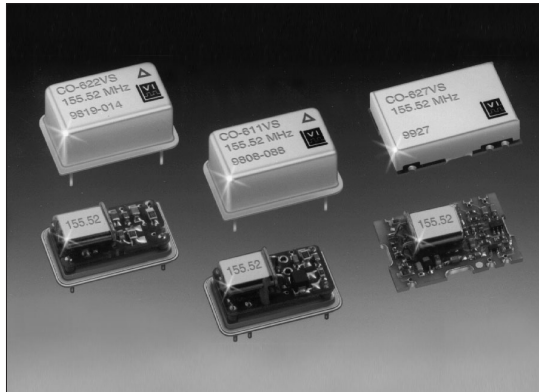


Voltage Controlled Crystal Oscillators (VCXO's)

VC-400/401/410/411/415 Series (CO-600V Series)



Description:

Low jitter capable, PECL output VCXO in a DIP, Gull-wing or SMD package.

Features:

- 155.52 MHz Standard, Other Frequencies Available from 10 MHz to 170 MHz
- Jitter Performance <1 ps rms @ 155.52 MHz
- Temperature Stability to ± 20 ppm -40°C to $+85^{\circ}\text{C}$
- Aging: 10 ppm for 10 Years Typical
- ECL or PECL Output
- Complementary Output Available
- Package: Single DIP, Gull Wing, or True Surface Mount FR4

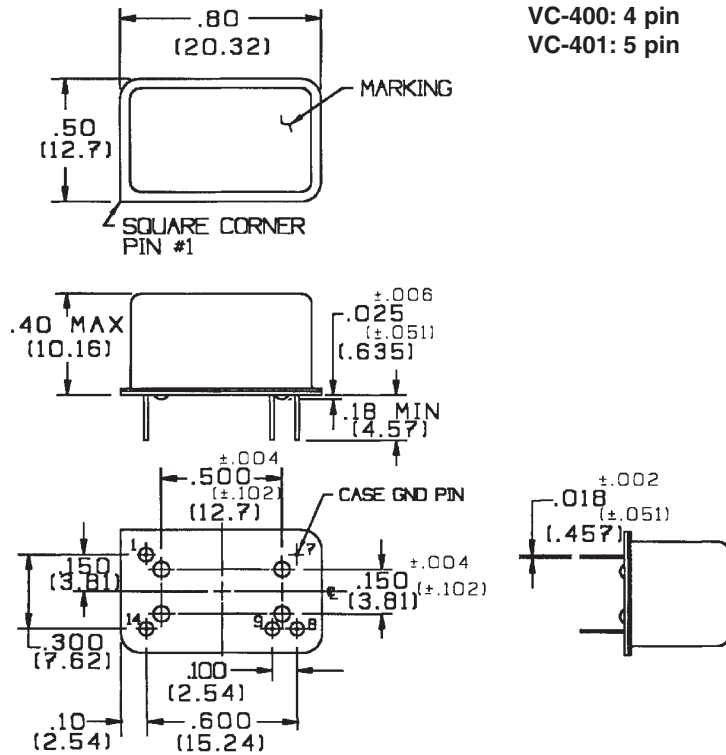
Performance Characteristics

| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|--------|--|--------------------|---------|--------------------|
| Standard Frequency: | f_o | 10 | | 170 | MHz |
| Supply: C | Vdd | 4.75 | 5.0 | 5.25 | V |
| D | Vdd | 3.13 | 3.3 | 3.46 | V |
| G | Vdd | -4.94 | -5.2 | -5.46 | V |
| J | Vdd | -4.27 | -4.5 | -4.72 | V |
| Current: Single Ended Output | Icc | | | 60 | mA |
| Complementary Output | Icc | | | 50 | mA |
| Output Type: C | | | ECL | | |
| D | | | PECL | | |
| E | | | Complementary ECL | | |
| F | | | Complementary PECL | | |
| Rise/Fall Time (20-80%): | tr/tf | | | 1.5 | ns |
| Symmetry (Duty Cycle): | SYM | 45 | | 55 | % |
| Temperature Range: | | -40 | | +85 | $^{\circ}\text{C}$ |
| Aging (10 years): | | | 10 | | ppm |
| Jitter (12 kHz - 20 MHz): | | | 0.5 | 1 | ps |
| Deviation/Stability: | | See How to Order | | | |
| Control Voltage: PECL, 3.3V | Vc | 0.3 | | 3.0 | V |
| PECL, 5V | Vc | 0.5 | | 4.5 | V |
| ECL, -4.5V | Vc | -0.5 | | -4.5 | V |
| ECL, -5.2V | Vc | -0.5 | | -4.5 | V |
| Transfer Function: PECL | | | Positive | | |
| ECL | | | Negative | | |
| Linearity (BSL): | | see ordering information | | | % |
| ssb Phase Noise (@ 155.52 MHz) (typical) | 10Hz | | -50 | | dBc/Hz |
| | 100Hz | | -80 | | dBc/Hz |
| | 1kHz | | -115 | | dBc/Hz |
| | 10kHz | | -135 | | dBc/Hz |
| | 50kHz | | -140 | | dBc/Hz |
| Modulation Bandwidth: | BW | 10 | | | kHz |
| Package Size: 400 | | 20.32x12.70x10.8 mm (0.8"x0.5"x0.425") 4 pin DIP | | | |
| 401 | | 20.32x12.70x10.8 mm (0.8"x0.5"x0.425") 5 pin DIP | | | |
| 410 | | 20.32x12.70x11.43 mm (0.8"x0.5"x0.45") 4 pin Gull wing | | | |
| 411 | | 20.32x12.70x11.43 mm (0.8"x0.5"x0.45") 5 pin Gull wing | | | |
| 415 | | 20.32x13.72x5.72 mm (0.8"x0.54"x0.225") SMD | | | |

