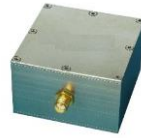


# OCO-M50VS12

Low Phase Noise under vibration



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## Features

- Low G-sensitivity : < 0.002ppb/g
- Frequency up to 130 MHz

| Parameter   | Specification                           |                         |   |           |                              |           |                              |
|---|---|-------------------------|---|-----------|------------------------------|-----------|------------------------------|
|   | OCO-M50VS12                             |                         |   |           |                              |           |                              |
| Frequency Range   | 50 MHz to 130 MHz                       |                         |   |           |                              |           |                              |
| Standard Frequencies                                      | 100.000MHz & 120.000 MHz                |                         |   |           |                              |           |                              |
| Operating Temperature Range                               | Code                                    | °C                      | <b>EH</b>   | <b>GH</b> | <b>JK</b>                    | <b>NN</b> | <b>Z</b>                     |
|   |   |                         | 0 / +60   | -10 / +60 | -20 / +70                    | -40 / +85 |                              |
| <b>Frequency Stability</b>                                |   |                         |   |           |                              |           |                              |
| vs Operating Temperature Range                            | Code                                    | Note 2                  | <b>u30</b>  |           | <b>u20</b>                   |           | <b>u10</b>                   |
|   |   |                         | $\leq \pm 30 \times 10^{-8}$  |           | $\leq \pm 20 \times 10^{-8}$ |           | $\leq \pm 10 \times 10^{-8}$ |
| vs. Supply Voltage change (Vdc $\pm 5\%$ )                |   |                         | $\leq \pm 1 \times 10^{-8}$   |           |                              |           |                              |
| vs. Load change ( $\pm 10\%$ )                            |   |                         | $\leq \pm 1 \times 10^{-8}$   |           |                              |           |                              |
| vs. Aging after 30 days of operation /day                 |   |                         | $\leq \pm 2 \times 10^{-9}$   |           |                              |           |                              |
| vs. Aging after 30 days of operation 1 <sup>st</sup> year |   |                         | $\leq \pm 1 \times 10^{-7}$   |           |                              |           |                              |
| Output waveform   | Sine wave                               |                         |   |           |                              |           |                              |
| Output level  | > 7 dBm                                 |                         |   |           |                              |           |                              |
| Output load   | 50 $\Omega$ $\pm 5\%$                   |                         |   |           |                              |           |                              |
| Harmonics   | < - 30 dBc                              |                         |   |           |                              |           |                              |
| Sub-harmonics   | < - 90 dBc                              |                         |   |           |                              |           |                              |
| <b>Supply Voltage [ Vdc ]</b>                             | <b>+12.0 V <math>\pm 5\%</math></b>     |                         |   |           |                              |           |                              |
| Warm-current @ +25 °C still air                           | < 500 mA                                |                         |   |           |                              |           |                              |
| Steady-state current @ +25 °C still air                   | < 300 mA                                |                         |   |           |                              |           |                              |
| Warm-up time @ +25 °C still air                           | < 5 min      < $\pm 0.1 \times 10^{-6}$ |                         |   |           |                              |           |                              |
| <b>Electronic Frequency Control [ EFC ] range</b>         | > $\pm 1 \times 10^{-6}$ positive slope |                         |   |           |                              |           |                              |
| Voltage Control [ Vc ]                                    | 1 ~ +9.0 V                              |                         |   |           |                              |           |                              |
| <b>Phase Noise @ 100MHz [ dBc/Hz ]</b>                    | <b>Frequency</b>                        | <b>Static Condition</b> | <b>Under Random Vibrations<br/>0.02g<sup>2</sup>/Hz 20 ~2000 Hz</b> |           |                              |           |                              |
|   | 10 Hz                                   | < -100                  | See page 2  |           |                              |           |                              |
|   | 100 Hz                                  | < -135                  |   |           |                              |           |                              |
|   | 1 kHz                                   | < -160                  |   |           |                              |           |                              |
|   | 10 kHz                                  | < -172                  |   |           |                              |           |                              |
|   | 100 kHz                                 | < -175                  |   |           |                              |           |                              |
| Storage temperature range                                 | -55 ~ +85 °C                            |                         |   |           |                              |           |                              |

Note 1: unless otherwise specified conditions are @ 25°C still air

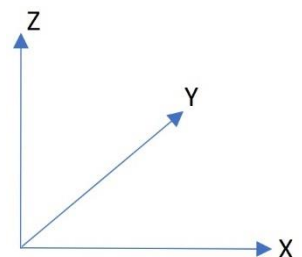
Note 2: all combination not possible (consult factory)

