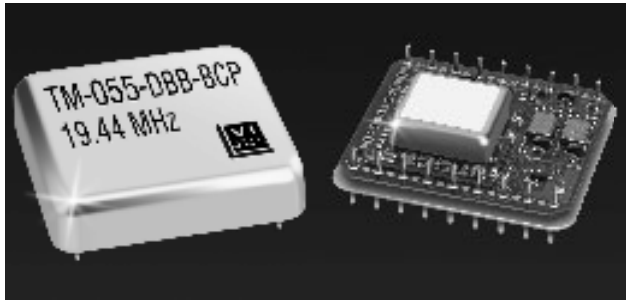


Timing Modules

TM-055



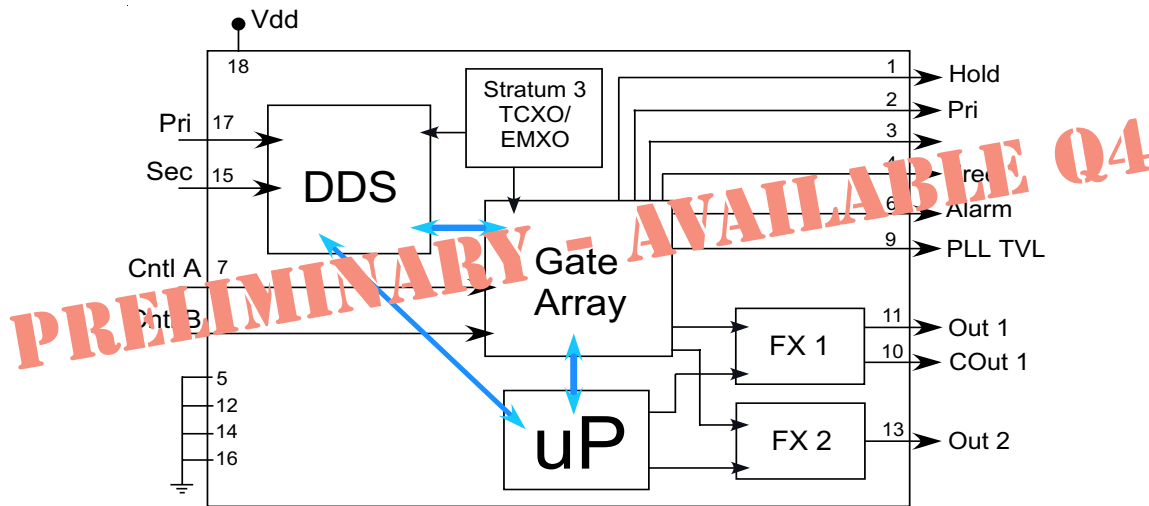
Description:

Vectron's TM-055 is a DDS based Timing Synchronization Module for use in applications requiring Stratum 3 compliance. Up to two different outputs are available at any standard frequency from 1.544 MHz to 777.6 MHz.

Applications:

- SONET / SDH / PDH / ATM / DWDM / Base Stations

Block Diagram



Performance Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit
Supply Voltage, C = 5.0 Vdc	V _{cc}	4.75	5.00	5.25	Vdc
D = 3.3 Vdc	V _{cc}	3.15	3.30	3.45	Vdc
Supply Current, 3.3 Vdc & 0°C to +70°C	I _{cc}		225	300	mA
Number of Inputs			2	2	
Input Frequency Range		8 kHz	8 kHz	155.52 MHz	
Input Logic			TTL / HCMOS		
Number of Outputs		1	1	2	
OUTPUT 1 - Frequency Range	Out1	1.544	77.76	777.6	MHz
Jitter Generation, rms 12 kHz to 20 MHz @ 77.76			0.5	1.0	ps
Output Logic			TTL or PECL		
OUTPUT 2 - Frequency Range	Out2	1.544	77.76	155.52	MHz
Jitter Generation, rms 12 kHz to 20 MHz @ 77.76			0.5	1.0	ps
Output Logic			TTL		
Jitter Generation, rms (cycle to cycle method)			3	5.0	ps
Operating Temperature Ranges		Temp Range B = 0°C to +50°C Temp Range C = 0°C to +70°C Temp Range F = -40°C to +85°C			
Package Size		50.8 x 50.8 x 14.86 mm (2.0" x 2.0" x 0.585")			

TM-055

Performance Characteristics - Output Levels

Parameter	Symbol	Min.	Typical	Max	Unit
Output, F = Comp PECL	---	---	PECL	---	---
Voh	Voh	2.275		2.42	Vdc
Vol	Vol	1.490		1.68	Vdc
Rise / Fall Time (@ 77.76 MHz)	tr / tf		0.5	2	ns
Output, B = TTL	---	---	TTL	---	---
Voh, loh = 50 μ A	Voh	2.4			Vdc
Vol, lol = 50 μ A	Vol			0.4	Vdc
Rise / Fall Time (@ 77.76 MHz)	tr / tf		0.5	2	ns
Output Symmetry @ 19.44 MHz	Sym	45		55	%