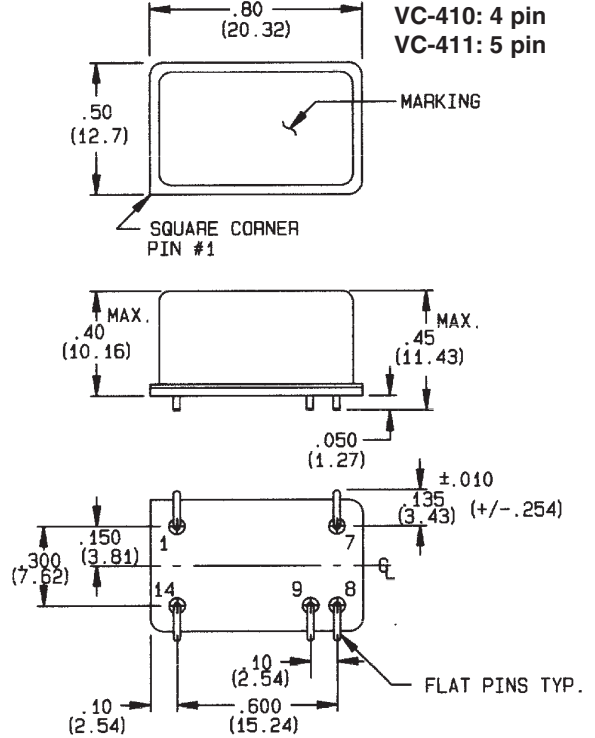
Voltage Controlled Crystal Oscillators (VCXO's)

VC-400/401/410/411 Series

VC-400/401 Outline Drawing



CO-410/411 Outline Drawing



VCXO

NOTES:

1. Pin numbers are for reference only. They do not appear on the unit.
2. Dimensions are in inches and (millimeters).

NOTES:

1. Pin numbers are for reference only. They do not appear on the unit.
2. Dimensions are in inches and (millimeters).

Pin Out Information

| PIN | FUNCTION | |
|-----|-----------|-----------|
| | PECL | ECL |
| 1 | VCXO | VCXO |
| 7 | GROUND | SUPPLY(-) |
| 8 | OUTPUT Q | Q |
| 9* | OUTPUT Q | Q |
| 14 | SUPPLY(+) | GND |

*Pin 9 present only on complementary output units. Requires 5 pin base.

Pin Out Information

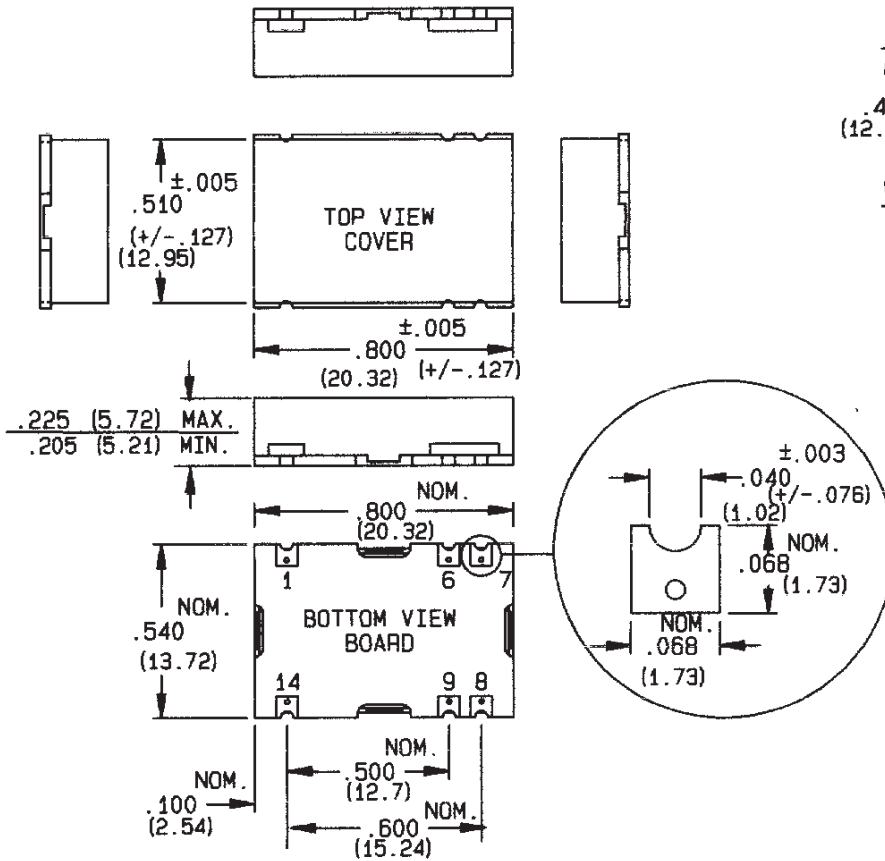
| PIN | FUNCTION | |
|-----|-----------|-----------|
| | PECL | ECL |
| 1 | VCXO | VCXO |
| 7 | GROUND | SUPPLY(-) |
| 8 | OUTPUT Q | Q |
| 9* | OUTPUT Q | Q |
| 14 | SUPPLY(+) | GND |

