

FEATURES:

- ♦ Phase Locked Output Frequency Control
- ♦ Low Jitter Voltage Controlled Oscillator Incorporated
- ♦ +3.3 Volt Power Supply
- ♦ LOR and LOL Alarm
- ♦ Forced Free Run Function
- ♦ Automatic Free Run upon LOR Alarm Condition
- ♦ 77.760MHz Input Reference
- ♦ Tri-State Enable/Disable Function
- ♦ Surface Mount Package
- ♦ Output Frequency 77.760MHz

Applications

- ♦ Low-Jitter, Precision Clocks
- ♦ VCXO's and VCTCXO's

GENERAL DESCRIPTION

The CTM 5002A is manufactured in Champion's ISO 9001 Certified facility located in Franklin Park, Illinois. The CTM 5002A is a Frequency Translator that will lock to an input of 77.760MHz, providing a very low jitter output at 77.760MHz (9ps RMS). A variety of input/output frequencies for T1, E1, OC-n and STM applications are also available.

Further features include alarms for Loss-Of-Reference (LOR), or Loss-Of-Lock (LOL) conditions. Upon LOR the CTM 5002A will automatically enter a "free run" state that will maintain a ± 20 ppm frequency stability. A Tri-State enable/disable function is also available for testing purposes.

The CTM 5002A is available in a Surface Mount Package that is leaded to be compatible with a variety of SMD manufacturing processes.

CTM5002A is a member of Champion's CTM5000 Series of Frequency Translator Modules. Our experienced engineering Staff can also offer custom modules for specific applications.

PART NUMBERING GUIDE	
CTM5002AX	- Specify Output Frequency
	"Blank" = 40%/60% Symmetry
	"S" = 45%/55% Symmetry

Table 1: Absolute Maximum Ratings

Symbol	Parameter	Minimum	Maximum	Units
V _{CC}	Power Supply Voltage	0.0	+5.5	Volts
V _i	Input Voltage	-0.5	+5.5	Volts
T _S	Storage Temperature	-65	135	°C

Table 2: Electrical Specifications

Parameter	Specification
Voltage	3.3V ±10%
Current	< 100 mA @ 3.6V
Oscillator Output Frequencies	77.760MHz
Temperature Range	0°C to 70°C
Input Reference Frequencies	77.760MHz
Input Jitter Tolerance	0.064UI
Acquisition Time	0.25 sec
Capture/Pull In Range	±50 ppm
Input Logic Type	3.3V CMOS, 5V Tolerant
Output Logic Type	CMOS
Output Duty Cycle	40%/60% @ 50% Level
Output Rise and Fall Times	<2 ns (20% - 80%)
Output Load	30 pF
Alarms	LOR and LOL
Freerun Accuracy	±20 ppm
Jitter @ 77.760MHz	9ps @ 10Hz to 1MHz

Table 3: Input and Output Characteristics

Symbol	Parameter	Minimum	Maximum	Units
V _{IH}	High Level Input Voltage	2.0	5.5	Volts
V _{IL}	Low Level Input Voltage	-0.5	0.8	Volts
T _{IO}	I/O to Output Valid		10	nS
C _O	Output Capacitance		10	pF
V _{HO}	High Level Output Voltage	2.4		Volts
V _{IO}	Low Level Output Voltage		0.4	Volts
T _{IR}	Input Signal Pulse Width	30		nS

Table 4: Input Reference Selection

SEL A IN	SEL B IN	Reference Input
0	0	77.760MHz
1	0	Not Used
0	1	Not Used
1	1	Not Used

Table 5: Alarm States

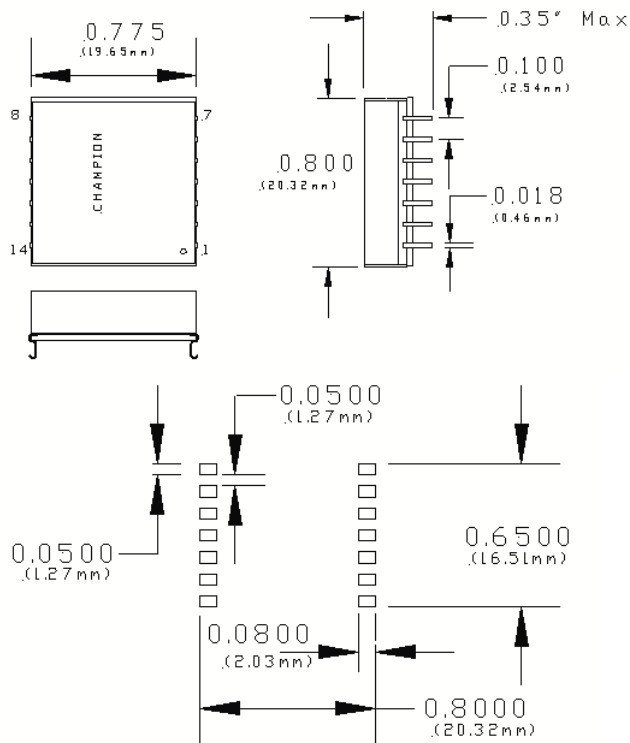
LOL	LOR	Alarm
0	0	No Alarm
1	-	Loss of Lock
-	1	Loss of Reference

