

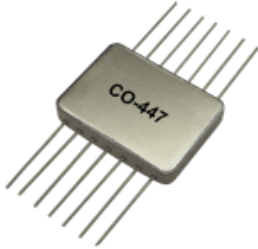


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## CO-447 HCMOS, AC MOS and FCT Clock Oscillators



### Features:

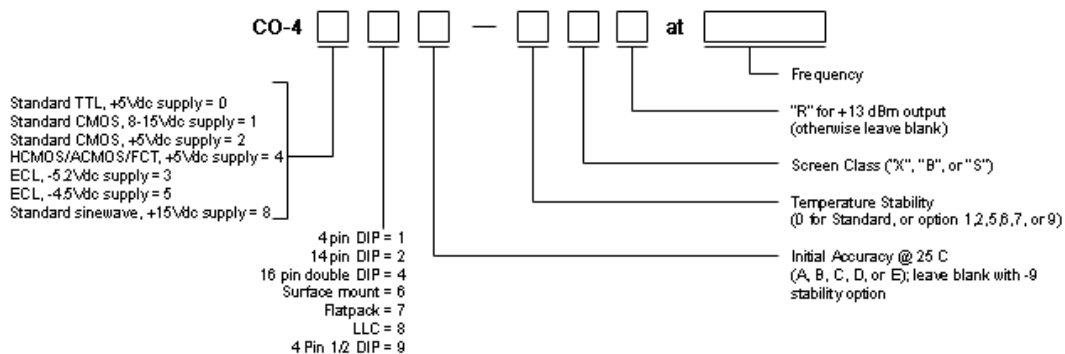
- 1 Hz to 175 MHz Frequency Range
- Low Profile 14 Pin Flatpack
- HCMOS/ACMOS/FCT/ACT Compatible
- Tri-state Output Available
- Available with 3.3 Vdc input below 20 MHz

| SPECIFICATIONS   |  |                  |               |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
|--|--|------------------|---------------|-----------|--------------|-----------|-------|-----------|--------------|-----------|-------|------------|--------------|-----------|-----|-----------|-------------|-----------|-----|-----------|--------------|-----------|-------|------------|---------------|------------|-------|------------|---------------|
| Series   | CO-447: Flatpack   |                  |               |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Frequency  | 1 Hz-175 MHz   |                  |               |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Supply   | 5 Vdc $\pm$ 5%<br>(Available with 3.3 Vdc input below 20 Mhz)  |                  |               |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Accuracy<br>(Maximum Error at 25°C)  | CO-447A $\pm$ 50 ppm<br>CO-447C $\pm$ 25 ppm<br>CO-447D $\pm$ 15 ppm<br>CO-447B $\pm$ 10 ppm<br>CO-447E $\pm$ 1 ppm*<br><small>*Settability via external capacitor: (&lt;60 MHz only: except 449E <math>\leq</math>20 MHz)</small>   |                  |               |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Temperature Stability<br><br><small>Improved accuracy/stability available on some models. For example, for <math>\pm</math>7 ppm over 0°C to +50°C and for <math>\pm</math>10ppm over 0°C to +70°C. Improvement is also available over wider temperature ranges. Please contact factory.</small> | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>STANDARD:</b></td> <td style="width: 15%;">0°C</td> <td style="width: 15%;">to +70°C:</td> <td style="width: 55%;"><math>\pm</math>25 ppm</td> </tr> <tr> <td>Option 1:</td> <td>-55°C</td> <td>to +85°C:</td> <td><math>\pm</math>50 ppm</td> </tr> <tr> <td>Option 2:</td> <td>-55°C</td> <td>to +125°C:</td> <td><math>\pm</math>50 ppm</td> </tr> <tr> <td>Option 5:</td> <td>0°C</td> <td>to +50°C:</td> <td><math>\pm</math>5 ppm</td> </tr> <tr> <td>Option 6:</td> <td>0°C</td> <td>to +50°C:</td> <td><math>\pm</math>10 ppm</td> </tr> <tr> <td>Option 7:</td> <td>-55°C</td> <td>to +125°C:</td> <td><math>\pm</math>100 ppm</td> </tr> <tr> <td>*Option 9:</td> <td>-55°C</td> <td>to +200°C:</td> <td><math>\pm</math>300 ppm</td> </tr> </table> <p>(Option 9: N/A in CO-448 or above 20 MHz in CO-440 Series)<br/>*Specified stability includes initial accuracy:<br/>do not specify A,B,C,D or E accuracy.</p> | <b>STANDARD:</b> | 0°C           | to +70°C: | $\pm$ 25 ppm | Option 1: | -55°C | to +85°C: | $\pm$ 50 ppm | Option 2: | -55°C | to +125°C: | $\pm$ 50 ppm | Option 5: | 0°C | to +50°C: | $\pm$ 5 ppm | Option 6: | 0°C | to +50°C: | $\pm$ 10 ppm | Option 7: | -55°C | to +125°C: | $\pm$ 100 ppm | *Option 9: | -55°C | to +200°C: | $\pm$ 300 ppm |
| <b>STANDARD:</b>   | 0°C  | to +70°C:        | $\pm$ 25 ppm  |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Option 1:  | -55°C  | to +85°C:        | $\pm$ 50 ppm  |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Option 2:  | -55°C  | to +125°C:       | $\pm$ 50 ppm  |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Option 5:  | 0°C  | to +50°C:        | $\pm$ 5 ppm   |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Option 6:  | 0°C  | to +50°C:        | $\pm$ 10 ppm  |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Option 7:  | -55°C  | to +125°C:       | $\pm$ 100 ppm |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| *Option 9:   | -55°C  | to +200°C:       | $\pm$ 300 ppm |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |
| Aging Rate<br>(typical after 30 days)  | 3 ppm first year<br>2 ppm/year thereafter  |                  |               |           |              |           |       |           |              |           |       |            |              |           |     |           |             |           |     |           |              |           |       |            |               |            |       |            |               |

