Module Data Sheet: VCT2000A 155.520MHz
Application: LVPECL Output-Dual Input Clock Generator

1.0 DESCRIPTION AND APPLICATION

The VCT2000A 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.

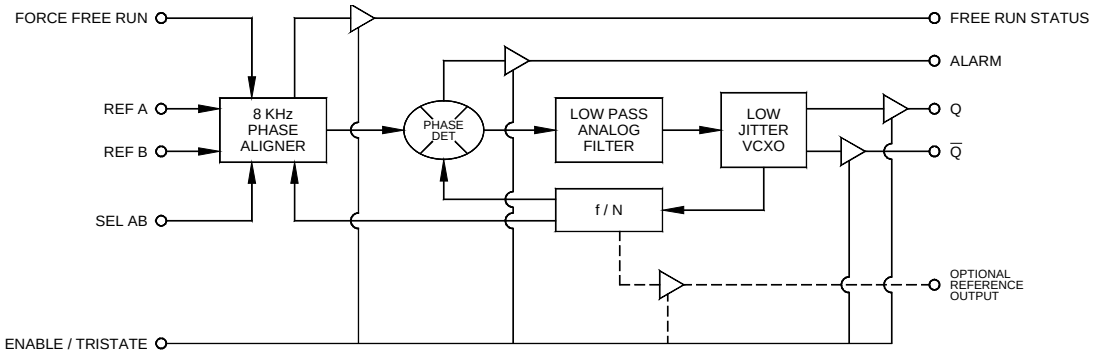
The 8kHz output is divided from the on-board low jitter oscillator. Output phase coherence is maintained during reference switching rearrangement, so the output phase will not necessarily be the same as the reference being used.

The dimensions of the low jitter module are 1.00" x 1.05" x 0.32" mounted on a FR-4 board with castillations.

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-State-able 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: 1 in (25.40 mm) X 1.05 in (26.67 mm) X 0.32 in (8.13 mm)
- Surface Mount with Castillated Pins

Module Data Sheet: VCT2000A 155.520MHz
Application: LVPECL Output-Dual Input Clock Generator



VCT2000A Block Diagram

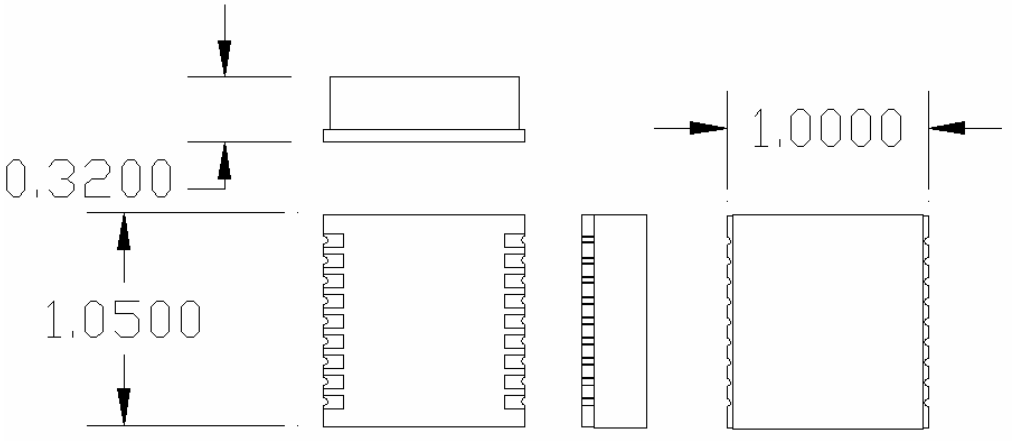
2.0 ELECTRICAL CHARACTERISTICS

	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 @ 3.5Vdc			110	mA
2.3	Frequency Output		155.520		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%)	-	-	550	ps
2.5.2	Input Jitter Tolerance @ 8kHz Reference (Input Jitter Frequencies > 10 Hz)	31.25	-	-	µs
2.5.3	Acquisition Time (Offsetting reference by 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			150	nS
2.5.9	SONET Jitter BW 12 kHz - 20 MHz			1	ps
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 50Ω @Vcc-2.0V)				
2.7.1	‘0’		Vcc-1.62		V
2.7.2	‘1’		Vcc-1.02		V