## Ordering Guide:

### OCO-M50VS12-NNu20-H 100MHz

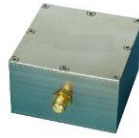
Vdc    OTR    Package

G-sensitivity



# OCO-M50VS12

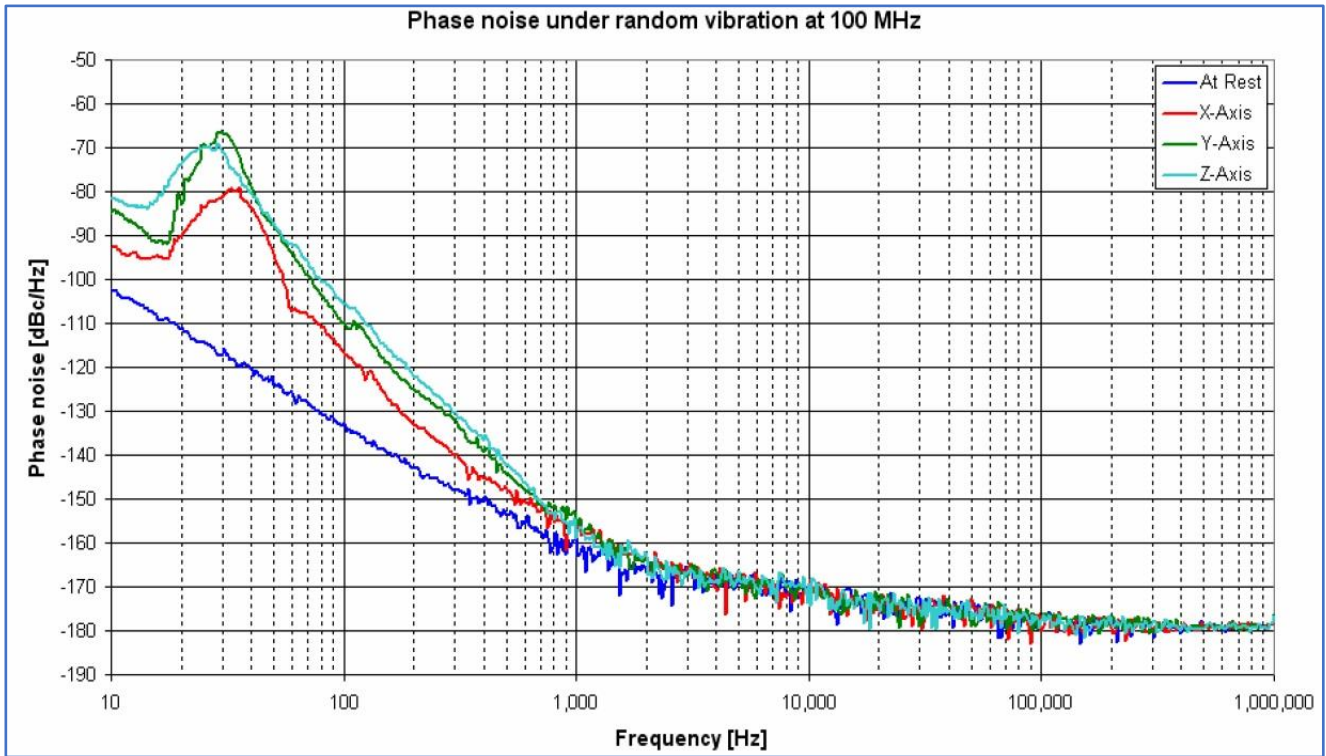
Low Phase Noise under vibration



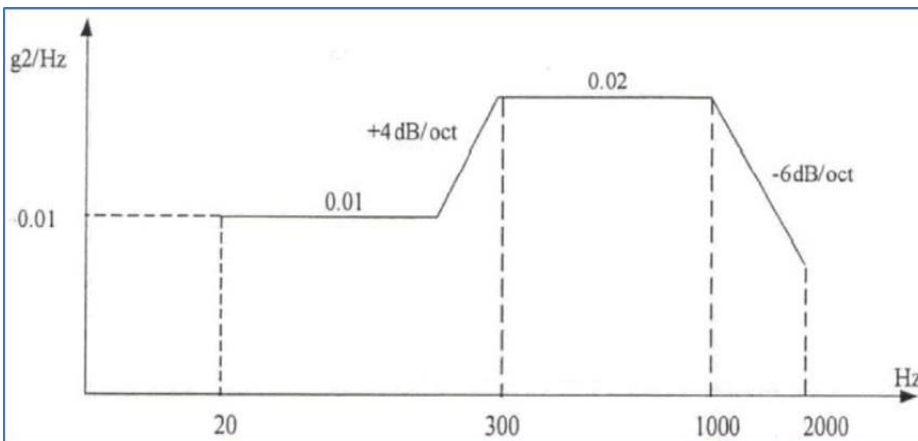
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## Phase Noise under random vibration at 100 MHz

