

# Quartz Crystal Ceramic SMD

**GC GF**


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

- Pb-free and RoHS/Green compliant.
- Low profile 4.0mm height GC
- Low profile 3.0mm height GF

## 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:

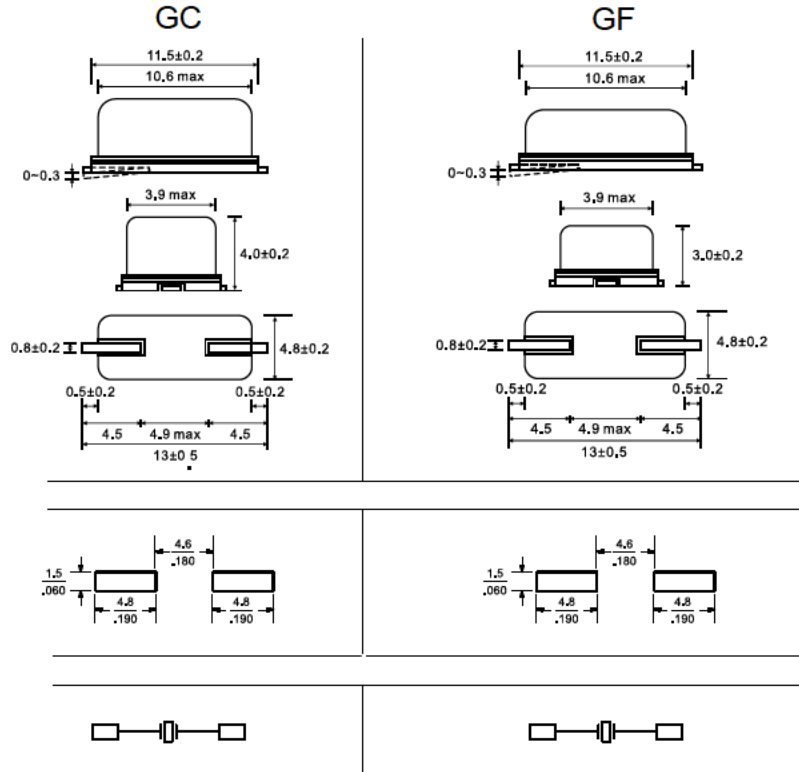
- ±3ppm (typ), ±5ppm (max)

## Reflow Temperature:

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

#### Mechanical Drawings: HC-49

##### Package Details



|           |            |             |                        |
|-----------|------------|-------------|------------------------|
| <b>GC</b> | <b>036</b> | <b>0001</b> | A = Product Family     |
| <b>A</b>  | <b>B</b>   | <b>C</b>    | B = Frequency Code     |
|           |            |             | C = Specification Code |

|           |            |             |                        |
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| <b>GF</b> | <b>036</b> | <b>0001</b> | A = Product Family     |
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|           |            |             | C = Specification Code |

Note: After July 1, 2007, a Saronix - eCera part number following the above format will be assigned upon confirmation of exact customer requirements.

#### Legacy Ordering Information

|                                                               |        |         |    |     |    |     |
|---------------------------------------------------------------|--------|---------|----|-----|----|-----|
| Type / Package                                                | 49SMLB | 03.6864 | 18 | GGC | -E | (X) |
| 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 MΩ min (100 VDC)