*Pin 9 present only on complementary output units. Requires 5 pin base.

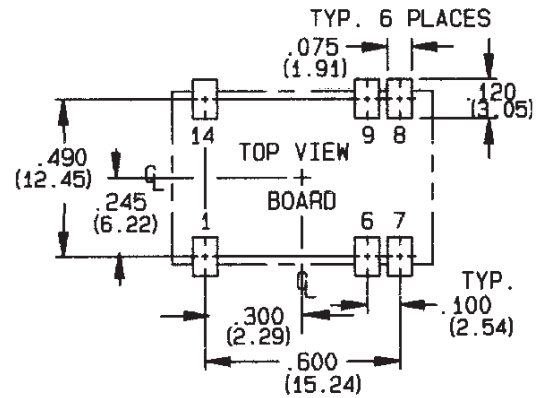
Voltage Controlled Crystal Oscillators (VCXO's)

VC-415 Series

Outline Drawing



Recommended Pad Dimensions



Pin Out Information

| PIN | FUNCTION | |
|-----|------------------|---------|
| 1 | PECL | ECL |
| 1 | VCXO | VCXO |
| 6** | DISABLE | DISABLE |
| 7 | GND SUPPLY(-) | |
| 8 | OUTPUT SIGNAL, Q | |
| 9* | OUTPUT SIGNAL, Q | |
| 14 | SUPPLY(+) | |
| | | GND |

NOTES:

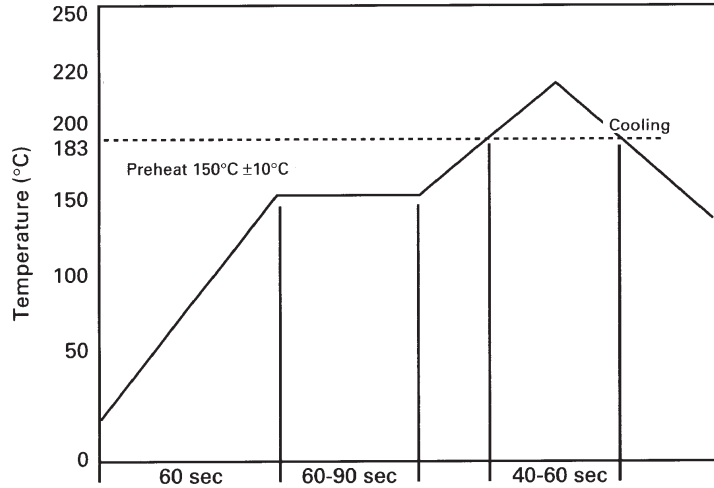
- Pin numbers are for reference only. They do not appear on the unit.
- Dimensions are in inches and (millimeters).

*Pin 9 present only on complementary output units **Disable = PECL high, oscillator shuts off. Floating or PECL low normal operation.

Voltage Controlled Crystal Oscillators (VCXO's)

VC-400/401/410/411/415 Series

Recommended Soldering Profile



VCXO

Ordering Information

VC - **400** - **C** **D** **B** - **205G** - **155.52** MHz

Product Family
VC = VCXO

Package
400 = 4 pin DIP
401 = 5 pin DIP
410 = 4 pin Gullwing
411 = 5 pin Gullwing
415 = SMD

Supply Voltage
C = 5.0V ± 5%
D = 3.3V ± 5%
G = -5.2V ± 5%
J = -4.5V ± 5%

Output
C = ECL
D = PECL
E = Complementary ECL
F = Complementary PECL

Code
B-205G
C-205G
C-405H
D-305J
D-405H
F-405J
F-505H
F-205G

Temperature Range
0/+50°C
0/+70°C
0/+70°C
-20/+70°C
-20/+70°C
-40/+85°C
-40/+85°C
-40/+85°C

Temperature Stability
±20 ppm
±20 ppm
±40 ppm
±30 ppm
±40 ppm
±40 ppm
±50 ppm
±20 ppm

***Minimum Deviation**
±50 ppm
±50 ppm
±100 ppm
±60 ppm
±100 ppm
±60 ppm
±100 ppm
±50 ppm

Frequency
10 - 170 MHz