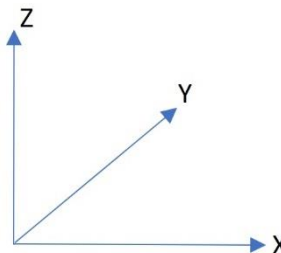


## Vibration profile



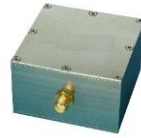
PSD = 0.02 g<sup>2</sup>/Hz

Functional test : 1 hour each direction



# OCO-M50VS12

Low Phase Noise under vibration



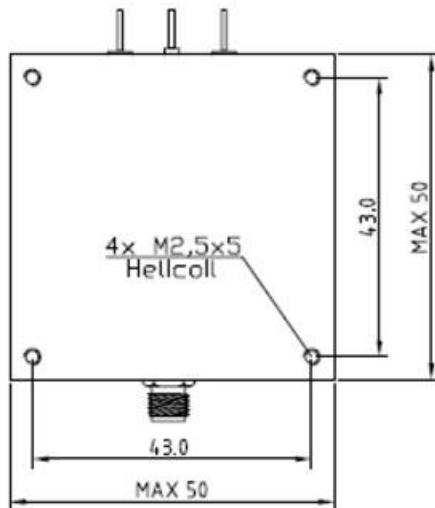
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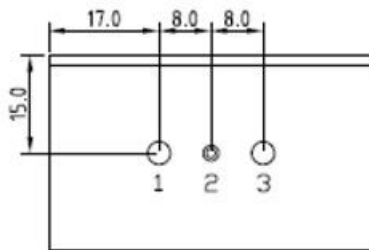
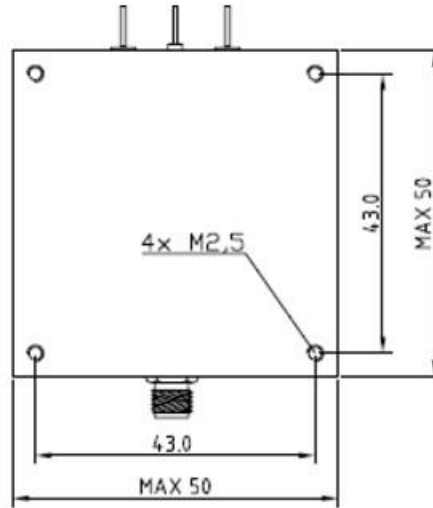
Package size : 50 x 50 x 30 mm

## Package Option

**H** \*Threaded Holes\*

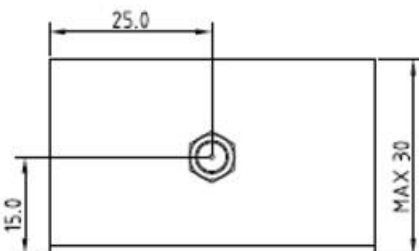
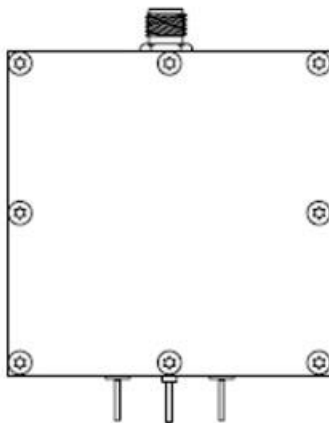


**S** \*Threaded Studs\*



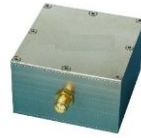
### Pin Connections :

| Pin # | Symbol          | Function              |
|-------|-----------------|-----------------------|
| 1     | V <sub>dc</sub> | Supply Voltage        |
| 2     | GND             | Ground                |
| 3     | V <sub>c</sub>  | Voltage Control [EFC] |
| SMA   | RF Out          | Output Signal         |



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## Environmental conditions

| Test                 | IEC 60068 Part | IEC 600679-1 Clause | MIL-STD 202G Method | MIL-STD 810F Method | MIL-PRF 55310d Clause | IEC Test condition  |
|----------------------|----------------|---------------------|---------------------|---------------------|-----------------------|---|
| Solderability        | 2-20<br>2-58   | 5.6.3               | 208H<br>210F        |                     | 3.6.52<br>3.6.48      | Test Ta, Method 1<br>Test Td1, Method 2<br>Test Td2, Method 2 |
| Shock                | 2-27           | 5.6.8               | 213B                | 516.4               | 3.6.40                | Test Ea, 3x /axe100g<br>6ms ½ sine pulse                      |
| Vibration Sinusoidal | 2-6            | 5.6.7.1             | 201A<br>204D        | 516.4-4             | 3.6.38.1<br>3.6.38.2  | Test FC, 30 min /axe<br>10Hz – 50Hz 0.75mm<br>55Hz – 2kHz 10g |
| Vibration Random     | 2-64           | 5.6.7.3             | 214A                | 514.5               | 3.6.38.3<br>3.6.38.4  | Test Fdb  |
| Endurance            |                |                     | 108A                |                     |                       |   |
| Aging                |                | 5.7.1               |                     |                     | 4.8.35                | 30 days @ 25°C  |
| Ext Aging            |                | 5.7.2               |                     |                     |                       | 1000h, 2000h, 8000h @85°C                                     |