

## VTB4-1000-20M000 CMOS TCXO

### Pin Information

Pin	Symbol	Function
1	NC	No Connect
7	GND	Case Ground
8	Output	CMOS Output waveform
14	V <sub>DD</sub>	Power Supply Voltage (3.3 V ± 5%)

### Performance Characteristics

Parameter	Symbol	Minimum	Typical	Maximum	Units
Nominal Output Frequency	f <sub>0</sub>	-	20.000	-	MHz
Supply Voltage <sup>1</sup>	V <sub>DD</sub>	3.14	3.3	3.47	V
Operating Temperature Range	T <sub>OP</sub>	0		+70	°C
Storage Temperature	T <sub>stor</sub>	-40		+85	°C
Supply Current	I <sub>DD</sub>			20	mA
Output Voltage Levels (from V <sub>DD</sub> )					
High	V <sub>OH</sub>	2.2			V
Low	V <sub>OL</sub>			0.40	
Output Current Levels					mA
High	I <sub>OH</sub>	-4.0			
Low	I <sub>OL</sub>			+4.0	
Output Rise/Fall Time <sup>2</sup>	t <sub>R</sub> /t <sub>F</sub>			5	ns
Output Duty Cycle or Symmetry <sup>3</sup>	D	40		60	%
Stability over operating temperature/initial tolerance/ 15 years aging/ power supply and load variation	delta f/f <sub>0</sub>	-4.6		+4.6	ppm
Jitter, 10Hz to 20MHz, RMS			2	5	pS
Jitter, 12kHz to 20MHz, RMS			0.5	1	pS
Phase Noise					dBc/Hz
10 Hz				-70	
100 Hz				-100	
1kHz				-125	
10kHz				-135	
100kHz				-140	
Start Up Time	T <sub>SU</sub>			10	mS

1. A 0.1 μF low frequency ceramic bypass capacitor in parallel with a 0.01 μF high frequency ceramic capacitor is recommended.

2. Figure 1 defines these parameters. Figure 2 illustrates the operating conditions.

3. Duty cycle is defined as (on time/period) per Figure 1.

4. Measured using a Wavecrest DTS2075 or equivalent.

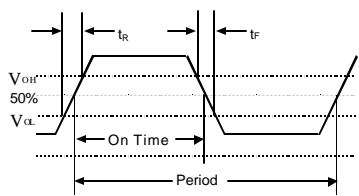


Figure 1. Output Waveform

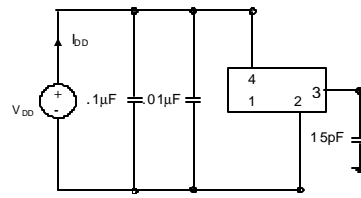


Figure 2. Output Test Conditions ( $25 \pm 5^\circ\text{C}$ )

**Recommended Reflow Profile:**

This oscillator contains a quartz crystal which is susceptible to damage if handled roughly or dropped. Transportation and handling should be carefully performed. ESD precautions should be taken. When stored, units should be kept in conductive containers and only handled at properly grounded workstations by operators using proper ESD procedures.

We recommend hand placing and hand soldering units into a PCB. The soldering tip and temperature should be appropriate for 60/40 type solder. Once installed and inspected a non-aqueous board wash is recommended. If cleaning is required then a manual brush cleaning with an appropriate solvent is recommended. Care should be given to prevent mechanical shock to the unit.

If not hand placed then we recommend the following solder profile:

