

Helping Customers Innovate, Improve & Grow



Description

The VS-501 VCSO (Voltage Controlled Saw Oscillator) from Vectron is a high frequency, ultra low phase noise oscillator designed to support high speed data converters and 100G coherent optical receivers. The VS-501 provides 12fs rms jitter in a 12kHz to 20MHz integration bandwidth and is available from 1.3GHz to 1.8GHz.

Features

- Frequency Range 1.3 to 1.8 GHz
- Ultra low jitter performance
- Typical Jitter: 12fsec rms, 12kHz to 20MHz
- 5V supply voltage
- Sinewave output
- 9x14 mm SMD package
- See table on Page 4 for standard frequencies

Applications

- High Speed ADCs
- 40G & 100G Coherent Receivers
- Test & Measurement

Performance Specifications

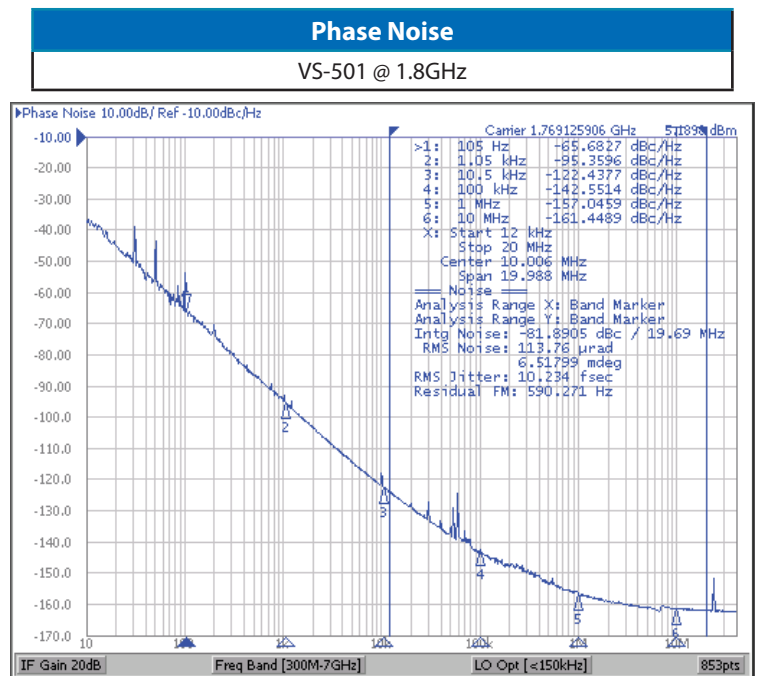
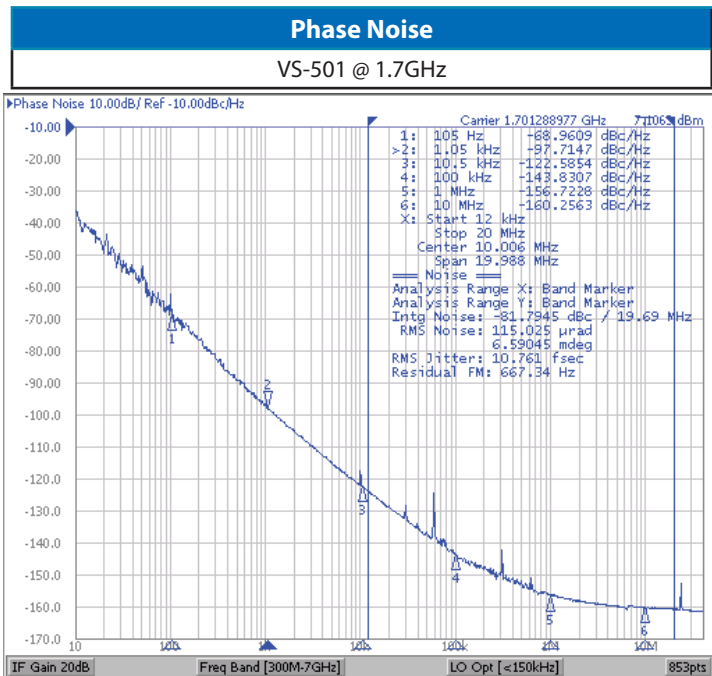
Pulling Characteristics					
Parameter	Min	Typ	Max	Units	Notes
Absolute Pull Range (APR)	±20			ppm	Includes df vs: •Operating temperature range +10 .. 85°C •Aging 10 years •Supply Voltage Change 5% •Load change 10%
Tuning Slope					Positive
Control Voltage Range	0.5	2.5	4.5	V DC	with $V_s = 5V$
Frequency control input impedance	10			kΩ	
Supply Voltage (V_s)					
Supply voltage (standard)	4.75	5.00	5.25	V DC	
Current consumption			100	mA	