Performance Characteristics - Stability Per GR-1244-CORE I2

Parameter	Performance
Free Run	< \pm 4.6 ppm for 10 years
Hold Over (24 Hrs) Vs. Initial Offset Vs. Temperature Range Vs. Drift (24 Hrs)	< \pm 0.37 ppm < \pm 0.05 ppm < \pm 0.28 ppm < \pm 0.04 ppm
Hold Over History	TBD
Pull-In / Hold-In Range	> \pm 9.2 ppm

Performance Characteristics - Operational State Truth Table

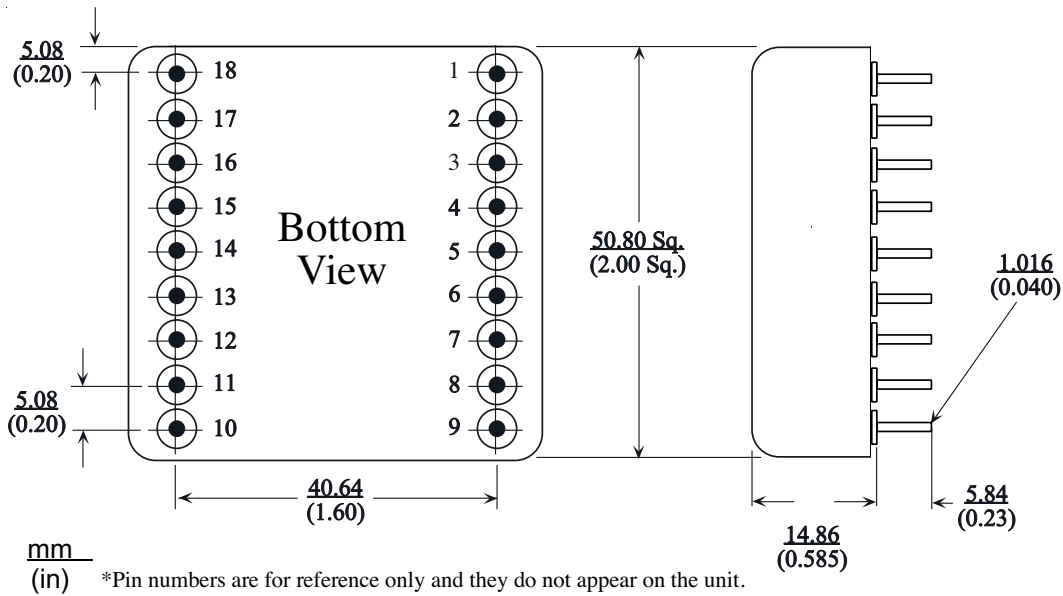
Control Inputs		Operational State		Status Pin Outputs					
A	B			Pri Ref.	Sec. Ref.	Holdover	Free Run	PLL TVL	Alarm Output
0	0	Free Run		0	0	0	1	0	1
1	0	Primary Reference	Normal	1	0	0	0	0	0
			Out of Tune Limit	1	0	0	0	1	1
			LoL & LoS	1	0	0	0	0	1
0	1	Secondary Reference	Normal	0	1	0	0	0	0
			Out of Tune Limit	0	1	0	0	1	1
			LoL & LoS	0	1	0	0	0	1
1	1	Holdover		0	0	1	0	0	1

TM

Timing Modules

TM-055

Outline Drawing



Pin Out Information

Pin	Symbol	Function
1	Hold	Holdover Status; See Operational State Truth Table
2	Pri	Primary Status; See Operational State Truth Table
3	Sec	Secondary Status; See Operational State Truth Table
4	Free	Free Run Status; See Operational State Truth Table
5	GND	GND
6	Alarm	Alarm Out; A high level indicates there is a sync problem
7	Cntl A	Control A; See Operational State Truth Table
8	Cntl B	Control B; See Operational State Truth Table
9	PLL TVL	PLL TVL; The output is high when the unit is not locked to either reference
10	COU1/NC	Complementary PECL Output 1 or No Connect if Output is TTL
11	Out1	Output 1
12	GND	Ground
13	Out 2	Output 2
14	GND	Ground
15	Sin	Secondary Input
16	GND	Ground
17	Pin	Primary Input
18	Vcc	5 Vdc or 3.3 Vdc (3.3 Vdc is Standard)

TM-055

Description

Vectron's TM-055 is a DDS based Timing Synchronization Module for use in applications requiring Stratum 3 compliance. Up to two different outputs are available at any standard frequency from 1.544 MHz to 777.6 MHz. These outputs are low jitter outputs that meet the stringent jitter requirements for OC-192 systems.

