1.0 DESCRIPTION AND APPLICATION

The VCT2001A is a dual reference input 3.3V clock generator module with an HCMOS output. Reference inputs are selectable by a one-bit select control input.

An alarm output can be used to detect a problem on the selected reference, such as a loss of lock or a loss of reference. A logic level "1" is indicated from the alarm pin when there is a problem with the selected reference. The unit operates in the free run mode when there is a problem with the selected reference, or when free run is invoked by enabling the forced free run input. Free run accuracy will keep the output to within 20 ppm. The reference will not automatically switch upon loss of reference. Also, all outputs may be tri-stated for external testing purposes with a signal to the Tri-State/Reset input.

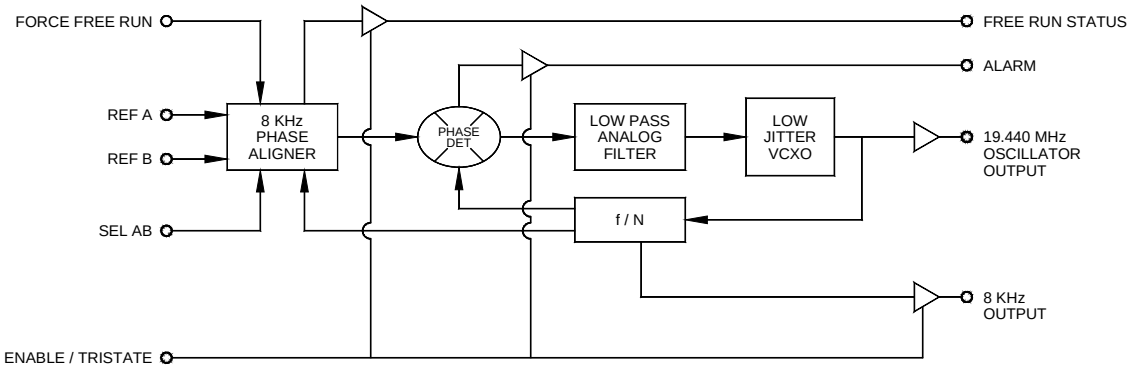
The Loss of Reference alarm detects a missing rising edge within 100 nS of the missing edge. This is usually around 70 nS.

The 8kHz output is divided from the on-board low jitter oscillator. Output phase coherence is maintained during reference switching rearrangement, so the output phase will not necessarily be the same as the reference being used.

The dimensions of the low jitter module are 0.78" x 0.83" x 0.29" mounted on a castellated pin FR-4 board.

FEATURES:

- Output jitter below 1 ps from 12 kHz to 20 MHz
- Two Selectable References @ 8 kHz
- Alarm Output Detecting Loss of Reference or Loss of Lock
- Tri-Statable Outputs
- Force Free Run Function
- Automatic Free Run Operation upon loss of both references
- Rising Edge Phase Detector allows for any Duty Cycle Reference Input
- 3.3 Volt Regulated Power Supply
- Small Size: 0.78" x 0.83" x 0.29"
- Surface Mount with Castellated Pins



