



Differential Sine Wave Clock for 40 Gb/s Systems

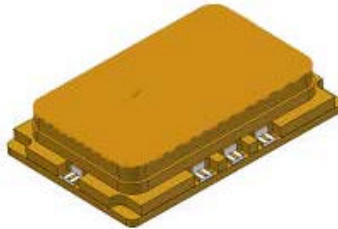
HSC-39813-SMD **HSC-43018-SMD**

Features

- Operating frequencies:
 39.813GHz or 43.018GHz
- Output Power (50 Ω Load):
 0 dBm min.
- 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

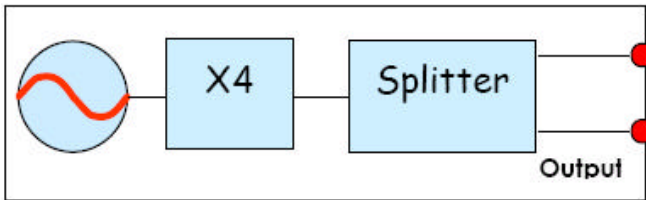


General Description

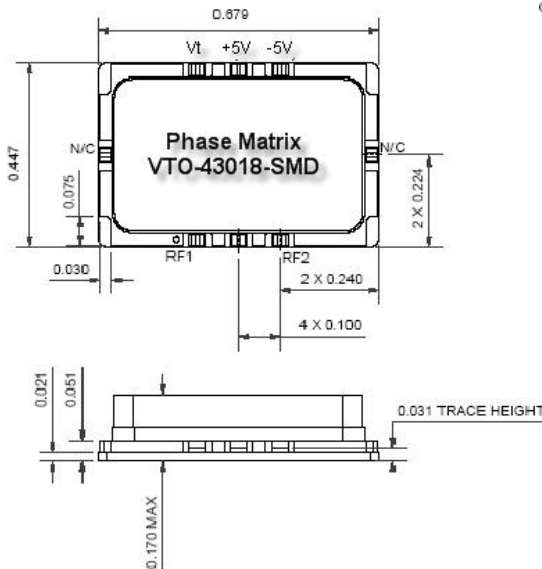
The HSC-39813-SMD and HSC-43018-SMD provide differential output sine wave low jitter source at 39.813 GHz and 43.018 GHz in a bondable surface mount package. This source is commonly used as a key component for applications of the 40Gb/sec optical communication systems.

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 frequency multiplier is used to generate 40 GHz signal. The signal is then passed through a band-pass filter before coupling a power splitter to provide differential output voltages.

Functional Block Diagram



Package Mechanical Dimensions (Inches)



Frequencies other than the ones mentioned are available on request. Contact factory for package versions using k-connectors or GPPO connectors

HSC-39813-SMD & HSC-43018-SMD Absolute Maximum Ratings

Parameter	Units	Ratings
Positive & Negative Supply Voltages	V	+6V, -6V
Tuning Voltage	V	0 to 12 V
Operating Temperature	°C	-10 to 85
Storage Temperature	°C	-40 to +125

**HSC-39813- SMD & HSC-43018-SMD
 Summary Electrical Specifications, 0° C to 70° C**

Parameter	Units	Min	Typ	Max
Frequency f_o	GHz		39.813 or 43.018	
Vt @ f_o	V	0		5
Output each port (50 Ω Load) Power	dBm	0		6
Voltage p-p	V	0.6		1.2
Slew Rate	V/ns	25		
Duty Cycle	%	45	50	55
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		-30	-20
Third Harmonic (Below Carrier)	dBc		-30	-20
Sub Harmonically related Spurious	dBc		-30	-20
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
Jitter (50KHz to 80 MHz)	fs			100
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 or package options (K-connector and GPPO).

Part Number Ordering Information

Part Number
HSC-39813-SMD
HSC-43018-SMD

For more information:

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