## Oven Controlled Crystal Oscillators (OCXO's)

## OC-160 Series (CO-730C)



## Description: <br> The OC-160 Series offers low aging and excellent stability options with quick warm-up performance with a standard European CO-08 footprint.

Features:

- Frequencies: 5, 10, 12.8, 13, 16.384, 19.44, 20, 20.48 MHz
- European CO-08 Package
- Excellent Temperature Stability
- Superior Aging Characteristics
- Very Fast Warm-up


## Performance Characteristics

| Parameter | Characteristics |
| :---: | :---: |
| Standard Frequencies: | 5, 10, 12.8, 13, 16.384, 19.44, 20, 20.48 MHz , Available 1 MHz to 80 MHz |
| Package Size: | $35.3 \times 26.9 \times 19.4 \mathrm{~mm}(1.4 " \times 1.06 " \times 0.76$ ") |
| Supply Voltage: | A: $15 \mathrm{Vdc} \pm 5 \% \quad$ B: $12 \mathrm{Vdc} \pm 5 \% \quad$ C: $5 \mathrm{Vdc} \pm 5 \%$ |
| Input Power: | <6W turn-on (-20 $\left.{ }^{\circ} \mathrm{C} / 70^{\circ} \mathrm{C}\right) ; \quad<2.5 \mathrm{~W}$ steady-state @ $+25^{\circ} \mathrm{C}\left(-20^{\circ} \mathrm{C} / 70^{\circ} \mathrm{C}\right)$ |
| Output Type: | A: HCMOS <br> K: Sinewave ( >+10 dBm into 50 ohm) <br> J: Sinewave ( >+7 dBm into 50 ohm) <br> L: Sinewave ( >+13 dBm into 50 ohm) |
| Output Level (HCMOS): | " 0 " <0. 5 V , " 1 " > 4.5 V (HCMOS) |
| Rise/Fall Time $\mathrm{tr}_{\mathrm{r}} / \mathrm{tf}^{\text {(HCMOS) }}$ | $<10 \mathrm{~ns} \mathrm{(10} \mathrm{\%-90} \mathrm{\%)} \mathrm{(HCMOS)}$ |
| Symmetry (Duty/Cycle,HCMOS): | 50/50 $\pm 10 \%$ (@50\% level) (HCMOS) |
| Harmonics/subs: | -20 dBc (reduced level sinewave, for optional output) |
| Spurious: | -70 dBc (for sinewave output) |
| Temperature Stability: | B-308: $\pm 3 \times 10^{-8}$ over $0 / 50^{\circ} \mathrm{C}$ <br> B-109: $\pm 1 \times 10^{-9}$ over $0 / 50^{\circ} \mathrm{C}$ <br> D-508: $\pm 5 \times 10^{-8}$ over $-20 / 70^{\circ} \mathrm{C}$ <br> D-509: $\pm 5 \times 10^{-9}$ over $-20 / 70^{\circ} \mathrm{C}$ <br> F-107: $\pm 1 \times 10^{-7}$ over $-40 / 85^{\circ} \mathrm{C}$ <br> Note: Tighter stability options <br> F-108: $\pm 1 \times 10^{-8}$ over $-40 / 85^{\circ} \mathrm{C}$ are available, contact factory. |
| Aging: | A: $1 \times 10^{-8} /$ day, $2 \times 10^{-6} /$ year <br> B: $3 \times 10^{-9} /$ day, $1 \times 10^{-6} /$ year <br> C: $1 \times 10^{-9} /$ day, $3 \times 10^{-7} /$ year <br> D: $5 \times 10^{-10} /$ day, $1 \times 10^{-7} /$ year |
| Short Term Stability (Allan Deviation): | $5 \times 10^{-11} /$ second (with aging $\mathbf{A}$ or $\mathbf{B}$ ); $5 \times 10^{-12} /$ second (with aging $\mathbf{C}$ or $\mathbf{D}$ ) |
| Phase Noise (Typical @ 10 MHz ): | With Aging: A or B Aging: C or D <br> 10 Hz $-100 \mathrm{dBc} / \mathrm{Hz}$ $-120 \mathrm{dBc} / \mathrm{Hz}$ <br> 100 Hz $-135 \mathrm{dBc} / \mathrm{Hz}$ $-140 \mathrm{dBc} / \mathrm{Hz}$ <br> 1 kHz $-145 \mathrm{dBc} / \mathrm{Hz}$ $-145 \mathrm{dBc} / \mathrm{Hz}$ <br> 10 kHz $-150 \mathrm{dBc} / \mathrm{Hz}$ $-150 \mathrm{dBc} / \mathrm{Hz}$ <br> 50 kHz $-150 \mathrm{dBc} / \mathrm{Hz}$ $-150 \mathrm{dBc} / \mathrm{Hz}$ |
| Frequency vs. Supply: | $2 \times 10-9$ per \% change in supply (with Aging A or B) $5 \times 10-10$ per \% change in supply (with Aging C or D) |
| Warm-up (Restabilization): <br> (Frequency relative to two hours after turn-on following 24 hours off time at $+25^{\circ} \mathrm{C}$ with a maximum ambient of $<70^{\circ} \mathrm{C}$ ) | With Aging: A or B Aging: C or D <br> $1 \times 10^{-6}:$ 6 minutes <br> $1 \times 10^{-6}:$ 2 minutes <br> $1 \times 10^{-7}:$ 8 minutes <br> $3 \times 10^{-8}:$ 2.5 minutes <br> $3 \times 10$ minutes $3 \times 10^{-8}:$ <br> 3 minutes  <br> $3 \times 10^{-8}: 30$ minutes $1 \times 10^{-8}:$ <br> 4 minutes  |
| Electrical Frequency Adjust: | $10 \times 10-6$ typical range (with Aging A or B) $2 \times 10-6$ typical range (with Aging C or D) |
| Mechanical Configuration: | Pins for PCB mounting |

## OC-160 Series (CO-734C/738CS)

## Outline Drawing

PIN NUMBERS ARE FOR REFERENCE ONLY. THEY DO NOT APPEAR ON THE UNIT.


| Pin Out Information |  |
| :---: | :--- |
| Pin | Function |
| 1 | Electrical Frequency Adjustment |
| 2 | N/C or Reference Voltage Output |
| 3 | Supply (+) |
| 4 | Output |
| 5 | GND |

Note: Pin numbers are for reference only, and may not appear on unit.

## Ordering Information