The TM-055 is externally controlled so as to work in one of four different operational states; Locked to Primary, Locked to Secondary, Holdover and Free Run. If the unit is locked to either the Primary or Secondary and the sync signal is lost, the TM-055 will enter Holdover and signal an alarm. The internal oscillator has a temperature stability of <0.28 ppm pk-pk over the entire temperature range thus assuring compliance with Telcordia specification GR-1244-CORE while in Holdover regardless of the temperature of the unit upon entering into Holdover and regardless of the temperature drift of the system over 24 hours.

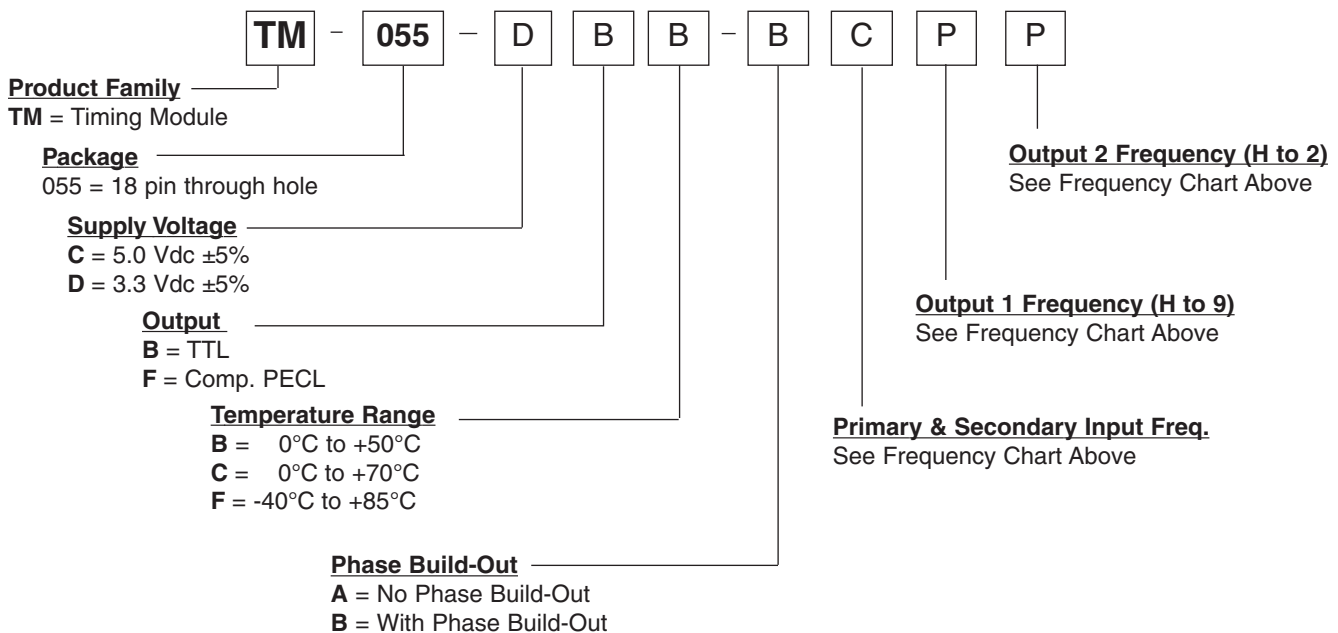
The TM-055 is available with either a 3.3 Vdc or 5 Vdc supply and in temperature ranges as wide as -40°C to +85°C while still maintaining a maximum height of less than 0.6". This unit is perfect for Campus, Fiber to the Curb and any other applications where environmental temperature can not be controlled.

The information contained in this catalog is a condensed version of the full data sheet. For additional information about Vectron's Timing Modules please visit our Website at www.stratum3.com.

Standard Frequencies

8 kHz	C	16.384 MHz	N	82.944 MHz	3
16 kHz	D	19.44 MHz	P	112 MHz	4
64 kHz	E	20.48 MHz	R	139.264 MHz	5
1.024 Hz	F	26.00 MHz	T	155.52 MHz	6
1.544 Hz	H	38.88 MHz	X	166.6286 MHz	7
2.048 MHz	J	44.736 MHz	Y	622.08 MHz	8
4.096 MHz	K	51.84 MHz	0	666.5143 MHz	9
8.192 MHz	L	61.44 MHz	1	no output frequency	A
13.00 MHz	M	77.76 MHz	2	Special SCD	S

Ordering Information



TM