


VS-507

Description

The VS-507 VCSO (Voltage Controlled Saw Oscillator) from Vectron is an ultra high frequency, ultra low phase noise oscillator. The VS-507 provides 10fs rms jitter in a 12kHz to 20MHz integration bandwidth and is available from 3 to 6 GHz.

Features

- Frequency Range 3.0 to 6.0 GHz
- Ultra low jitter performance
- Typical Jitter: 10fsec rms, 12kHz to 20MHz
- 3.3 supply voltage
- Output: Sinewave & Balanced Sinewave
- 9x14 mm SMD package
- See table on Page 5 for standard frequencies

Applications

- High Speed ADCs
- 100G & 400G Coherent Receivers
- 5G BTS
- Test & Measurement
- Military

Performance Specifications

Pulling Characteristics					
Parameter	Min	Typ	Max	Units	Notes
Absolute Pull Range (APR)	±5			ppm	Includes df vs: •Operating temperature range -40 .. 85°C •Aging 10 years •Supply Voltage Change 5% •Load change 10%
Tuning Slope					Positive
Control Voltage Range	0	1.65	3.3	V DC	with $V_s = 3.3V$
Frequency control input impedance	100			kΩ	
Modulation bandwidth	20			kHz	@ -3dB
Supply Voltage (V_s)					
Supply voltage (standard)	3.135	3.3	3.465	V DC	
Current consumption			85	mA	

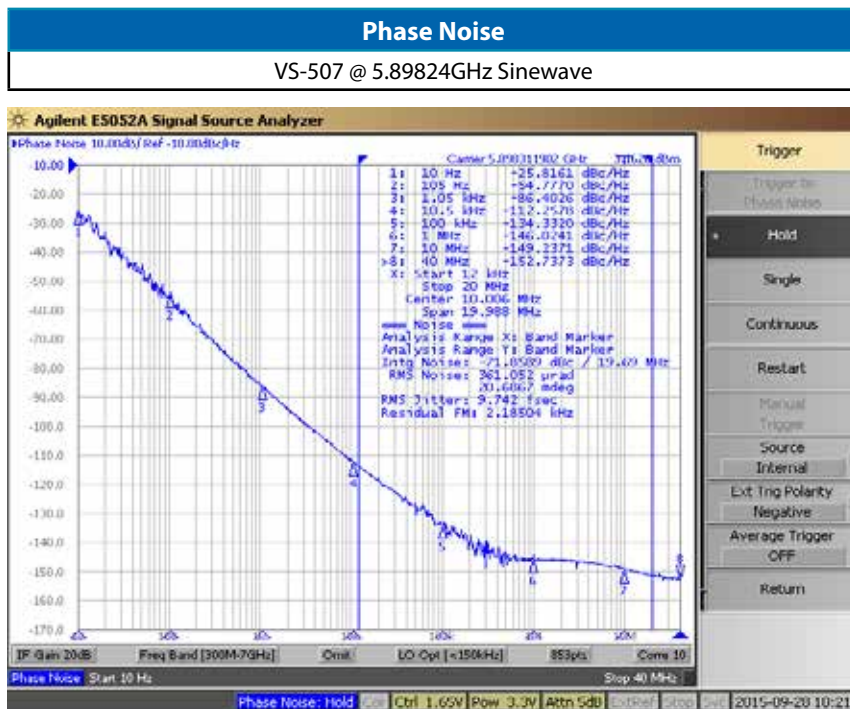
Performance Specifications (Continued)

RF Output					
Parameter	Min	Typ	Max	Units	Notes
Signal	Sinewave				
Load	45	50	55	Ω	
Output Power	0	3	6	dBm	
Signal	Balanced Sinewave				
Load	45	50	55	Ω	
Output Power	0	3	6	dBm	
Phase Noise: 100Hz offset		-54		dBc/Hz	@ 5.89824GHz Sinewave 3.3V
Phase Noise: 1kHz offset		-86		dBc/Hz	
Phase Noise: 10kHz offset		-112		dBc/Hz	
Phase Noise: 100kHz offset		-134		dBc/Hz	
Phase Noise: 1MHz offset		-146		dBc/Hz	
Phase Noise: 10MHz offset		-149		dBc/Hz	
Jitter: 12kHz to 20MHz offset		10		fs rms	

Additional Parameters					
Parameter	Min	Typ	Max	Units	Notes
Weight	2.0g				
Subharmonics			-25	dBc	
Processing and Packing	Handling and Processing Note				

Absolute Maximum Ratings					
Parameter	Min	Typ	Max	Units	Notes
Supply Voltage (V_s)			6.0	V	
Operable Temperature Range	-40		+85	$^{\circ}\text{C}$	
Storage Temperature Range	-40		+95	$^{\circ}\text{C}$	

