Phase Matrix, Inc.™
Technology You Can Count On

Voltage Tuned Oscillator

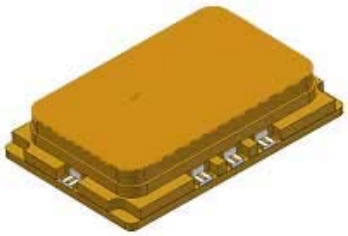
VTO-39813-SMD
VTO-43018-SMD

Features

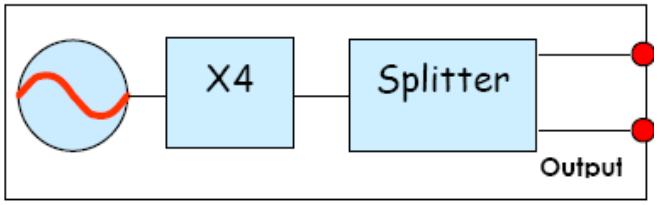
- **Operating frequencies: 39.813GHz or 43.018GHz**
- **Output Power (50 Ω Load): 3 dBm Typical**
- **Modulation Sensitivity: 40 to 80 MHz/V**
- **Tuning Voltage: 0 to 5 Volts**
- **Low Phase Noise: < -95 dBc/Hz @100 KHz**
- **Low Power Consumption**
- **0.679 L x 0.447 D x 0.17 H (inches)**

Applications

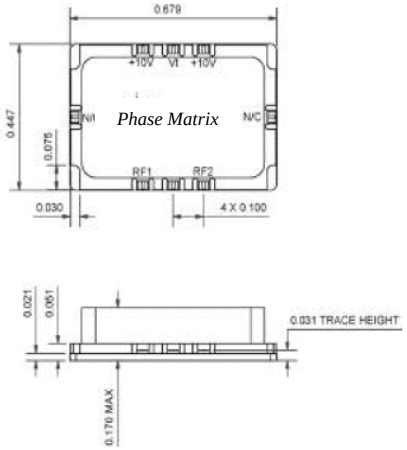
- **Transmitter and Receiver Subsystems for OC-768 / STM-256 applications.**
- **40 GHz Low Noise Source**



Functional Block Diagram



Package Mechanical Dimensions (Inches)



General Description

The VTO-39813-SMD and VTO-43018-SMD provide differential output sine wave low jitter source at 39.813 GHz and 43.018 GHz in a surface mount package. This source is commonly used as a key component for clock and data recovery applications of the 40Gb/sec optical communication systems.

This low jitter source uses a high performance low noise Silicon Bipolar transistor in conjunction with a hyper-abrupt silicon varactor diode to realize a 10GHz voltage tuned oscillator with necessary tuning capability to compensate for any variations due to temperature, bias, load variations as well as aging. A GaAs FET buffer amplifier is used to achieve necessary power output and load isolation of the oscillator. A GaAs PHEMT MMIC quadrupler is used to generate 40Ghz signal. The signal is then passed through a band-pass filter before coupling a power splitter to provide differential output voltage.

Frequencies other than the ones mentioned are available on request.

VTO-39813-SMD & VTO-4301-SMD Absolute Maximum Ratings

Parameter	Units	Ratings
Positive Supply Voltage	V	+6V
Negative Supply Voltage	V	- 6V
Tuning Voltage	V	0 to 6 V
Operating Temperature	°C	-10 to 85
Storage Temperature	°C	-40 to +125

VTO-39813- SMD & VTO-43018-SMD
Summary Electrical Specifications, 0° C to 75° C

Parameter	Units	Min	Typ	Max
Frequency f_o	GHz		39.813 or 43.018	
Vt @ f_o	V	0		5
Output (50 Ω Load) each port				
Power	dBm	0		4
Voltage p-p	V	0.6		1.0
Power Balance	dB			1
Phase Balance	degrees			20
Tuning Sensitivity	MHz / V	40		80
Tuning Sensitivity Variation	%	-20		20
Modulation Bandwidth	MHz	100		
Output Return Loss	dB	10	12	
Second Harmonic (Below Carrier)	dBc			-20
Third Harmonic (Below Carrier)	dBc			-20
Sub Harmonically related Spurious	dBc			-30
Spurious Output (Below Carrier)	dBc			-60
Phase Noise @				
100 KHz from F_o	dBc / Hz		-95	-90
10 MHz from F_o	dBc / Hz			-130
Frequency Drift over Temperature	MHz			100
Pulling Figure (12 dB Return Loss)	MHz			10
Pushing Figure, +/- 0.2V Supply	MHz			20
Positive Supply Voltage	V	4.8	5	5.2
Positive Supply Current	mA			150
Negative Supply Voltage	V	-4.8	-5	-5.2
Negative Supply Current	mA			15
Package Dimensions	inches		0.67X0.47 x 0.17H	

Contact Factory for any changes in specifications.

Part Number Ordering Information

Part Number
VTO-39813-SMD
VTO-43018-SMD

For more information:
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Data subject to change