2.8	Dual Reference input (+/- 30ppm)		8		kHz
2.9	Output loads @ Vcc-2.00V		50		Ω

3.0 MECHANICAL CHARACTERISTICS

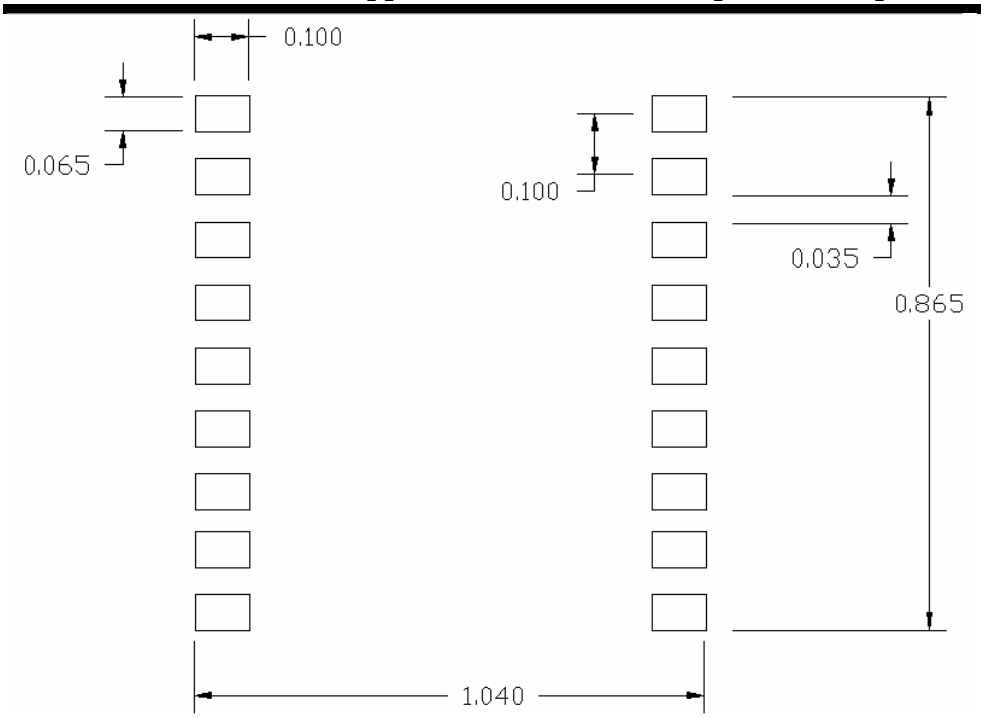
Pkg. size is 1 in (25.40 mm) X 1.05 in (26.67 mm) X 0.32 in (8.13 mm) max on an FR4 board with castellated pins. Overall coplanarity is .004 in (0.101mm).



VCT2000A Outline and Dimensions

Pin Descriptions

Pin #	Pin Name	Pin Description
1	ENABLE/TRI-STATE	VCXO Enable (Enable = 0, Disable = 1 = CMOS Outputs Tri-stated)
2, 3, 14, 15	No Connection	No Connection
4	REFA	8kHz CMOS Reference Frequency Input
5	SELA/B	Input Reference Select Pin (REFA = 0, REFB = 1)
6	RESET	RESET (RESET = 1)
7	REFB	8kHz CMOS Reference Frequency Input
8, 17	GND	Ground
9	FRstatus	Free Run Status (FR = 1)
10	Vcc	Supply Voltage
11	Optional	Reserved for Optional Use
12	ALARM	Loss of Reference / Lock alarm (Alarm = 1)
13	FR	Force Free Run (Phase Lock = 0, Free Run = 1)
16	/Q	LVPECL Complementary Output
18	Q	LVPECL Output



Dimensions for Pads

I/O Truth Table

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

4.0 STANDARD ENVIRONMENTAL LIMITS

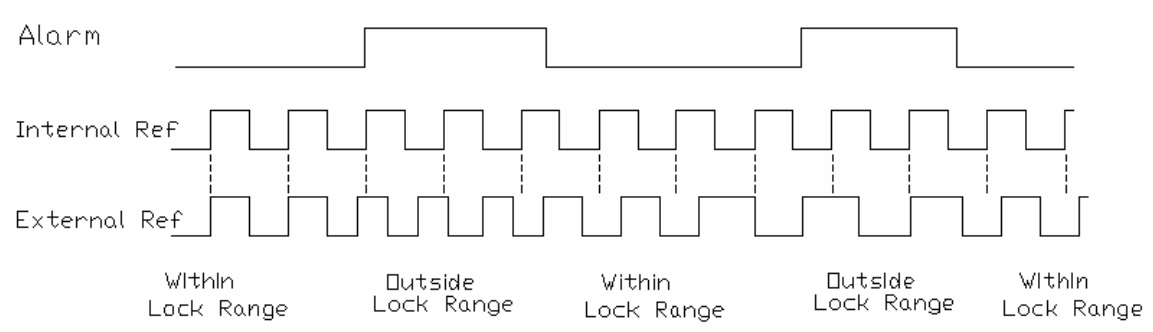
This product is capable of operating within the following environmental conditions:

4.1 Operating Temperature	0 to +70 °C.
4.2 Storage Temperature	-40 to +85°C.
4.3 Humidity (non- Condensing)	85% Relative humidity max @ 40°C.
4.4 Atmospheric Pressure	730 to 780 mm Hg.
4.5 Vibration	10 Gs 10 to 500 Hz with double amplitude of 1.52mm max.
4.6 Shock	100G, with pulse width 1mSec. (1 shock in each of 6 directions of 3 perpendicular planes).

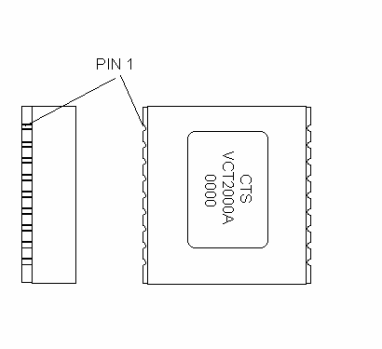
5.0 MAXIMUM SOLDERING PROFILE

Temperature	110 to150 °C	>183°C	>220°C	220°C
Time	6min	2.0min	0.5min	Max temperature

6.0 ALARM



Loss of Lock Alarm



Pin 1 Locator