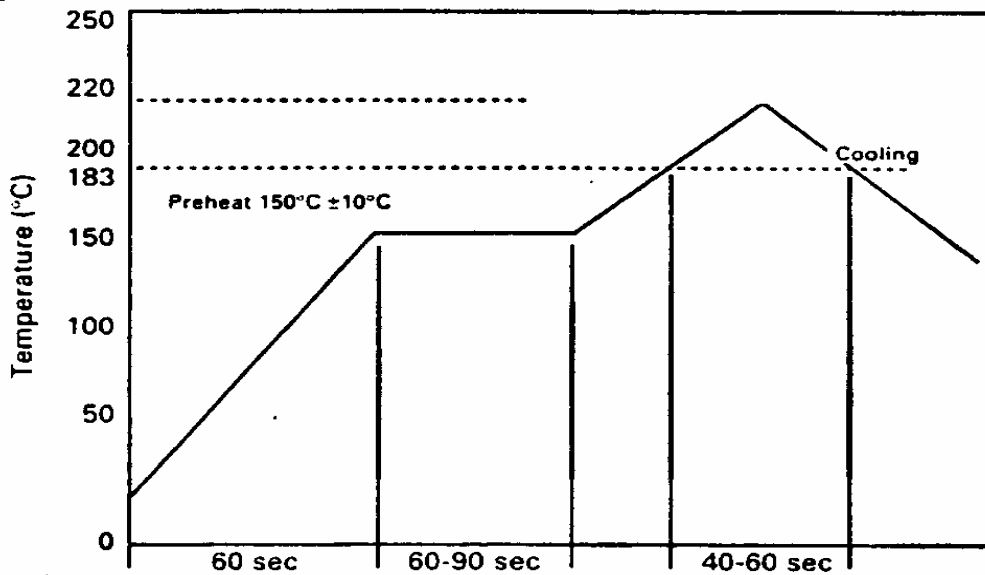


Figure 4 IR Reflow Diagram

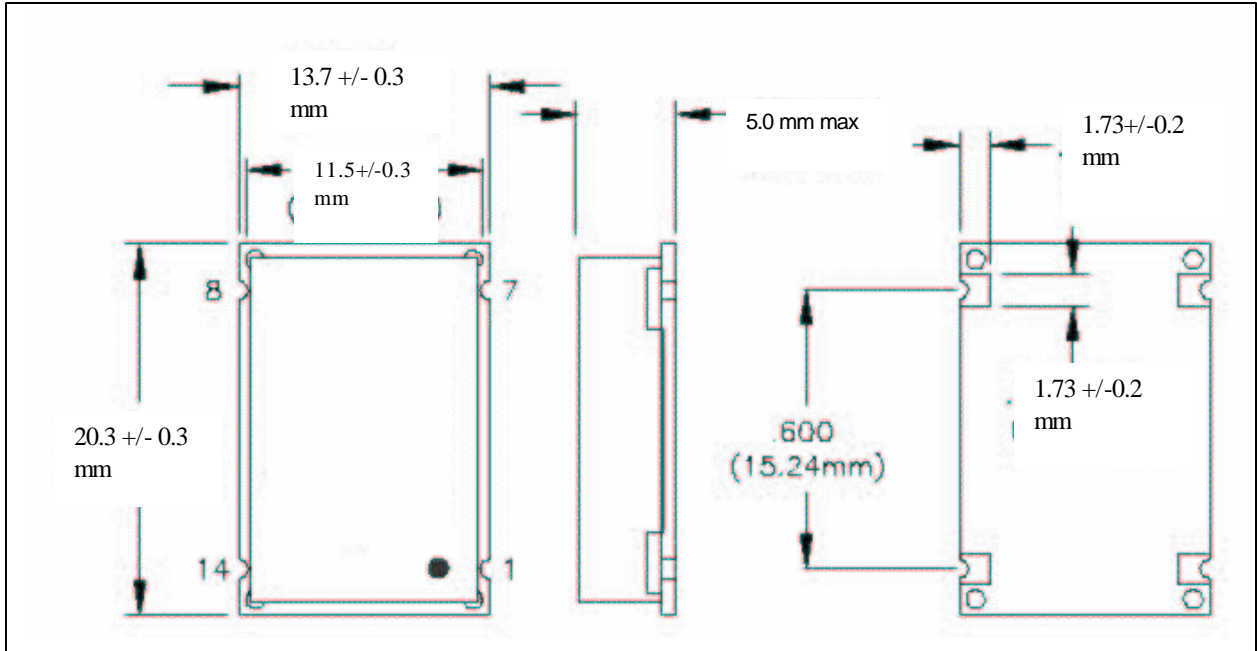


Figure 4. Outline Diagram

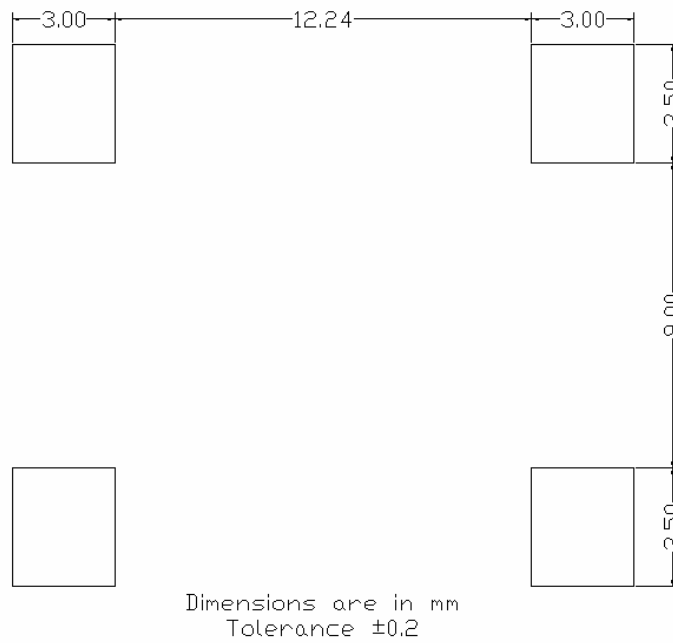


Figure 5. Suggested Pad Layout

Ordering Information: **VTB4-1000-20M000**

Table 4. Revision Control			
Revision History	Date	By	Description
-	02/03/04	FBoudreau	Initial
A	2/10/04	FBoudreau	Change stability spec, +/-4.6 ppm min, to -4.6 min and +4.6 max. Delete references to tristate.
B	8/13/04	FBoudreau	Correct package drawing dimensions, add suggested pad layout, correct test circuit diagram



USA: Vectron International • 267 Lowell Road, Hudson, NH 03051 • Tel: 1-88-VECTRON-1 •  
Fax: 1-888-FAX-VECTRON

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