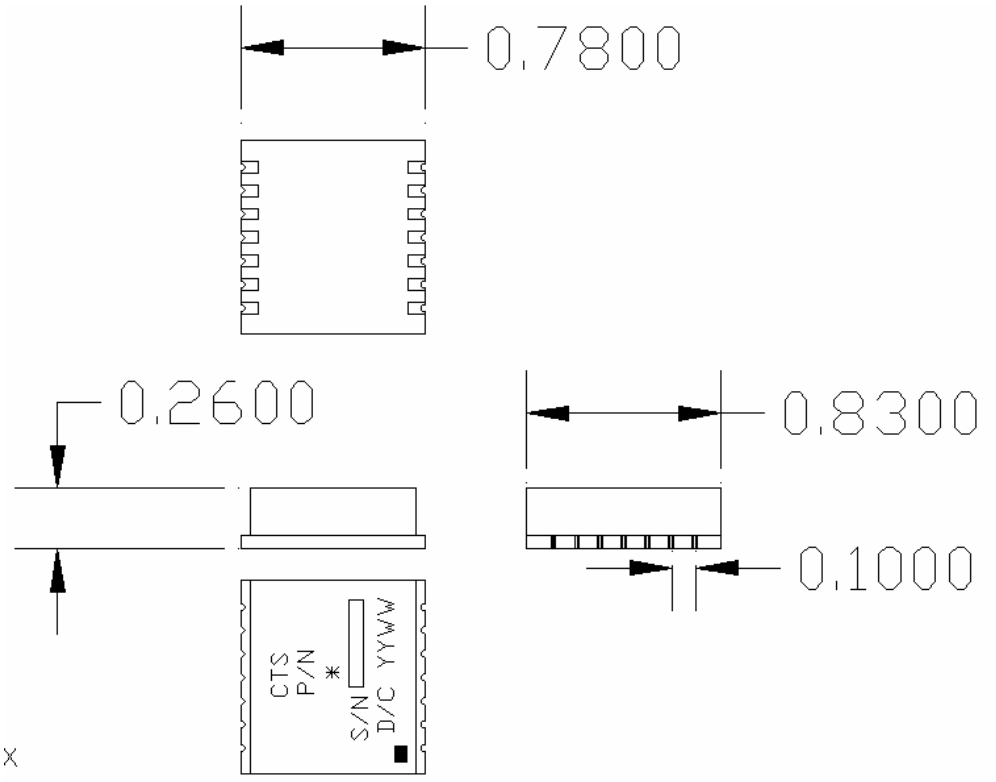
VCT2001A Block Diagram

2.0 ELECTRICAL CHARACTERISTICS

	Specification	Min	Typ	Max	Units
2.1	Regulated Input Supply Voltage, Vcc	3.10	3.30	3.50	V DC
2.2	Supply Current Drain… @ 3.5V			55	mA
2.3	Frequency Output		77.760		MHz
2.4	Temperature Ranges				
2.4.1	Operating Temp. Range	0		70	ºC
2.4.2	Storage Temp. Range	-40		85	ºC
2.5	Timing Parameters				
2.5.1	Output Rise and Fall Time (20% 80%)	-	-	3	ns
2.5.2	Input Jitter Tolerance @ 8kHz Reference (Input Jitter Frequencies > 10 Hz)	2	-	-	µs
2.5.3	Acquisition Time (Offsetting ref. 20ppm)	-	1	-	s
2.5.4	Jitter Filter Bandwidth	-	-	10	Hz
2.5.5	Capture/pull-in range	-25	-	25	ppm
2.5.6	Free Run Frequency	-20	-	20	ppm
2.5.7	Output Duty Cycle	45	50	55	%
2.5.8	Phase Transient due to Reference switching (Rearrangement)			50	nS
2.6	Input Logic Levels				
2.6.1	‘ 0’	-0.5		0.8	V
2.6.2	‘1’	2.4		5.5	V
2.7	Output Logic Levels (into 30pF load)				
2.7.1	‘0’	-0.25		0.8	V
2.7.2	‘1’	4.0		Vcc*0.9	V
2.8	Dual Reference input (HCMOS levels)		8		kHz
2.9	Output load		10		pF