Performance Specifications (Continued)

RF Output					
Parameter	Min	Typ	Max	Units	Notes
Signal	Sinewave				
Load	45	50	55	Ω	
Output Power	7	8.5	12	dBm	
Phase Noise: 100Hz offset		-68		dBc/Hz	@ 1.7GHz Sinewave 5V
Phase Noise: 1kHz offset		-96		dBc/Hz	
Phase Noise: 10kHz offset		-122		dBc/Hz	
Phase Noise: 100kHz offset		-145		dBc/Hz	
Phase Noise: 1MHz offset		-156		dBc/Hz	
Phase Noise: 10MHz offset		-160		dBc/Hz	
Jitter: 12kHz to 20MHz offset		12		fs rms	

Additional Parameters				
Weight	2.0g			
Processing and Packing	Handling and Processing Note			
Absolute Maximum Ratings				
Parameter	Min	Max	Units	Notes
Supply Voltage (V_S)		6.0	V	
Operating Temperature Range	-40	+85	$^{\circ}\text{C}$	
Storage Temperature Range	-55	+125	$^{\circ}\text{C}$	

Typical Performance

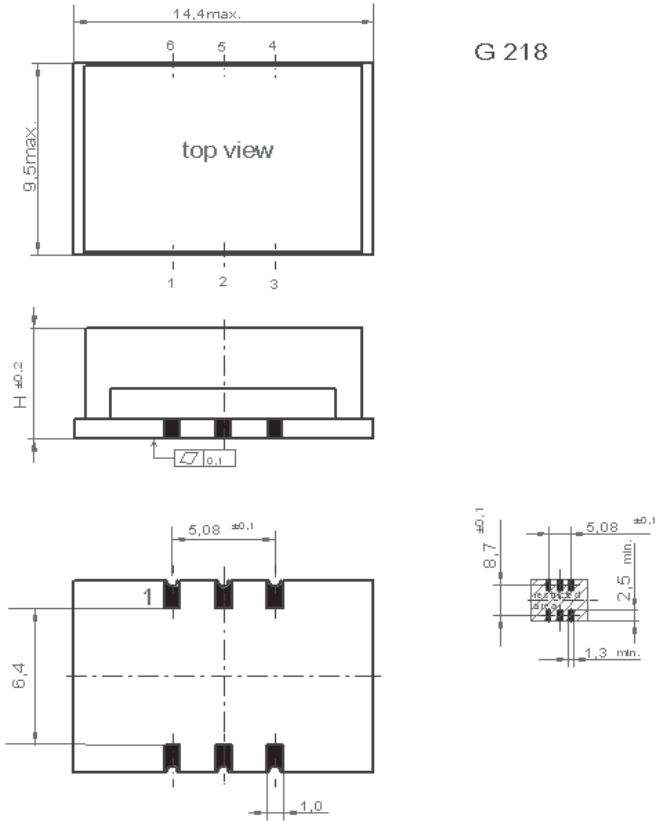


Outline Drawing / Enclosure

Package Codes		
Code	Height "H"	Pin Length "L"
G218C	2.3	NA

Dimensions in mm

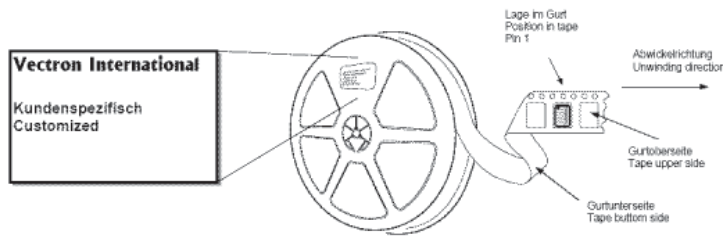
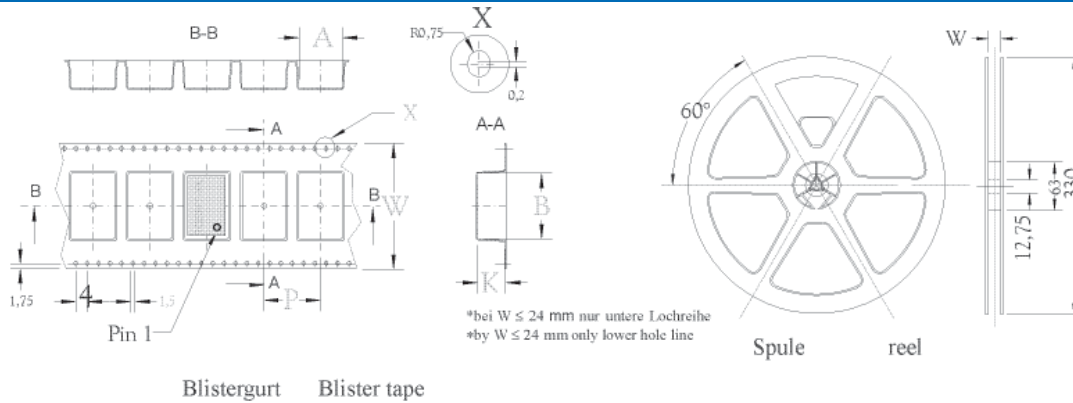
Pin Assignment	
1	Control Voltage (V_c)
2	GND
3	GND
4	RF Out
5	GND
6	Supply Voltage Input (V_s)



