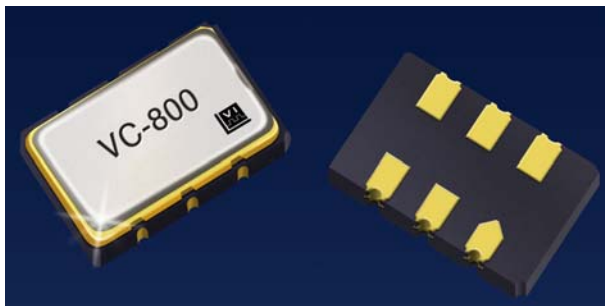


VC-800 Voltage Controlled Crystal Oscillator



The VC-800 Voltage Controlled Crystal Oscillator

Features

- **Worlds Smallest VCXO, 5.0 X 3.2 X 1.5 mm**
- High Frequencies to 51.84 MHz
- 5 or 3.3 V operation
- Tri-State Output
- Low jitter < 6pS rms for freq >12MHz
- VCXO with CMOS outputs
- 0/70 or -40/85 °C temperature range
- Hermetically sealed ceramic SMD package

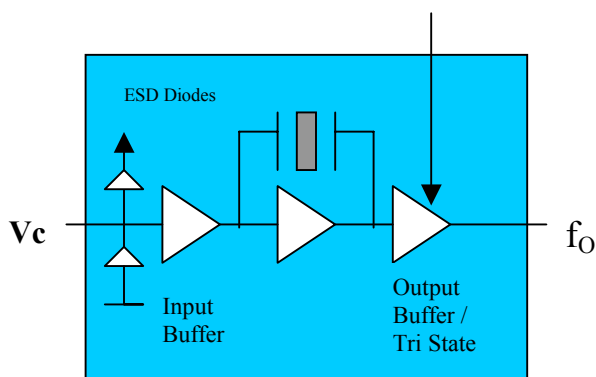
Applications

- SONET/SDH
- DWDM
- xDSL/PCMCIA cards
- Digital Video

Description

Vectron's VC-800 Voltage Controlled Crystal Oscillator (VCXO) is a quartz stabilized square wave generator with a CMOS output and is tested at CMOS and TTL logic levels (5 volt operation).

The VC-800 is the smallest available VCXO making it ideally suitable for PCMCIA applications as well as any other where size is limited but performance is required.



VC-800 Voltage Controlled Crystal Oscillator

Performance Characteristics

Table 1. Electrical Performance					
Parameter	Symbol	Min	Typical	Maximum	Units
Frequency	f_O	1.544		51.84	MHz
Supply Voltage ¹ (+3.3 V) (+5.0 V)	V_{DD}	2.97 4.5	3.3 5.0	3.63 5.5	V
Supply Current	I_{DD}		12	25	mA
Output Logic Levels Output Logic High ² Output Logic Low ²	V_{OH} V_{OL}	$0.9 \cdot V_{DD}$		$0.1V_{DD}$	V V
Transition Times Rise Time ² Fall Time ²	t_R t_F			5 5	nS nS
Symmetry or Duty Cycle ³	SYM	45	50	55	%
Operating temperature (<i>ordering option</i>)		0/70 or -40/85			°C
Test Conditions for APR (+5V option)	V_C	0.5		4.5	V
Test Conditions for APR (+3.3V option)	V_C	0.3		3.0	V
Absolute Pull Range (<i>ordering option</i>)	APR	+/-50 +/- 80 +/-100			ppm
Gain Transfer (See figure 3)		Positive			ppm/V
Control Voltage Leakage Current	I_{VCXO}			± 1	μA
Control Voltage Bandwidth (-3dB)	BW	10			kHz
Package Size		5.0x3.2x1.5			mm

1. A 0.01 μF and a 0.1 μF capacitor should be located as close to the supply as possible (to ground) is recommended.

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

3. Symmetry is defined as (ON TIME/PERIOD with $V_s = -1.4$ V for TTL and $V_s = 2.5$ V for CMOS, 5 volt operation, and $V_s = 1.65$ V for 3.3 Volt operation.