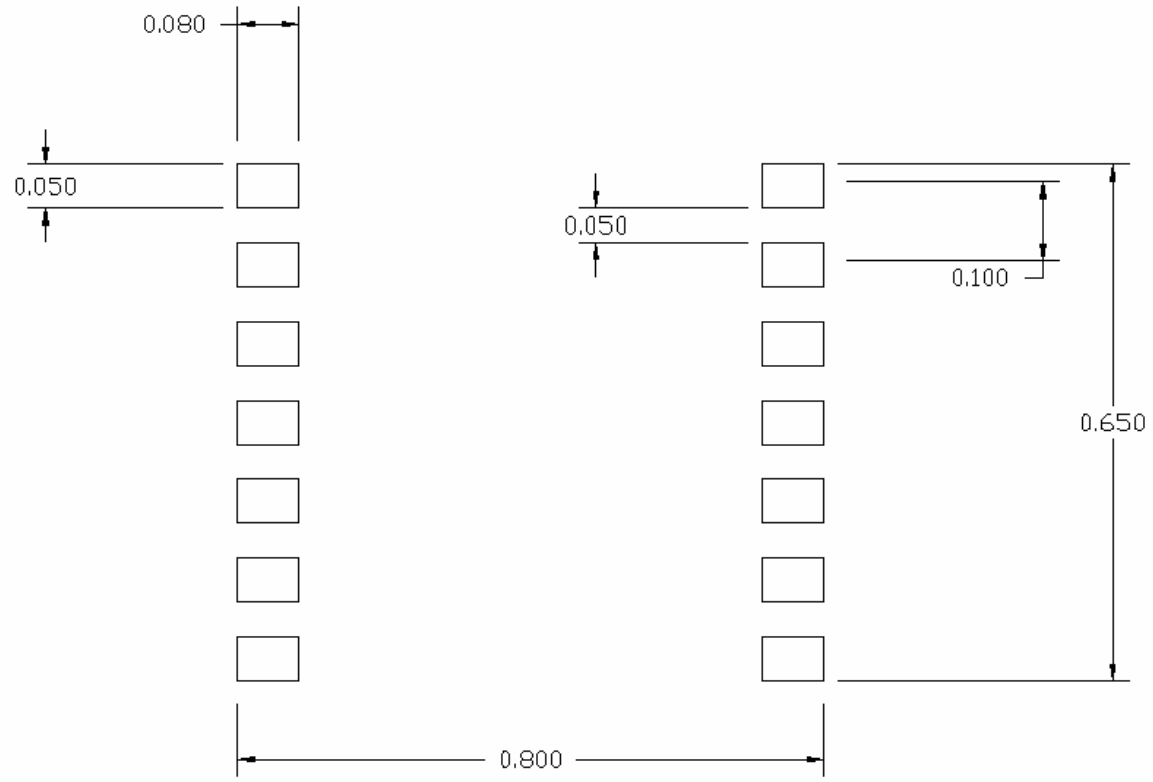
3.0 MECHANICAL CHARACTERISTICS

Pkg. size is 0.780 in (25.40 mm) X 0.830in (26.67 mm) X 0.35 in (8.13 mm) max on an FR4 board with castellated pins. The module coplanarity is .004 in. (0.101 mm)



Pin Descriptions

Pin #	Pin Name	Description
1	8 kHz Out	Filtered 8 kHz Output
2	N/C	
3	N/C	
4	GND	Ground
5	F/R	Force Free Run Input("1" is Free Run)
6	Alarm	Alarm Output (1 = Alarm)
7	REF B	8kHz CMOS Reference Frequency Input
8	REF A	8kHz CMOS Reference Frequency Input
9	RF Output	Oscillator Output
10	F/R status	Free Run Status Output (FR = 1)
11	Vcc	Input Voltage-3.3V nominal
12	N/C	
13	Reset	Reset / Tri-State (1 = Reset)
14	REFSEL	Reference Select A/B Input (A = 0, B = 1)



Dimensions for Pads

I/O Truth Table

Inputs					Outputs			
Reset/ Tri State	**SEL A/B**	**REF A**	**REF B**	**Free Run**	**Free Run Status**	**Alarm**	**Oscillator Output**	**8 kHz Output**
1	X	X	X	X	Tri state	Tri State	Free Run	Tri State
0	X	X	X	1	1	1	Free Run	Free Run
0	0	Ref A Available	Ref B Available	0	0	0	Ref A Lock	Ref A Lock
0	1	Not Available	Ref B Available	0	0	0	Ref B Lock	Ref B Lock
0	0	Not Available	Ref B Available	0	0	0	Free Run	Free Run
0	0	Not Available	Ref B Available	0	0	1	Free Run	Free Run
0	1	Ref A Available	Not Available	0	0	1	Free Run	Free Run
0	0	Ref A Available	Not Available	0	0	0	Ref A Lock	Ref A Lock
0	X	Not Available	Not Available	0	1	1	Free Run	Free Run

