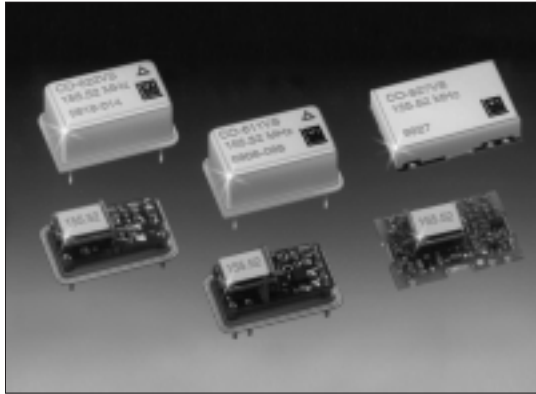


# Voltage Controlled Crystal Oscillators (VCXO's)

## 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  $\pm 20$  ppm  $-40^{\circ}\text{C}$  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

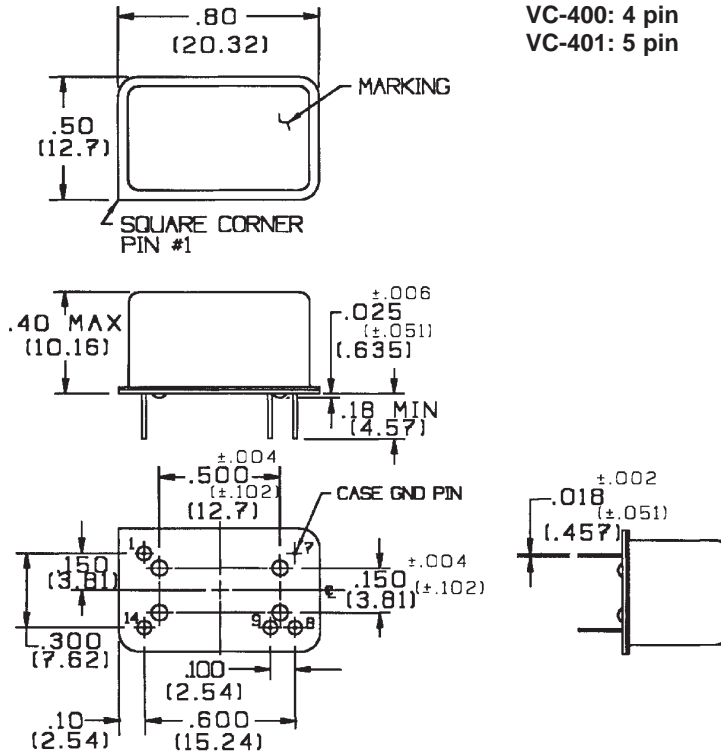
### Performance Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Standard Frequency:	fo	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			

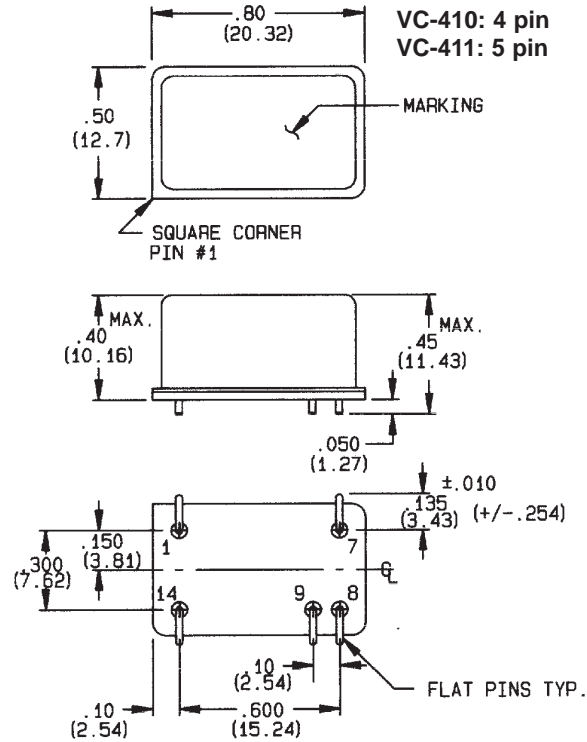
# Voltage Controlled Crystal Oscillators (VCXO's)

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

### VC-400/401 Outline Drawing



### CO-410/411 Outline Drawing



#### NOTES:

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

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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

