



Actual Size



#### Product Description

The crystals are miniature AT or BT cut strip resonators housed in low profile packages for surface mounting. The parts utilize a proven, low-cost, metal package technology with a precision molded base and universal contact configuration.

#### Product Features

- 49SNC is interchangeable with common plastic-molded crystal configurations.
- Pb-free and RoHS/Green compliant available.

#### Typical Applications

- Set-Top Box/Multimedia
- Clock/VCXO Multiplier
- Network Adapter Cards
- Modems
- Microcontrollers and Processors
- Remote control devices

#### Frequency Range:

- 3.2 to 29.999 MHz, AT Fundamental
- 30.0 to 54.000 MHz, AT 3rd OT
- 26.8 to 54.000 MHz, BT Fundamental

#### Characteristics at 25°C ±2°C:

- Frequency Calibration Tolerance (as specified): ±30ppm, ±50ppm
- Load Capacitance (as specified): 12 to 32pF or Series Resonance
- Effective Series Resistance:
  - 200Ω max (3.2 to 3.499MHz)
  - 180Ω max (3.5 to 3.999MHz)
  - 150Ω max (4 to 4.999MHz)
  - 120Ω max (5 to 5.999MHz)
  - 100Ω max (6 to 6.999MHz)
  - 80Ω max (7 to 8.999MHz)
  - 60Ω max (9 to 12.999MHz)
  - 40Ω max (13 to 19.999MHz)
  - 30Ω max (20 to 29.999MHz, AT Fund)
  - 80Ω max (30 to 54MHz, AT (3rd overtone)
  - 30Ω max (26.8 to 54MHz, BT Fund)

- Drive Level: 100μW correlation, (500μW Max)
- Shunt Capacitance: 7pF Max.

#### Temperature Range:

- Operating: -20 to +70°C ; -40 to +85°C (as specified)
- Storage: -55 to +125°C

#### Temperature Stability (as specified):

- ±30ppm (-20 to +70°C) AT Cut
- ±50 or ±100ppm (-40 to +85°C) AT Cut
- 0 to -100ppm (-20 to +70°C) BT Cut

#### Aging @ 25°C, first year:

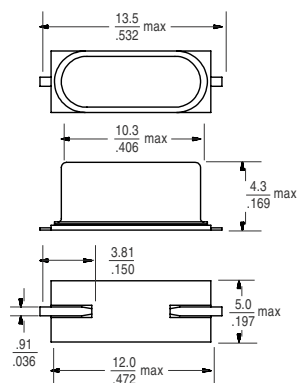
- ±3ppm (typ), ±5ppm (max)

#### Reflow Temperature:

- 240°C Max (non-RoHS package)
- 260°C Max, 10 sec max (RoHS package)

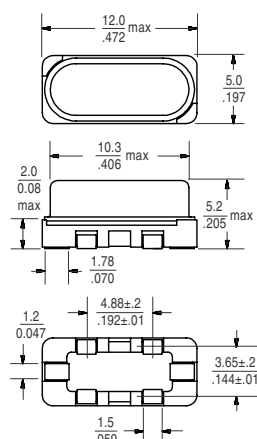
## Packaging Information: HC-49

49SMLB package

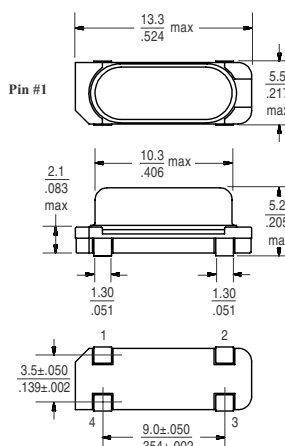


Scale: None (Dimensions in mm / inches)

49SAB/SUB package



49SNC package

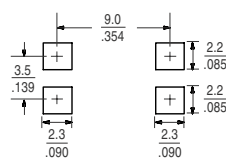
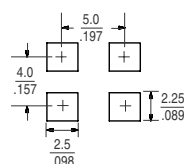
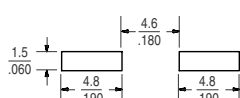


## Package Marking Information

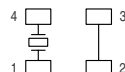
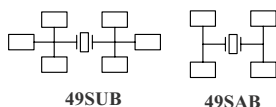
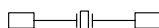
Line 1: S = SaRonix  
xxx = Calib/Stability/Temp Code  
YYWWX = Date Code  
Line 2: Frequency (up to 7 digits, including decimal point)  
Z = - (dash) for AT-cut parallel resonant  
= blank for AT-cut series resonant  
= B for BT-cut  
xx = Load Capacitance (leave Blank if Series)

SxxxYYWWX  
24.5760zxx

## Land Pattern



## Pad Connection Configurations



## Ordering Information

49SMLB 03.6864 = 18 GGC -E (X)

Type / Package \_\_\_\_\_  
49SMLB = 2 contact, 4mm high  
49SAB = 4 contact, 5 mm high  
49SNC = 4 contact, 5mm high  
49SUB = 6 contact, 5mm high

Frequency \_\_\_\_\_  
Frequency (in MHz) = 0x.xxxx, xx.xxxx  
(a zero is used in front of frequencies under 10 MHz)

Cut Type \_\_\_\_\_  
- (dash) = AT-cut Parallel Resonance  
Blank = AT-cut Series Resonance  
B = BT-Cut

Load Capacitance \_\_\_\_\_  
xx = Parallel Resonance (specify load)  
Blank = Series Resonance

Options  
(T) = Tape and Reel (full increments only) 1000 pieces  
(Q) = Manufactured in a TS16949 or QS9000 registered facility  
Blank = Bulk

-E (dash E) = Lead (Pb)-free RoHS Compliant Version  
Blank = non-RoHS (not available for new designs)

Calibration / Stability / Temp Range  
GGC = ±30ppm / ±30ppm / -20 to +70°C (ATCut)  
GHE = ±30ppm / ±50ppm / -40 to +85°C (ATCut)  
HJE = ±50ppm / ±100ppm / -40 to +85°C (ATCut)  
Blank = ±50ppm/0 to -100ppm/-20 to +70°C (BTCut)  
\*others available

Part Number Examples: Freq 5.1234MHz, ±30ppm calib, ±30ppm stability, -20 to +70°C, 16pF  
= 49SMLB05.1234-16GGC  
= 49SMLB05.1234-16GGC-E (for Pb-Free/RoHS Compliant)

**Mechanical:**

- Shock: JESD22-B104 Condition B
- Solderability: MIL-STD-883, Method 2003 (non-RoHS package)
- Solderability: J-STD-002( RoHS package )
- Terminal Strength: MIL-STD-883 Method 2004
- Vibration: JESD22-B103
- Solvent Resistance: JESD22-B107
- Resistance to Soldering Heat: MIL-STD-202, Method 210, Condition I or J (Non-RoHS package)
- Resistance to Soldering Heat: J-STD-020C Table 5-2 Pb-free devices (3 cycles max) (RoHS package)

**Environmental:**

- Gross Test Leak: JESD22-A109, Condition C
- Fine Test Leak: JESD22-A109, Condition A1
- Moisture Resistance: JESD22-A113
- Insulation Resistance: 500 M $\Omega$  min (100 VDC)