4.0 STANDARD ENVIRONMENTAL LIMITS

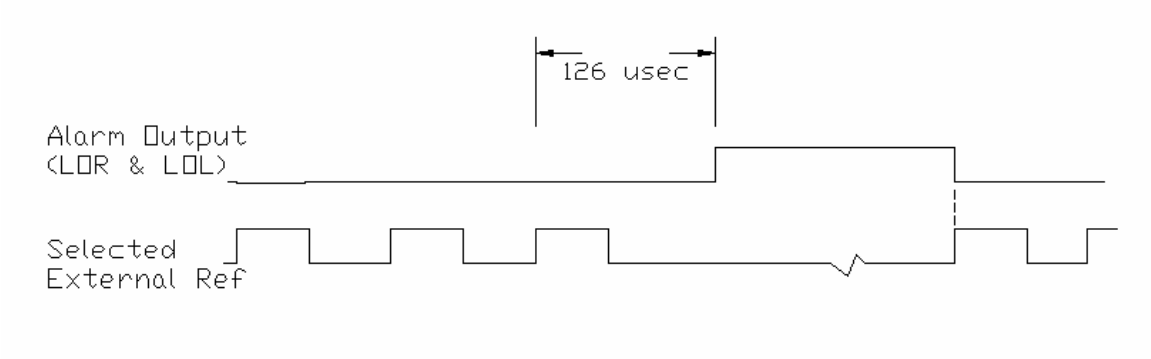
This product is capable of operating within the following environmental conditions:

4.1 Operating Temperature	0 to +70 °C.
4.2 Storage Temperature	-40 to +85°C.
4.3 Humidity (non- Condensing)	95% Relative humidity max @ 40°C.
4.4 Atmospheric Pressure	730 to 780 mm Hg.
4.5 Vibration	10 to 60 Hz with double amplitude of 1.52mm max. (1/2 hour in each of 3 perpendicular planes).
4.6 Shock	1/2 sine pulse, 7000G, with pulse width 0.3mSec. (1 shock in each of 6 directions of 3 perpendicular planes).

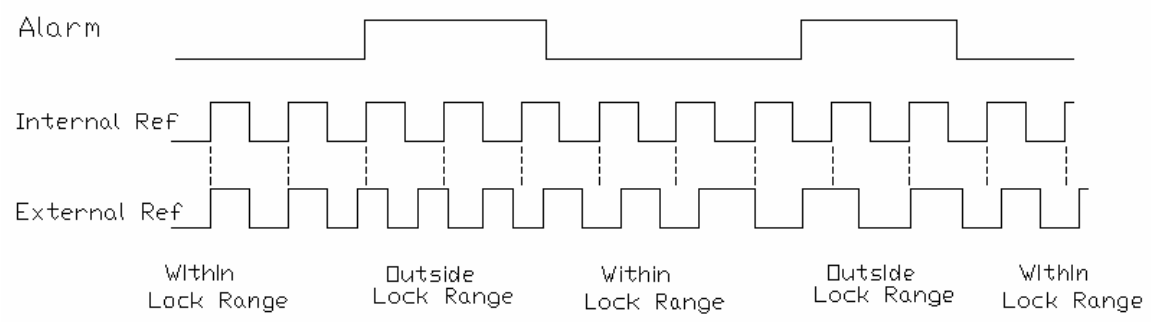
5.0 MAXIMUM SOLDERING PROFILE

Temperature	110 to150 °C	>183°C	>235°C	240°C
Time	6min	2.5min	0.25min	Max temperature

6.0 ALARM SITUATIONS



Loss of Reference Situation



Loss of Lock Situation