4. Load Capacitor will depend on frequency.

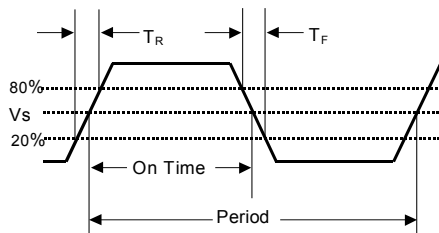


Figure 1. Output Waveform

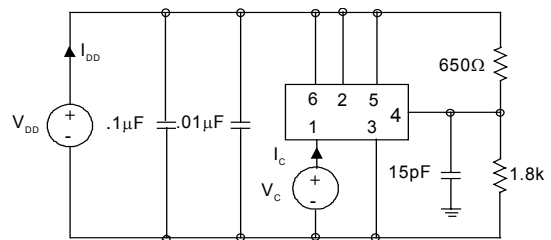
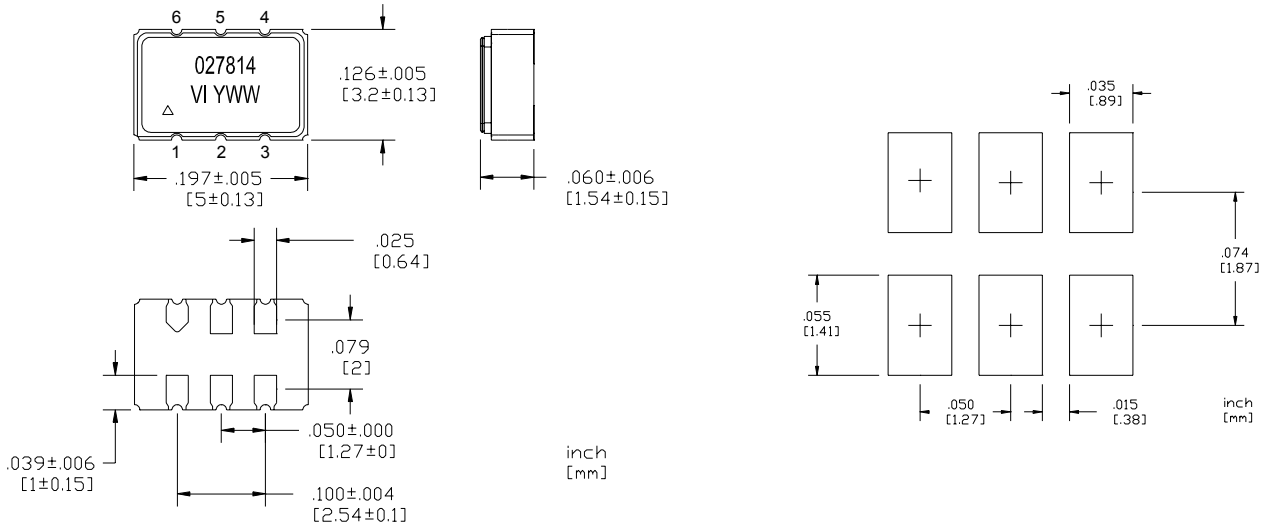


Figure 2. Typical Output Test Conditions (25 \pm 5°C)

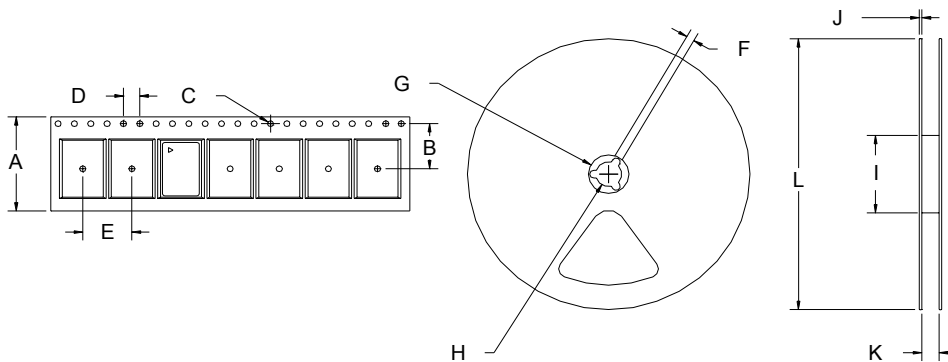
VC-800 Voltage Controlled Crystal Oscillator

Outline Diagram, Pad Layout and Pin Out



Pin #	Symbol	Function
1	V_C	Control Voltage
2		Tri-state
3	GND	Ground
4	f_o	Output Frequency
5		CMOS/TTL
6	V_{DD}	Supply Voltage

Tape and Reel



Tape and Reel Dimensions (mm)													
Tape Dimensions					Reel Dimensions								# Per Reel
Product	A	B	C	D	E	F	G	H	I	J	K	L	
VC-800	12	5.5	1.5	4	8	1.78	20.6	13	55	6	12.4	178	500

VC-800 Voltage Controlled Crystal Oscillator

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can permanently damage the device. Functional operation is not implied at these or any other conditions in excess of conditions represented in the operational sections of this data sheet. Exposure to absolute maximum ratings for extended periods may adversely affect device reliability.

