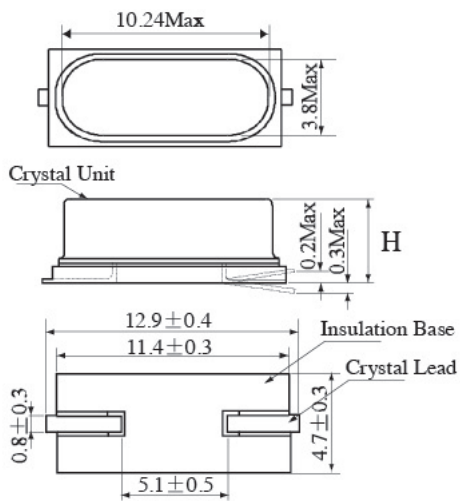
| Frequency (MHz) | ESR (Ω) max. | Frequency (MHz)            | ESR (Ω) max. |
|-----------------|--------------|----------------------------|--------------|
| 3.2 - 4.499     | 150          | 13.0 - 48.0                | 40           |
| 4.5 - 6.9       | 100          | 27.0 - 31.99, 3rd overtone | 100          |
| 7.0 - 9.9       | 80           | 32.0 - 70.0, 3rd overtone  | 80           |
| 10.0 - 12.99    | 50           | 24.0 - 54.0, Fund. BT-cut  | 40           |

### OPTIONS & ORDERING INFORMATION

| 49SSM-.....     |                  |                  |                                         |                    |                       | ..... MHz                           |
|-----------------|------------------|------------------|-----------------------------------------|--------------------|-----------------------|-------------------------------------|
| .....           | .....            | .....            | .....                                   | .....              | .....                 | .....                               |
| Freq. Tolerance | Freq. Stability* | Operating Temp.* | Load Capacitance                        | Mode               | ESR if other than STD | Frequency in MHz                    |
| 10 = ±10 ppm    | 10 = ±10 ppm     | D = -10° / +60°C | Please specify CL in pF or S for Series | F = Fundamental    | Specify a value in Ω  | Please specify the frequency in MHz |
| 15 = ±15 ppm    | 15 = ±15 ppm     | E = 0° / +70°C   |                                         | D = 3rd overtone   |                       |                                     |
| 20 = ±20 ppm    | 20 = ±20 ppm     | F = -20° / +70°C |                                         | FB = Fundamental , |                       |                                     |
| 25 = ±25 ppm    | 25 = ±25 ppm     | G = -30° / +75°C |                                         | BT-cut             |                       |                                     |
| 30 = ±30 ppm    | 30 = ±30 ppm     | H = -30° / +85°C |                                         |                    |                       |                                     |
| 50 = ±50 ppm    | 50 = ±50 ppm     | K = -40° / +85°C |                                         |                    |                       |                                     |

\* Note : Not all combinations are possible, please consult us.

## OUTLINE DIMENSIONS



49SM : H = 4.2mm max.

49SSM : H = 3.2mm max.