

# F-Type

## Voltage Controlled Crystal Oscillator (VCXO)



The FTV Voltage Controlled Crystal Oscillator

### Features

- Industry Common Pinout
- Commercial or Industrial Temperature Range
- TTL or CMOS Drive Capability
- Hermetic Package
- 5.0 V or 3.3 V Supply

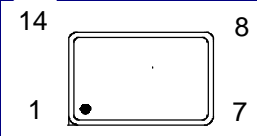
### Description

The F-Type Voltage Controlled Crystal Oscillator (VCXO) is used in a phase lock loop applications including clock recovery and frequency translation applications. The metal package is grounded for improved EMI performance.

### Pin Information

Table 1. Pin Function

Pin	Symbol	Function
1	$V_C$	VCXO Control Voltage
7	GND	Case Ground
8	Output	VCXO Output
14	$V_{DD}$	Power Supply Voltage (3.3 or 5.0 V $\pm 10\%$ )



### Performance Characteristics

Table 2. Electrical Performance

Parameter	Symbol	Minimum	Typical	Maximum	Units
Operating Temperature Range	$T_O$	0 to 70, -20 To 70, or -40 to 85			$^{\circ}\text{C}$
Center Frequency <sup>1</sup>	$f_0$	1	-	52	MHz
Absolute Pull Range		$\pm 20$ to $\pm 100$			ppm
Supply Voltage <sup>2</sup>	$V_{DD}$	3.3 or 5.0 ( $\pm 10\%$ )			V
Supply Current	$I_{DD}$	-	0.45 mA/MHz	35	mA
Output Voltage Levels <sup>3</sup>					
Output High	$V_{OH}$	0.9 $V_{DD}$	-		V
Output Low	$V_{OL}$			0.1 $V_{DD}$	V
Transition times <sup>3</sup>					
Rise Time	$T_R$	-	-	5.0	ns
Fall Time	$T_F$	-	-	5.0	ns
Fanout		-	-	10	TTL
Start-Up Time	$t_{SU}$	-	2	-	ms
Control Voltage	$V_C$	0.1 $V_{DD}$	-	0.9 $V_{DD}$	V
Fanout	Fo	-	-	10 TTL	Loads

1. Other frequencies may be available, please contact factory with your special requirements.

2. A 0.1  $\mu\text{F}$  low frequency tantalum bypass capacitor in parallel with a 0.01  $\mu\text{F}$  high frequency ceramic capacitor is recommended. Both should be located as close to the FTU-Type bias pin as is practical.

3. Figure 1 defines these parameters. Figure 2 illustrates the equivalent TTL load and operating conditions under which these parameters are specified and tested.

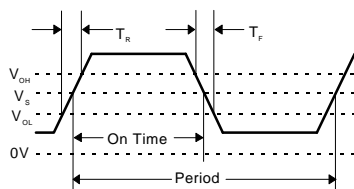


Figure 1. Output Waveform

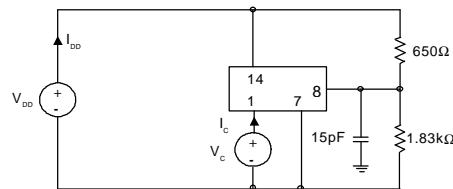


Figure 2. Output Test Conditions (25 $\pm$ 5 $^{\circ}\text{C}$ )

# F-Type VCXO

## Handling Precautions

Although protection circuitry has been designed into this device, proper precautions should be taken to avoid exposure to electrostatic discharge (ESD) during handling and mounting. VTI employs a human-body model (HBM) and a charged-device model (CDM) for ESD-susceptibility testing and protection design evaluation.

ESD voltage thresholds are dependent on the circuit parameters used to define the mode. Although no industry-wide standard has been adopted for the CDM, a standard HBM (resistance = 1500Ω, capacitance = 100pF) is widely used and therefore can be used for comparison purposes. The HBM ESD threshold presented here was obtained by using these circuit parameters.

**Table 3. ESD Threshold Voltage**

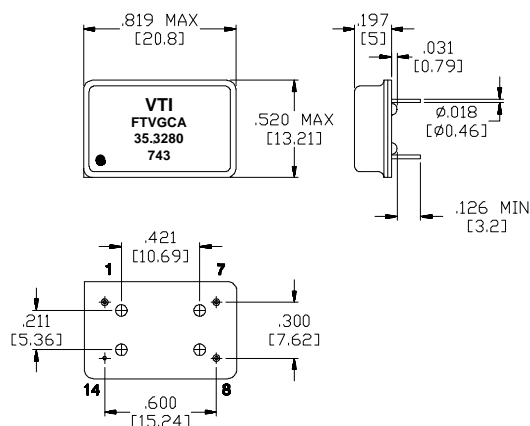
Model	Threshold	Unit
Human-Body (HBM)	1000*	Volts Min.
Charged-Device (CDM)	500	Volts Min.

\*MIL-STD-883D, Method 3015, Class 1

**Table 4. Mechanical and Environmental Compliance**

Parameter	Conditions
Mechanical Shock	MIL-STD-883C, 2002.3, A
Mechanical Vibration	MIL-STD-883C, 2007.1, A
Temperature Cycle	MIL-STD-883C, 1010, A
Gross Leak	100% Deionized Water
Fine Leak	MIL-STD-883C, 1014.7
Seal Strength	2 lbs Perpendicular to Top and Bottom
Bend Test	MIL-STD-202E, 211A, C
Marking	MIL-STD-202E, 215
Storage Temperature	-55°C to 125°C

## Outline Diagram



**Figure 3 Outline Diagram**

## Ordering Information

**Table 5. Part Numbering**

Example Part # →

<u>F</u>	<u>I</u>	<u>V</u>	<u>G</u>	<u>C</u>	<u>A</u>
Package	Supply Voltage (V)	VCXO Type	Pull (ppm)	Operating Temp. (°C)	Output Load
F 4 pin DIP	T 5.0±10%	V VCXO	F ±32	C 0 to 70	A TTL 50 ±5%
	D 3.3±10%		G ±50	L -40 to 85	B TTL 50 ±10%
			H ±100	I -20 to 70	J CMOS 50 ±5%
			A ±100 TPR		K CMOS 50 ±10%

Other specifications may be available on request.

### For Additional Information Please Contact:



USA: Vectron International • 267 Lowell Road, Hudson, NH 03051 • Tel: 1-888-VECTRON-1 • Fax: 1-888-FAX-VECTRON  
 EUROPE: Tel: 49 (0) 3328 4784 17 • Fax: 49 (0) 3328 4784 30  
 ASIA: Tel: +86 21 28909740 / 41 / 42 • Fax: +86 21 28909240 / 2890999

rev 1.2, 4/27/98, 08/16/02

Vectron International reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.