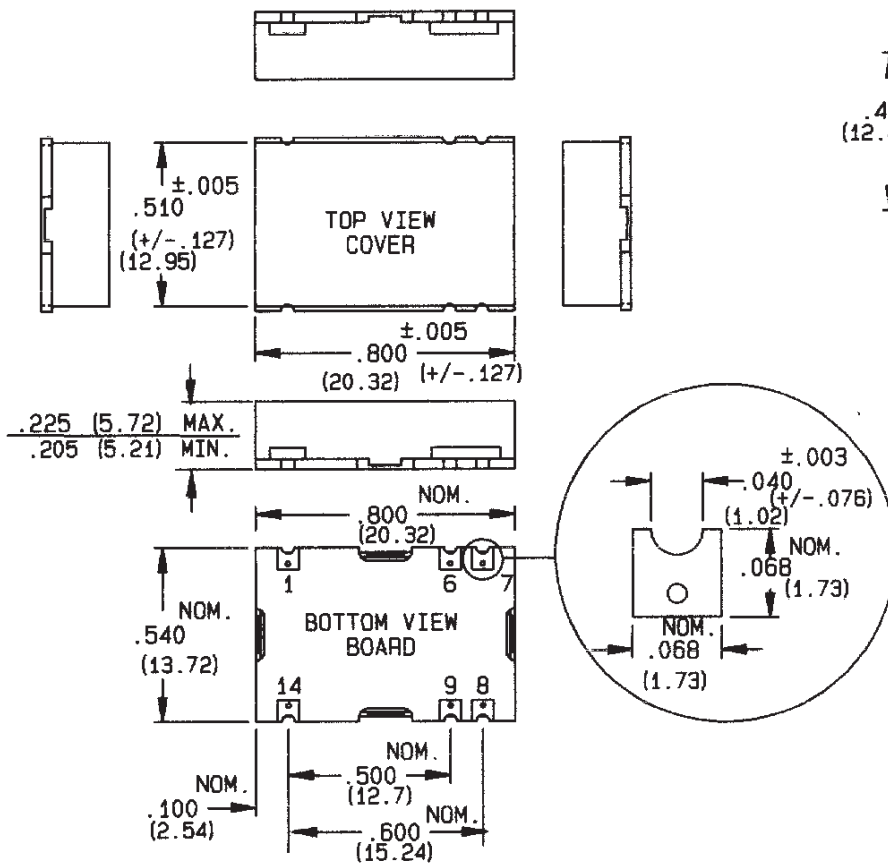
PIN	FUNCTION	
	PECL	ECL
1	VCXO	VCXO
7	GROUND	SUPPLY(-)
8	OUTPUT Q	Q
9*	OUTPUT Q	Q
14	SUPPLY(+)	GND

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

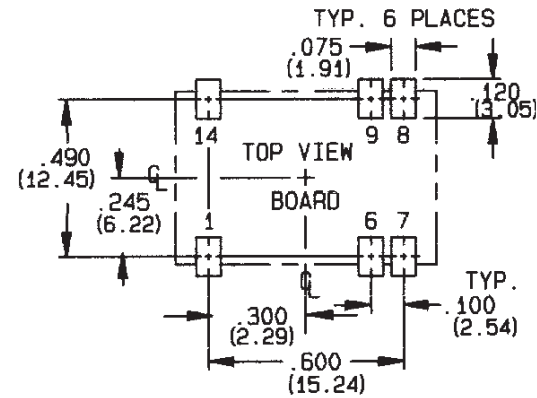
# Voltage Controlled Crystal Oscillators (VCXO's)

## VC-415 Series

### Outline Drawing



### Recommended Pad Dimensions



### Pin Out Information

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

#### NOTES:

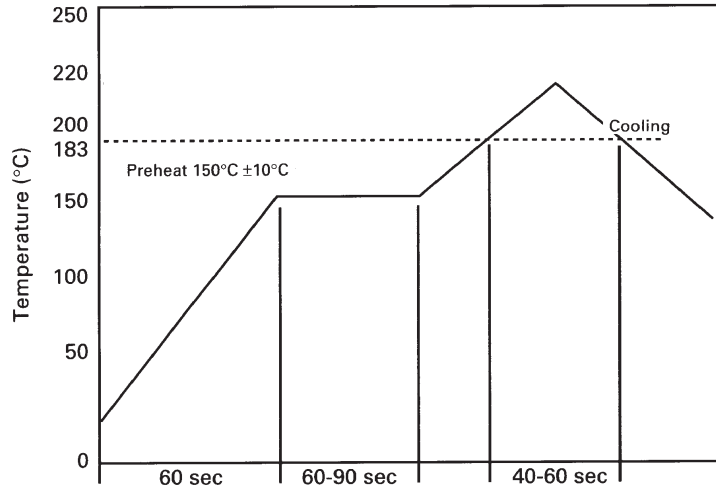
- Pin numbers are for reference only. They do not appear on the unit.
- Dimensions are in inches and (millimeters).

\*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



### 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

Code	Temperature Range	Temperature Stability	*Minimum Deviation
B-205G	0/+50°C	±20 ppm	±50 pp
C-205G	0/+70°C	±20 ppm	±50 pp
C-405H	0/+70°C	±40 ppm	±100 pp
D-305J	-20/+70°C	±30 ppm	±60 pp
D-405H	-20/+70°C	±40 ppm	±100 pp
F-405J	-40/+85°C	±40 ppm	±60 pp
F-505H	-40/+85°C	±50 ppm	±100 pp
F-205G	-40/+85°C	±20 ppm	±50 pp

**Frequency**  
10 - 170 MHz