

## TMB SERIES SYNCHRONOUS TIMING MODULES

8kHz Inputs, LVPECL outputs <622.080MHz

### DESCRIPTION

TMB (Synchronous Timing Module, model B) series parts consists of a PLL module that generates LVPECL outputs up to 622.080MHz from a low-jitter VCXO. The module is locked to one of two 8kHz reference inputs, selectable by the A/B SEL pad. PECL and complimentary PECL outputs can be disabled by pad 1, the control pad. Pad 12 gives an alarm signal when 'Loss Of Lock' or 'Loss Of Reference' occurs. The module will enter into Free Run mode, signaled from pad 9 FR status, when both REF A and REF B are absent.

Applications include Line Cards and Service Termination Cards for SONET, SDH, ATM and PDH network equipment.

### FEATURES

- Loss of Reference (LOR) and Loss of Lock (LOL) active alarms.
- Two 8kHz reference inputs, CMOS levels.
- Custom input frequencies upon request.
- Continuous input monitoring of the two external frequencies.
- Automatic FREE RUN mode on Loss of Reference (both A&B) <622.080MHz LVPECL outputs with enable/disable functions
- Free-run clock output
- +3.3V SMD package, current 150mA.

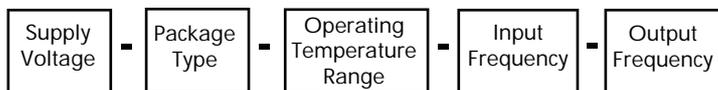
### GENERAL SPECIFICATION

Input Reference Frequency:	8kHz (A & B)*
Output Frequency:	< 622.080MHz
Supply Voltage:	+3.3 Volts ±5%
Current Consumption:	120mA minimum 150mA typical 200mA maximum
Acquisition Time:	1 second
Capture/Pull-in Range:	±40ppm
Input Logic:	CMOS
Output Logic Levels	
HIGH:	2.2V min., 2.3V typ., 2.5V max.
LOW:	1.4V min., 1.5V typ., 1.6V max.
Output Capacitance:	10pF
Duty Cycle:	40%60% at 50% level
Rise and Fall Times:	220ps
Free Run Accuracy:	±20ppm maximum
Output Jitter:	1ps RMS, 12kHz to 20MHz bandwidth
Input Jitter Tolerance:	7microseconds
Jitter Filter Band Width:	10Hz max. 3dB loop response
Operating Temperature Range	
COMMERCIAL:	0° ~ +70°C (Code 'C')
INDUSTRIAL:	-40° ~ +85°C (Code 'I')

\* Custom inputs available.

### PART NUMBERS

Part numbers are generated according to this scheme:

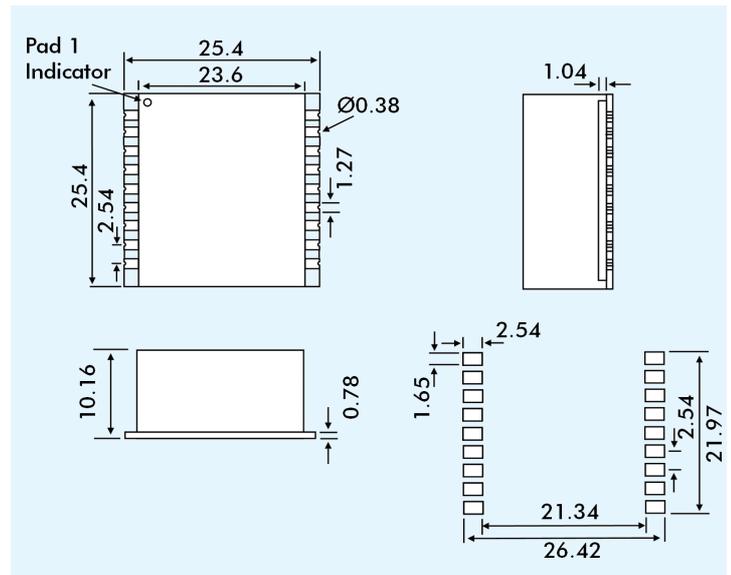


"3" for +3.3 V    TMB25    "C"=0°~+70°C    Add "k" for kHz    Output Frequency in MHz  
 "I"=-40°~+85°C