Parameter	Symbol	Ratings	Unit
Power Supply	V_{DD}	6	Vdc
Storage Temperature	Tstorage	-55/125	°C
Voltage Control Range	V_C	0 to V_{DD}	V

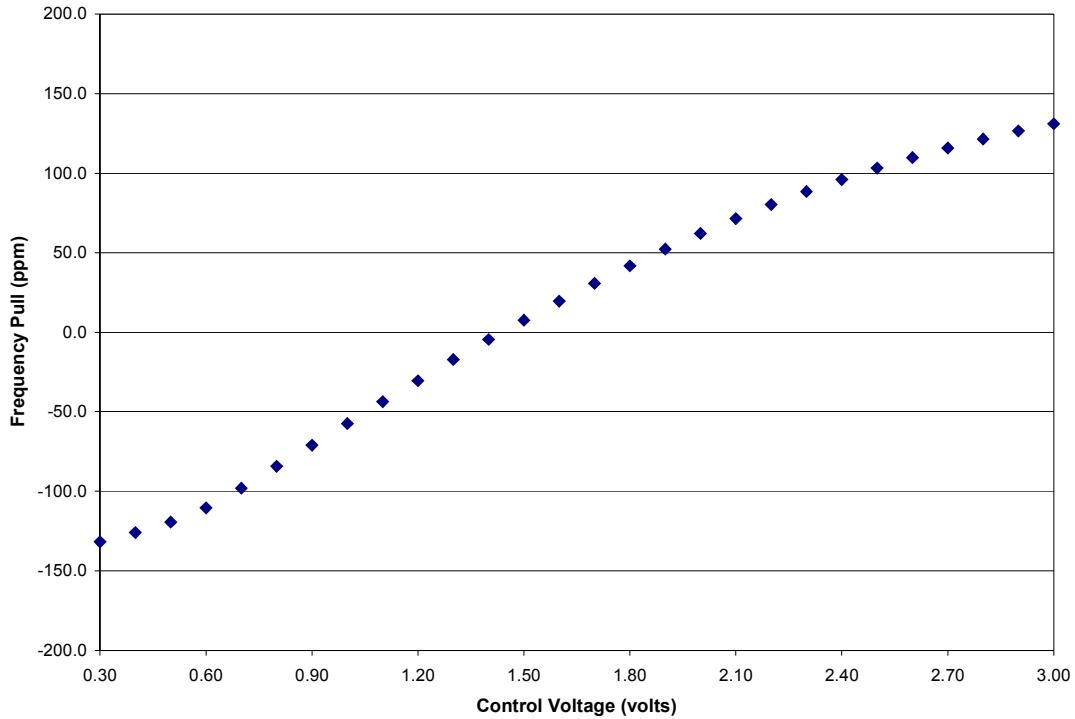


Figure 3. Frequency Pull versus Control Voltage, 35.328MHz Output, 3.3 Volt supply

VC-800 Voltage Controlled Crystal Oscillator

Reliability

The VC-800 is capable of meeting the following qualification tests.

Parameter	Conditions
Mechanical Shock	MIL-STD-883 Method 2002
Mechanical Vibration	MIL-STD-883 Method 2007
Solderability	MIL-STD-883 Method 2003
Gross and Fine Leak	MIL-STD-883 Method 1014
Resistance to Solvents	MIL-STD-883 Method 2016

Handling Precautions

Although ESD protection circuitry has been designed into the the VC-800, proper precautions should be taken when handling and mounting. VI employs a Human Body Model and a Charged-Device Model (CDM) for ESD susceptibility testing and design protection evaluation. ESD thresholds are dependent on the circuit parameters used to define the model. Although no industry wide standard has been adopted for the CDM, a standard HBM of resistance=1.5Kohms and capacitance = 100pF is widely used and therefore can be used for comparison purposes.

