

| | | | | |
|----------------------------------|-----|-----------|------|------|
| RoHS Compliant Pb - Lead Free | Ltr | Revisions | Date | Appr |
| | | | | |
| | | | | |
| | | | | |

Electrical Specifications:

| | | | |
|--|----------------|--------------------------------|--------------|
| Frequency Range | | 3.200 to 70.000 | MHz |
| Mode of Oscillation | Fundamental | 3.200 to 32.768 | MHZ |
| | Third Overtone | 24.576 to 70.000 | |
| Frequency Tolerance at 25°C | Standard | ±30 | PPM Max |
| | Optional | ±25 | |
| | | ±20 | |
| | | ±15 | |
| | | ±10 | |
| Frequency Stability over Temperature Range | Standard | ±50 | PPM Max |
| | Optional | ±30 | |
| | | ±25 | |
| | | ±20 | |
| | | ±15 | |
| Operating Temperature Range | Standard | -20 to +70 | ° C |
| | Extended | -40 to +85 | |
| Storage Temperature Range | | -55 to +125 | |
| Aging | | ±5 first year ±3 thereafter | PPM Max/Year |
| Load Capacitance | | 10 to 32 and Series Resonance | pF |
| Shunt Capacitance | | 7.0 | pF Max |
| Equivalent Series Resistance (ESR) | | See ESR Table | Ohms |
| Drive Level | | 1.0 | mW Max |
| Insulation Resistance | | 500 at 100 Vdc ± 15 Vdc | M Ohm |

Frequency Range vs. ESR Values:

| Frequency Range in MHz | ESR Ohms Max | Mode of Operation |
|------------------------|--------------|----------------------------|
| 3.200 to 3.500 | 300 | Fundamental |
| 3.510 to 3.999 | 200 | Fundamental |
| 4.000 to 5.999 | 120 | Fundamental |
| 6.000 to 7.999 | 80 | Fundamental |
| 8.000 to 9.999 | 60 | Fundamental |
| 10.000 to 15.999 | 50 | Fundamental |
| 16.000 to 32.768 | 40 | Fundamental |
| 24.576 to 70.000 | 80 | Fundamental-Third Overtone |



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All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

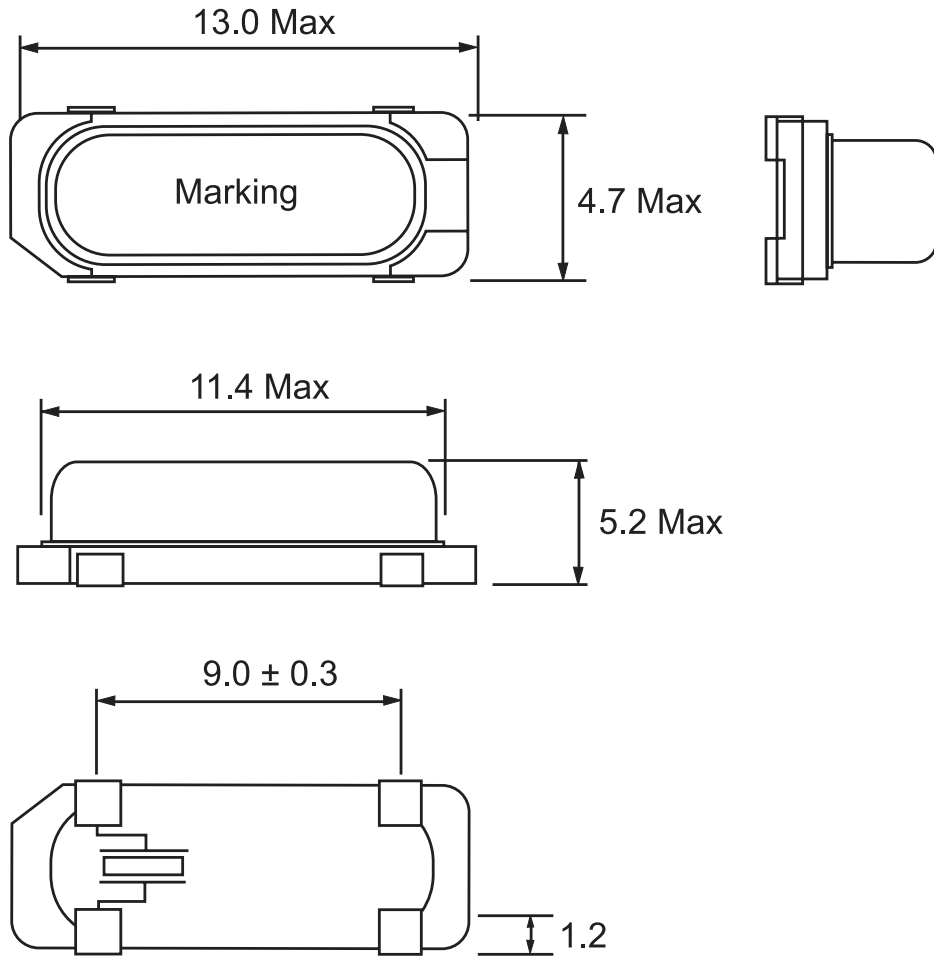
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Specification Title:

