



# 9–15 GHz Digitally Tuned Oscillator DTO-12000-50M

## Features

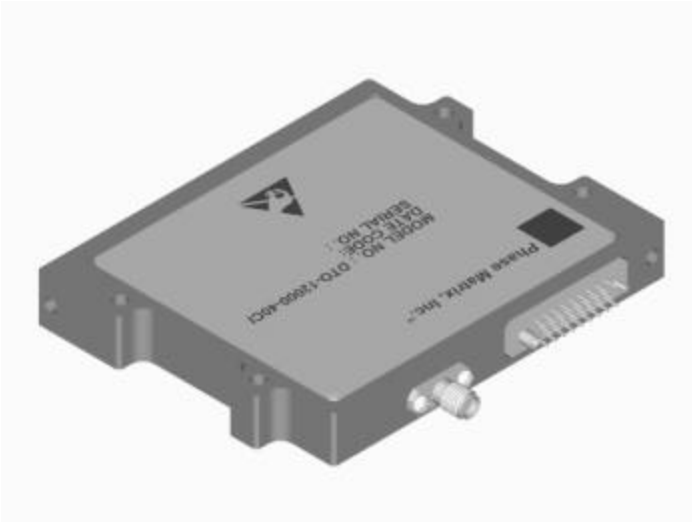
- Digital tuning using 12 bit parallel input word
- Frequency Bandwidth 9-15 GHz
- EEPROM Linearized
- Fast Settling  
 < +2 MHz @ 2ms
- Low Phase Noise  
 -75 dBc/Hz@100 KHz
- Dimensions 4 x 3 x 0.5 in

## Applications

- Wideband Digitally Tuned Source
- High Reliability Military Applications
- Simulators
- EW Systems

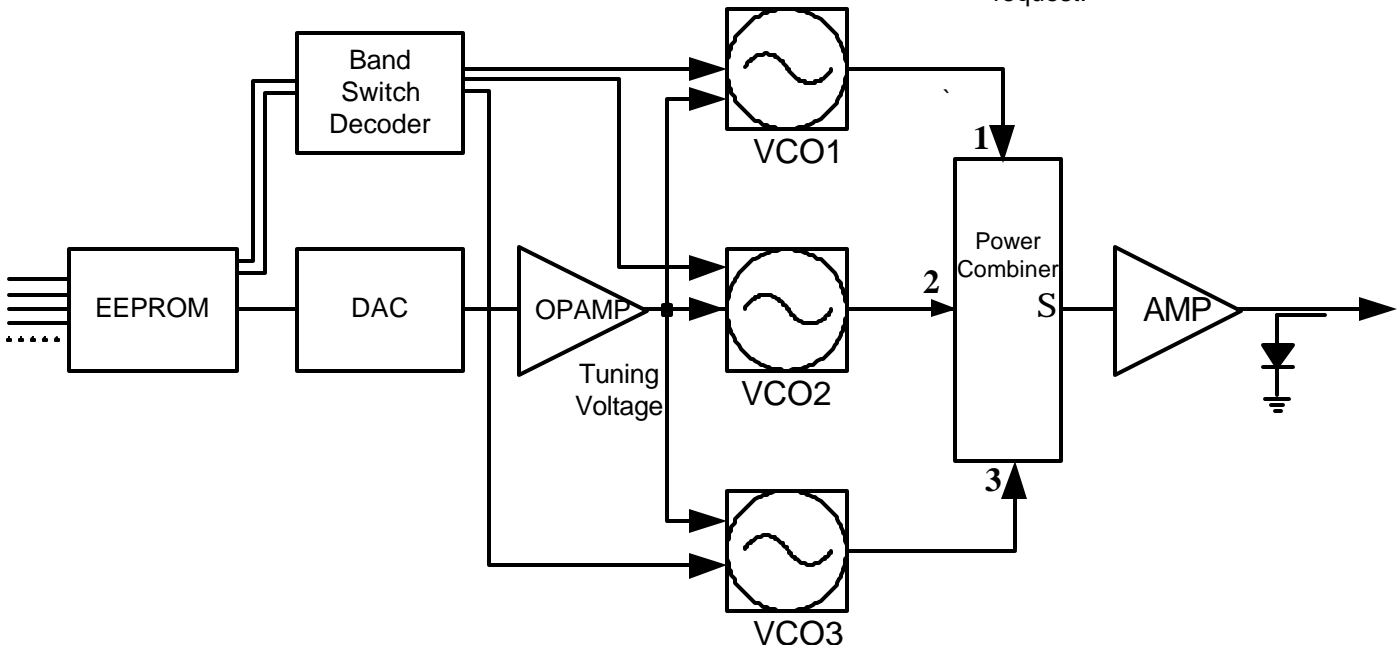
## General Description

The DTO-12000-50M provides a low noise, fast settling wideband, digitally tunable source for critical applications in Radar Simulators and EW Systems. Multiple fundamental VCOs are used in order to cover the desired frequency band. High accuracy, high resolution and high linearity is achieved by efficiently using EEPROM. A unique proprietary technique is used for fast switching between VCOs. This source is commonly used as a key component for wideband EW systems and simulators.



This low noise fundamental VCOs use a high performance Silicon Bipolar transistors in conjunction with a hyper-abrupt silicon varactor diode to realize three wideband sources which are combined using a Wilkinson power combiner. A GaAs FET buffer amplifier is used to achieve necessary power output and load isolation of the oscillator. A diode detector in the output is used to provide status indicator. Frequencies other than the ones mentioned are available on request.

## Functional Block Diagram



DTO-12000-50M August 2007 Preliminary  
 Specification is subject to change without prior notification

**DTO-12000-50M Absolute Maximum Ratings**

Parameter	Units	Ratings
Positive Supply Voltage	V	+14V
Negative Supply Voltage	V	- 14V
Operating Temperature	°C	-50 to 95
Storage Temperature	°C	-40 to +125

**DTO-12000- 50M Summary Electrical Specifications, - 40° C to 85° C**

Parameter	Units	Min	Typ	Max
Frequency $f_0$	GHz	9		15
Tuning	DTW	Parallel 12 bit		
Output Power ( 50 ohms load)	dBm	15		19
Frequency Settling @ 2 $\mu$ s	$\pm$ MHz			2
Post Tuning Drift 1 $\mu$ s to 1 sec	MHz			2
Digital Tuning Sensitivity	MHz/bit		2	
Output Return Loss	dB	12	14	
Harmonics (Below Carrier)	dBc			-20
Spurious Output (Below Carrier)	dBc			-70
Phase Noise @ 100 KHz from $F_0$	dBc / Hz		-75	-70
Frequency Drift over Temperature	MHz			120
Pulling Figure (12 dB RL)	MHz			10
Pushing Figure, +/- 0.2V Supply	MHz			10
Positive Supply Voltage	V	11.5	12	12.5
Positive Supply Current	mA		400	500
Negative Supply Voltage	V	-11.5	-12	-12.5
Negative Supply Current	mA			50
Package Dimensions	inches	4 x 3 x 0.5 H		

**Contact factory for change in specifications or package options.**

**Part Number Ordering Information**

Part Number
DTO-12000-50M

**For more information:**

Phase Matrix Inc.  
 109 Bonaventura Dr.  
 San Jose, California  
 95134 - 2106 USA  
 TEL: +1 (408) 428.1000

[sales@phasematrix.com](mailto:sales@phasematrix.com)

Printed in U.S.A.

Copyright © August 2007 Phase Matrix