Model	Minimum	Conditions
Human Body Model	1500	MIL-STD-883 Method 3115
Charged Device Model	1000	JESD 22-C101

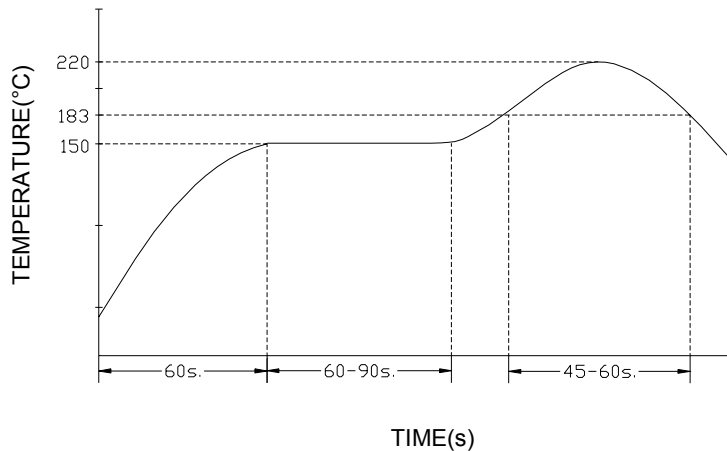


Figure 4. Suggested IR profile

VC-800 Voltage Controlled Crystal Oscillator

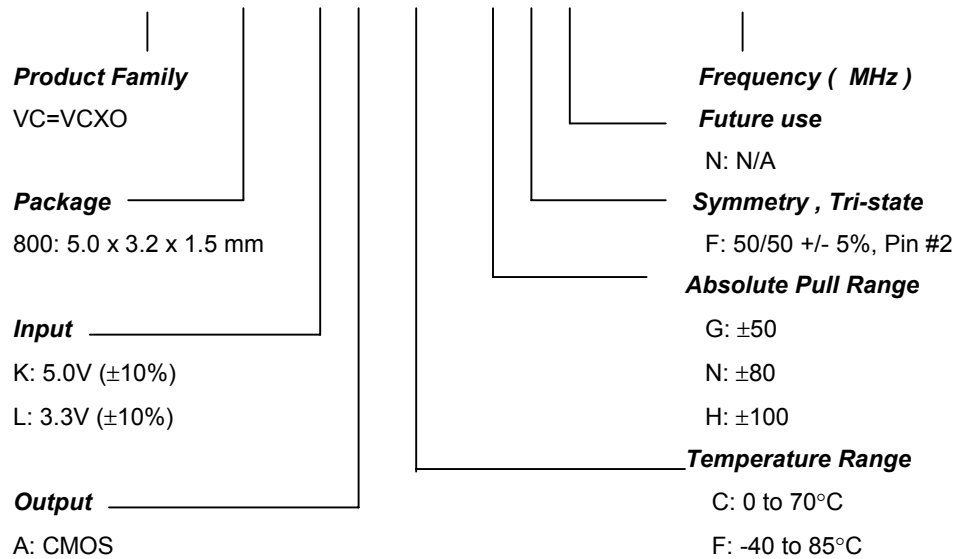
Standard Frequencies

4.096	8.192	12.960	13.500	16.000
16.384	17.664	25.920	27.000	32.000
32.768	35.328	44.736	51.840	

Other frequencies may be available upon request

Ordering Information

VC-800-K A C - G F N - xx.xxx



NOTE: Not all combinations of options are available.

For Additional Information, Please Contact:



VECTRON
INTERNATIONAL
A DOVER TECHNOLOGIES COMPANY

USA: Vectron International • 166 Glover Avenue, Norwalk, CT 06856 • Tel: 1-88-VECTRON-1

• Fax: 1-888-FAX-VECTRON

EUROPE: In Denmark, Finland, Ireland, Israel, Norway, Spain, UK: Tel: 442 3807 65 205

• Fax: 442 3807 66 822

In Austria, Belgium, France, Germany, Italy, Luxemburg, Netherlands, Sweden, Switzerland: Tel:

49(0)7263 6480 • Fax: 49(0)7263 6196

ASIA: In China, Taiwan, Japan: Tel: 01 603 598 0070 • Fax: 01 603 598 0075

In Korea, Singapore, Australia, India: Tel: 01 203 853 4433 • Fax: 01 203 853 1423

www.vectron.com

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.

VC-800.DOC (REVISION DATE: (30Aug01)