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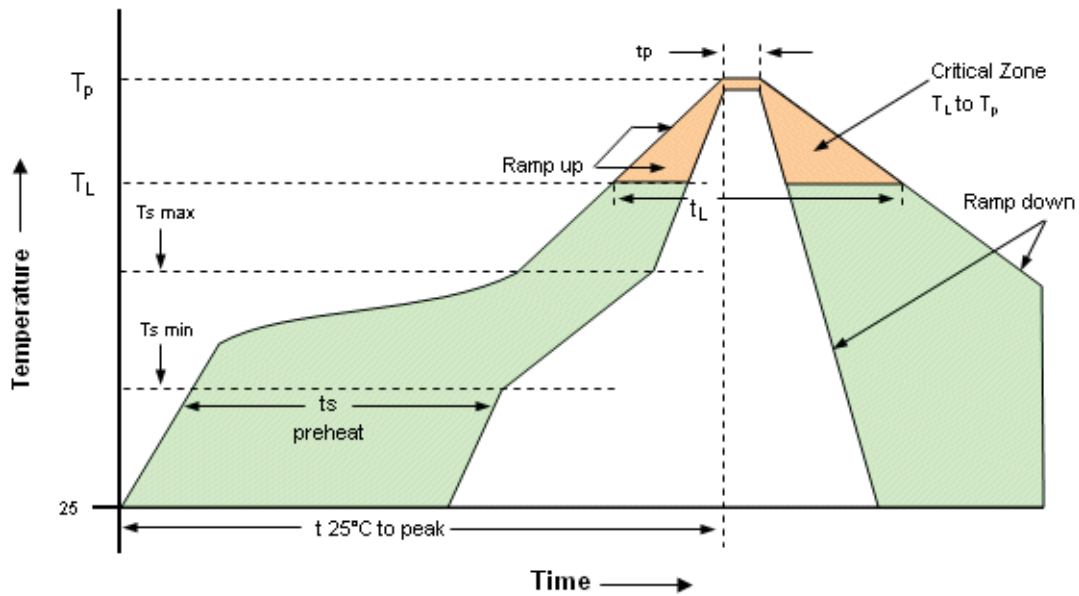
Marking	
VS-501-xxxx	
Frequency	
•AYYWW	

Standard Shipping Method



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P (mm)
G218C	24		1700	12

Recommended Reflow Profile



Profile Feature	Pb-Free Assembly/Sn-Pb Assembly
Average ramp-up rate (T_L to T_p)	3°C/second max.
Preheat - Temperature Min T_{smin} -Temperature Min T_{sma} -Time (min to max) t_s	150°C 200°C 60-180 seconds
T_{smax} to T_L -Ramp-up Rate	3°C/second max
Time maintained above -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_p)	max 260°C
Time 25°C Preak Temperature	8 minutes max.
Time within 5°C of actual Peak Temperature (t_L)	20-40 seconds
Ramp-down Rate	6°C/second max

Standard Frequencies (MHz)						
1701.32	1707.08	1747.030837	1747.62305	1748.366885	1748.793733	1769.145
1769.18						

Other Frequencies Available Upon Request

Ordering Information

VS - 501 0 - D E X - 205 X - 1747M030837

Product Family
VS: VCSCO

Package
9x14mm SMT

Height
0: 2.8mm (G218C)

Supply Voltage
D: +5.0V

RF Output Code
E: Sinewave

Temperature Range
X: +10°C to +85°C

APR Code
205: ±20ppm

Enable
X: No Enable

Frequency

Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

For Additional Information, Please Contact

USA:

Vectron International
267 Lowell Road
Hudson, NH 03051
Tel: 1.888.328.7661
Fax: 1.888.329.8328

Europe:

Vectron International
Landstrasse, D-74924
Neckarbischofsheim, Germany
Tel: +49 (0) 7268-801-0
Fax: +49 (0) 7268-801-281

Asia:

Vectron International
1F-2F, No 8 Workshop, No 308 Fenju Road
WaiGaoQiao Free Trade Zone
Pudong, Shanghai, China 200131
Tel: 86.21.5048.0777
Fax: 86.21.5048.1881

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Vectron International • 267 Lowell Road, Hudson, NH 03051 • Tel: 1-88-VECTRON-1 • <http://www.vectron.com>