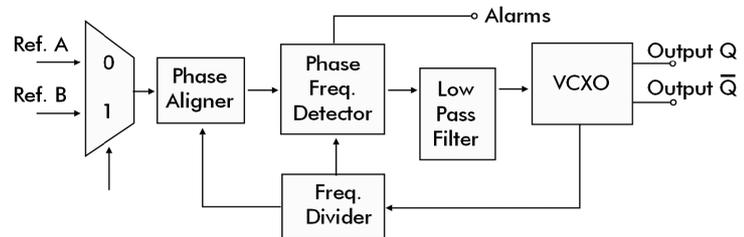
EXAMPLE: 3TMB25-C-8K-622.080

Representing: +3.3V supply, model TMB (25mm square, 18 pad SMD package), Commercial operating temperature range, 8kHz input frequency and output frequency is 622.080MHz

### OUTLINES & DIMENSIONS



### FUNCTIONAL BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Description	Rating
Vcc	Supply Voltage relative to ground	-0.5V to 4.0V
Vin	Input Voltage relative to ground	-0.5V to 5.5V
Tstg	Storage Temperature (Ambient)	-65° to +100°C
Tref	Maximum reflow Temperature	240°C

**TMB SERIES SYNCHRONOUS TIMING MODULES**

8kHz Inputs, LVPECL outputs &lt;622.080MHz

**INPUT SELECTION AND OUTPUT RESPONSE**

AUTO	RESET	ENABLE	A/B SELECT	REF A	REF B	FR	FR STATUS	ALARM	Q	$\overline{Q}$	NOTE
0	1	0	X	X	X	X	1	X	X	X	FR
0	X	1	X	X	X	X	X	X	0	1	
0	0	0	X	X	X	1	1	X	X	X	FR
0	0	0	0	A	A	0	0	0	X	X	RA
0	0	0	1	A	A	0	0	0	X	X	RB
0	0	0	0	NA	A	0	0	1	X	X	NL
0	0	0	1	NA	A	0	0	0	X	X	RB
0	0	0	1	A	NA	0	0	1	X	X	NL
0	0	0	0	A	NA	0	0	0	X	X	RA
0	0	0	X	NA	NA	0	1	1	X	X	FR
1	0	0	X	A	A	0	0	0	X	X	RA*
1	0	0	X	A	NA	0	0	0	X	X	RA*
1	0	0	X	NA	A	0	0	0	X	X	RB**
1	0	0	X	NA	NA	0	1	1	X	X	FR

**KEY**

A: ACTIVE      FR: FREE RUN MODE      RA: LOCKED TO A      RB: LOCKED TO B  
 NA: NOT ACTIVE      NL: NOT LOCKED      X: DON'T CARE

\* If AUTO is on (1) the system will lock to REF A

\*\* If REF A is lost the system will lock to REF B automatically; if both References are lost the unit go into FREE RUN.

**PAD CONNECTION DESCRIPTION**

Pad No.	Pad Name	Description of Function
1	ENABLE	VCXO Enable (0=Enable, 1= Disable)
2	NC	Not connected
3	NC	Not connected
4	REF A	Reference Input A
5	A/B SEL	Reference Select (0=Input A, 1=Input B)
6	RESET	Reset (Reset = 1)
7	REF B	Reference Inpt B
8	GRN	Ground
9	FR STATUS	Free Run Status (Unit on Free Run = 1)
10	Vcc	Supply Voltage (+3.3VDC)
11	AUTO	Automatic Function
12	ALARM	Loss of Reference (Alarm = 1)
13	FR	Force Free Run (Free Run = 1)
14	NC	Not connected
15	NC	Not connected
16	$\overline{Q}$	LVPECL Complimentary Output
17	GRN	Ground
18	Q	LVPECL Output