

**M49**

[ 12.4 \* 4.5 \* 4.0 mm ]

**ML49**

[ 12.4 \* 4.5 \* 3.0 mm ]

Surface Mount Crystals

Fund.

3rd O.T.

Min.

3.2MHz

Max.

70MHz

**Features**

## Specifications

- High frequency fundamental mode is available in BT-cut
- Withstands solder reflow and is available in EIA-481A tape and ree .l
- AT-strip crystal inside. Optimized for low spurious.
- Lowest cost among all Mercury SMD crystals



RoHS Compliance

**General Specifications**

| Item / Type                   | M49 ( 12.4 * 4.5 * 4.0mm ) , ML49 ( 12.4 * 4.5 * 3.0mm ) series                                                                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range & Crystal Cut | 3.2.000 ~ 48.000 MHz , AT-cut , Fundamental Mode ( see Table 1 )<br>27.000 ~ 70.000 MHz , AT-cut , 3rd overtone ( see Table 1 )<br>24.000 ~ 48.000 MHz , BT-cut , Fundamental Mode ( see Table 1 ) |
| Load Capacitance              | Series or Parallel ( 8 to 32 pF ) resonance                                                                                                                                                        |
| Drive Level                   | 10μ W typica ( 100μ W max. )                                                                                                                                                                       |
| Frequency Tolerance           | ± 5 ppm , ± 10 ppm , ± 20 ppm or ± 30 ppm at 25°C                                                                                                                                                  |
| Frequency Stability           | See Table 2                                                                                                                                                                                        |
| Aging                         | ΔF / F : ±3 ppm / year ( max. )                                                                                                                                                                    |
| Storage Temperature Range     | - 50°C to 105°C                                                                                                                                                                                    |

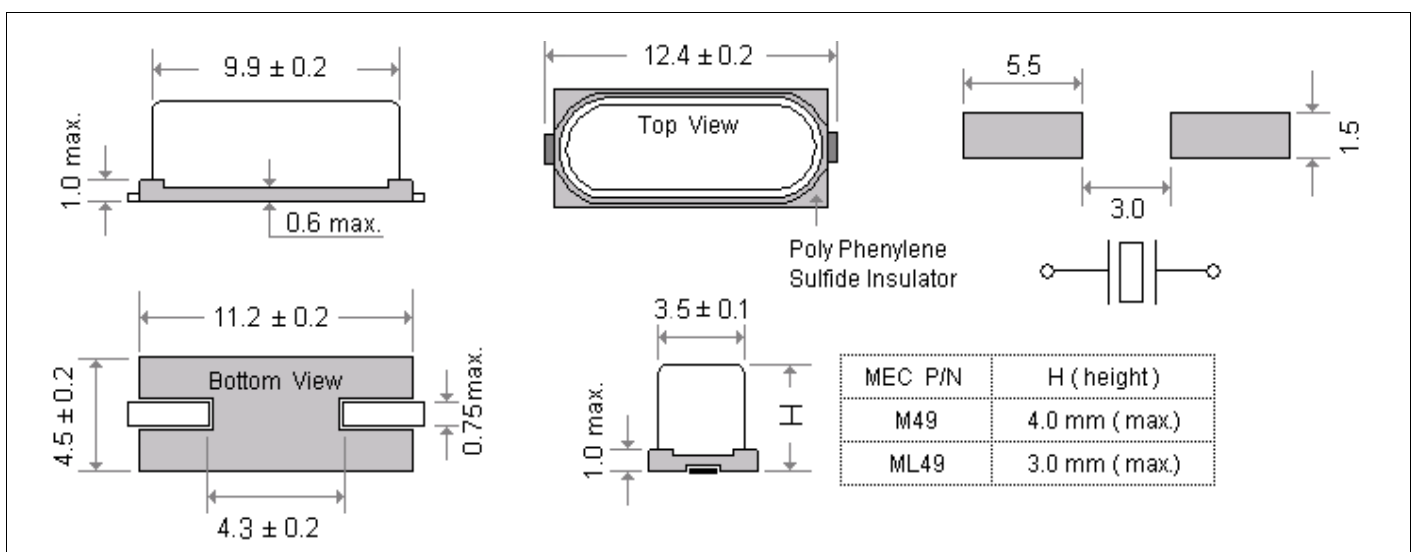
Table 1

| ESR ( Equivalent Series Resistance ) |            |        |             |            |        |
|--------------------------------------|------------|--------|-------------|------------|--------|
| Freq.(MHz)                           | Osc. Mode  | E.S.R. | Freq.(MHz)  | Osc. Mode  | E.S.R. |
| 3.2 ~ 3.4                            | AT , Fund. | 300 Ω  | 24.0 ~ 48.0 | BT , Fund. | 40 Ω   |
| 3.5 ~ 6.0                            | AT , Fund. | 120 Ω  | 27.0 ~ 30.0 | AT , 3rd   | 150 Ω  |
| 6.1 ~ 10.0                           | AT , Fund. | 60 Ω   | 30.1 ~ 50.0 | AT , 3rd   | 100 Ω  |
| 10.1 ~ 30.0                          | AT , Fund. | 40 Ω   | 50.1 ~ 70.0 | AT , 3rd   | 80 Ω   |

Table 2

| Frequency stability Vs Operating temperature range |                  |      |      |      |      |      |
|----------------------------------------------------|------------------|------|------|------|------|------|
| Stability code                                     | Temp. (°C) \ ppm | ± 10 | ± 15 | ± 20 | ± 25 | ± 30 |
| X                                                  | -10 to 60°C      | ○    | ○    | ○    | ○    | ○    |
| Y                                                  | -20 to 70°C      | ▲    | ○    | ○    | ○    | ○    |
| I                                                  | -40 to 85°C      |      | ○    | ○    | ○    | ○    |

○ : available ; ▲ : contact Mercury

**Outline Dimensions ( Unit : mm )**Mercury [www.mercury-crystal.com](http://www.mercury-crystal.com)

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