Table 6: Output Programming

Tri-State	Free Run	Effect on Output
0	0	Locked to Reference (Default)
1	*	Hi-Z Output
0	1	Free Run at Nominal Internal Reference

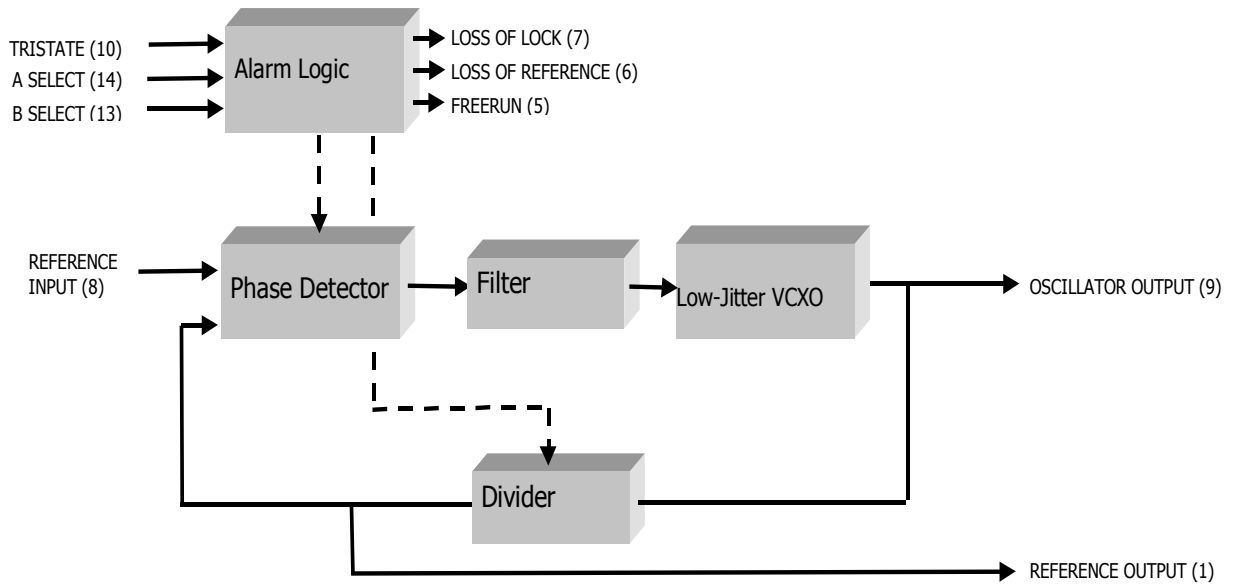
Table 7: Reference Frequencies

Input Reference	Output Reference
77.760MHz	77.760MHz



PIN	Function	PIN	Function
1	Reference Output	8	Reference Input
2	N/C	9	Oscillator Output
3	N/C	10	Tri-State Enable
4	Ground	11	VCC
5	Free Run	12	N/C
6	Loss of Reference	13	B Select Input Freq
7	Loss of Lock	14	A Select Input Freq

CTM5002A Block Diagram



Mechanical and Environmental Specifications

TEST METHODS	REFERENCE PROCEDURES	DESCRIPTION
Temperature Cycle	MIL-STD-883, Mtd 1010, Cond. B	-55°C to +125°C; Air-to-Air; 100 cycles; 10 min. dwell
Mechanical Shock	MIL-STD-202, Mtd 213, Cond. D	500 g's
Vibration	MIL-STD 202, Mtd 204, Cond. B	10-2000 Hz; 0.06 inch; 15g; 3 planes
Humidity Steady State	MIL-STD-202, Mtd 103	40°C; 90%-95% R.H.; 56 days
Thermal Shock	MIL-STD-883, Mtd 1011.7 Cond. A	100°C to 0°C; Water-to-Water; 15 cycles
Electrostatic Discharge	MIL-STD-883, Mtd 3015 Class II	2 KV to 4 KV Threshold
Solderability	MIL-STD-883, Mtd 2022.2	Solder dip; Meniscograph Criteria
Resistance to Soldering	MIL-STD-202, Mtd 210A, Cond. C	260°C; 10 seconds: 1 inch/sec.
Lead Integrity	MIL-STD-883, Mtd 2004.5, Cond. A, B1	Lead tension & bend stress
Marking Permanence	MIL-STD-883, Mtd 2015.8	Resistance to solvents
Life Test	MIL-STD-883, Mtd 1005.6	125°C, powered, 1000 hours minimum