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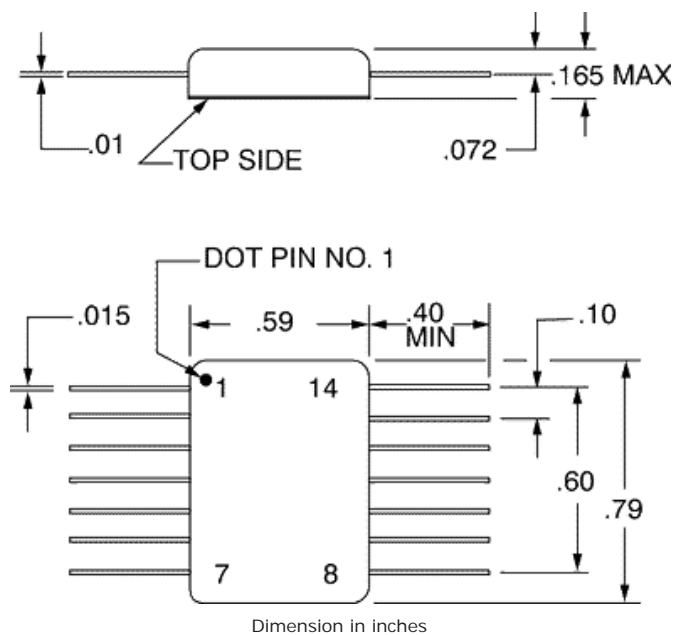
### How to Order Hybrid XO's - CO-400 Series

(Note: Not all combinations possible. See above for appropriate options.)



| SCREEN TESTING OF ABOVE MODELS              |                    |          |         |         |   |
|---|--------------------|----------|---------|---------|---|
| SCREEN TEST                                 | MIL-STD-883 METHOD | Standard |         | Options |   |
|   |                    | CLASS X  | CLASS D | CLASS B | CLASS S   |
| Stabilization Bake (150°C)                  | —                  | X        | X       | X       | Class S screen test requirements include 24 hour additional bake-out, 80 hour additional burn-in, thermal shock, PIND test and radiographic inspection in addition to Class B Screening. Has major cost impact. |
| Seal Test (Gross and Fine)                  | 1014, Cond A2      | X        | X       | X       |   |
| Temperature Cycling (Thermal Shock)         | 1010, Cond B       |          | X       | X       |   |
| Burn-in, operating 160 hours @125°C         | —                  |          | X       | X       |   |
| Acceleration (5000g in Y <sub>1</sub> axis) | 2001, Cond A       |          |         | X       |   |

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**Pinouts**

| Pin   | Function      |
|-------|---------------|
| 1     | *N/C          |
| 7     | OV, case, gnd |
| 8     | Output        |
| 14    | Supply +      |
| Other | N/C           |

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