



2 Lead Metal Package Quartz Crystal, 4.7 mm x 11 mm

HC49US Series

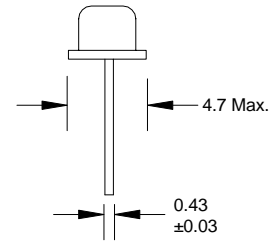
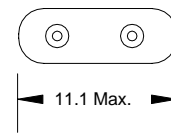
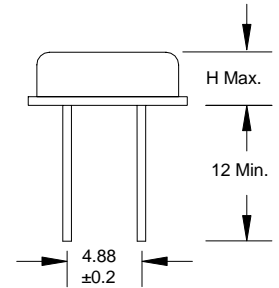
Product Features:

- Low Cost Package
- RoHS Compliant
- Compatible with Leadfree Processing

Applications:

- Fibre Channel
- Server & Storage
- Sonet /SDH
- 802.11 / Wifi
- T1/E1, T3/E3

| | |
|---|--|
| Frequency | 3.2 MHz to 100.000 MHz |
| ESR (Equivalent Series Resistance) | |
| 3.2 MHz – 3.49 MHz | 300 Ω Max. |
| 3.5 MHz – 3.99 MHz | 200 Ω Max. |
| 4.0 MHz – 4.99 MHz | 150 Ω Max. |
| 5.0 MHz – 5.99 MHz | 120 Ω Max. |
| 6.0 MHz – 6.99 MHz | 100 Ω Max. |
| 7.0 MHz – 8.9 MHz | 80 Ω Max. |
| 9.0 MHz – 12.9 MHz | 60 Ω Max. |
| 13 MHz – 19.9 MHz | 40 Ω Max. |
| 20 MHz – 36 MHz | 30 Ω Max. |
| 27 MHz – 100 MHz (3 rd O.T.) | 100 Ω Max. |
| Shunt Capacitance (C0) | 7 pF Max. |
| Frequency Tolerance @ 25° C | \pm 30 ppm Standard (see Part Number Guide for more options) |
| Frequency Stability over Temperature | \pm 50 ppm Standard (see Part Number Guide for more options) |
| Crystal Cut | AT Cut Standard |
| Load Capacitance | 18 pF Standard (see Part Number Guide for more options) |
| Drive Level | 1 mW Max. |
| Aging | \pm 5 ppm Max. / Year Standard |
| Temperature | |
| Operating | 0° C to +70° C Standard (see Part Number Guide for more options) |
| Storage | -40° C to +85° C Standard |



HC49US, H Max. = 3.5
 HC49US2, H Max. = 2.5
 HC49US3, H Max. = 2.0

Dimension Units: mm

| Part Number Guide | | Sample Part Number: HC49US - FB1F18 - 20.000 | | | | |
|---|-------------------------------------|--|-----------------------------|------------------------------|---------------------------|--------------|
| Package | Tolerance (ppm) at Room Temperature | Stability (ppm) over Operating Temperature | Operating Temperature Range | Mode (overtone) | Load Capacitance (pF) | Frequency |
| HC49US - (3.5 mm H) HC49US2 - (2.5 mm H) HC49US3 - (2.0 mm H) | B = \pm 50 ppm | B = \pm 50 ppm | 0 = 0°C to +50°C | F = Fundamental | 18 pF Standard Or Specify | - 20.000 MHz |
| | F = \pm 30 ppm | F = \pm 30 ppm | 1 = 0°C to +70°C | 3 = 3 rd overtone | | |
| | G = \pm 25 ppm | G = \pm 25 ppm | 2 = -10°C to +60°C | | | |
| | H = \pm 20 ppm | H = \pm 20 ppm | 3 = -20°C to +70°C | | | |
| | I = \pm 15 ppm | I = \pm 15 ppm** | 5 = -40°C to +85°C | | | |
| | J = \pm 10 ppm* | J = \pm 10 ppm** | 9 = -10°C to +50°C | | | |

* Not available at all frequencies. ** Not available for all temperature ranges.



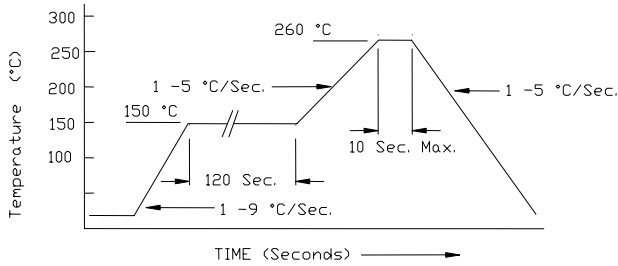
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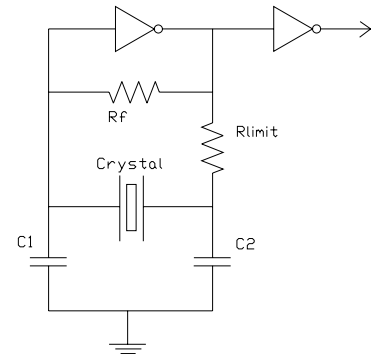
HC49US Series

Pb Free Solder Reflow Profile:

Typical Circuit:



*Units are backward compatible with 240C reflow processes



Package Information:

MSL = 1
Termination = e1 (Sn / Cu / Ag over Ni over Kovar base metal).

Environmental Specifications

| | |
|------------------------------|---|
| Thermal Shock | MIL-STD-883, Method 1011, Condition A |
| Moisture Resistance | MIL-STD-883, Method 1004 |
| Mechanical Shock | MIL-STD-883, Method 2002, Condition B |
| Mechanical Vibration | MIL-STD-883, Method 2007, Condition A |
| Resistance to Soldering Heat | J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max) |
| Hazardous Substance | Pb-Free / RoHS / Green Compliant |
| Solderability | JESD22-B102-D Method 2 (Preconditioning E) |
| Terminal Strength | MIL-STD-883, Method 2004, Test Condition D |
| Gross Leak | MIL-STD-883, Method 1014, Condition C |
| Fine Leak | MIL-STD-883, Method 1014, Condition A2, R1=2x10-8 atm cc/s |
| Solvent Resistance | MIL-STD-202, Method 215 |

Marking

Line 1 ILSI, Frequency, Date Code (yww)