**Quartz Crystal
Surface Mount
HC-49/U-S SMD 4 Pad Package
General Product Specification**

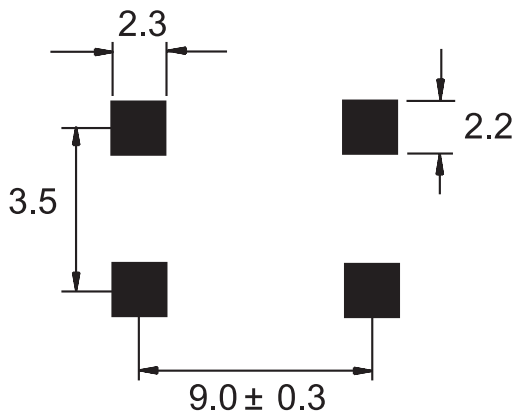
Part Number: **CA4 Series**

Mechanical Outline:

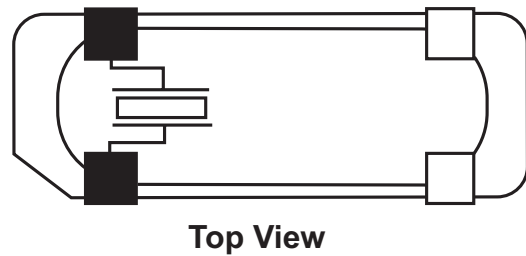


Dimensions are millimeters.

PCB Solder Pad Layout:



Pad Connection:



How to build a Part Number:

| | | | |
|----------------------------|-----------------|------------------------|----------------------------|
| Series | | C | Parameter |
| Package | | A4 | HC-49/U-S SMD 4 Pad |
| | | - | |
| Frequency | | 3.200 to 70.000 | MHz |
| | | - | |
| Load Capacitance | | 10 | 10 pF |
| | | 12 | 12 pF |
| | | 16 | 16 pF |
| | | 18 | 18 pF |
| | | 20 | 20 pF |
| | | 32 | 32 pF |
| | | S | Series |
| | | - | |
| Frequency Tolerance | Standard | 30 | ±30 PPM |
| | Option | 25 | ±25 PPM |
| | | 20 | ±20 PPM |
| | | 15 | ± 15 PPM |
| | | 10 | ±10 PPM |
| Frequency Stability | Standard | 50 | ±50 PPM |
| | Option | 30 | ±30 PPM |
| | | 25 | ±25 PPM |
| | | 20 | ±20 PPM |
| | | 15 | ±15 PPM |
| | | 10 | ±10 PPM |
| | | - | |
| Mode of Oscillation | | See Notes | Fundamental |
| | | 3 | Third Overtone |
| | | - | |
| Temperature Range | Standard | See Notes | -20 to +70 °C |
| | Option | X | -40 to +85 °C |
| | | - | |
| Packaging | | See Notes | Bulk |
| | | R | Tape and Reel |

Part Number Example:

CA4-24.000-18-3050-R

CA4: HC-49/U-S SMD 4 Pad Package

24.000 MHz Nominal Frequency

18 pF Load Capacitance

3050: ±30 PPM Tolerance and ±50 PPM Stability

Fundamental Mode

-20 to +70°C Temperature Range

R: Tape and Reel Packaging

Notes:

1- Standard Temperature Range and Fundamental Mode do not need to be included in Part Number description.

2- Product is shipped in Tape and Reel configuration. Each reel contains 1000 pieces.

4- Quantities less than 1000 are shipped bulk. 100 pieces in ESD bags.

5- Specification subject to change without notice.

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Date: July 27, 2006

P/N:

CA4 Series