Typical Performance



Outline Drawing / Enclosure

Package Codes		
Code	Height "H"	Pin Length "L"
G218C	2.8	N/A
G218E	4.7	N/A

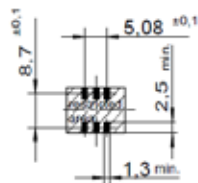
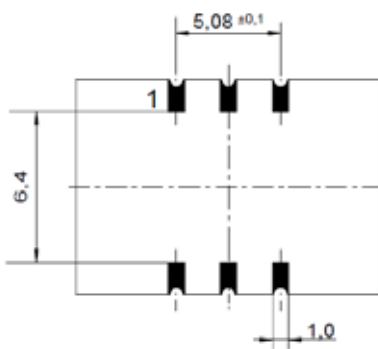
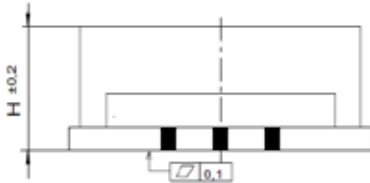
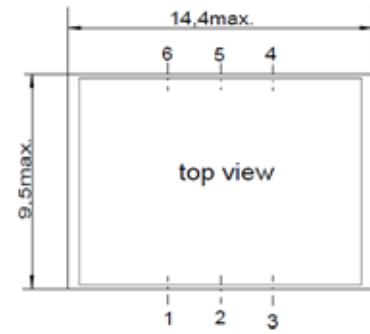
Dimensions in mm

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

Pin Assignment Balanced Sinewave	
1	Control Voltage (V_c)
2	GND
3	GND
4	RF Out
5	RF-Out Compl. (180° phase shifted)
6	Supply Voltage Input (V_s)

G 218

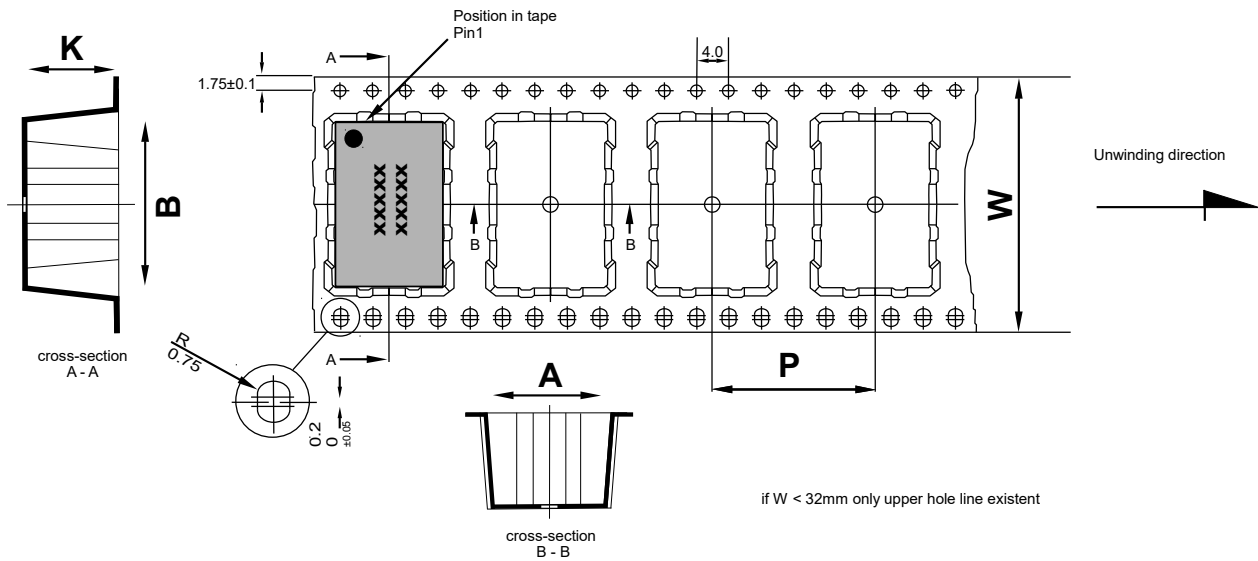
H = 5,9 : G218 B
 H = 2,8 : G218 C
 H = 2,6 : G218 D
 H = 4,7 : G218 E
 H = 5,7 : G218 F
 H = 5,4 : G218 G
 H = 4,9 : G218 H



Padvorschlag
land pattern
recommendation

Marking
VS-507-xxxx
Frequency
•AYYWW

Standard Shipping Method



Dimension in mm:

A, B and K are dependent upon component dimensions
production tolerance complying DIN IEC 286-3

All dimensions in millimeters unless otherwise stated

Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P (mm)
G218C	24		1700	12
G218E	24		850	12

Recommended Reflow Profile

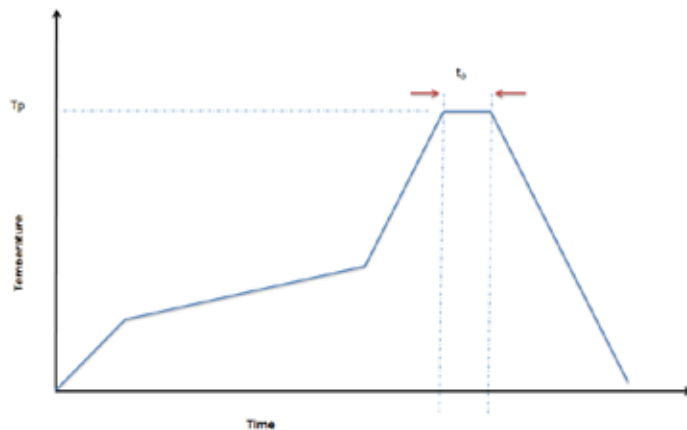
TP: max 250°C (@ solder joint, customer board level)

T_p: max: 10...30 sec

Additional Information:

This SMD oscillator has been designed for pick and place reflow soldering

SMD oscillators must be on the top side of the PCB during the reflow process.



Ordering Information

VS - 507 1 - E E E - 506 X - 5898M24

Product Family
VS: VCSO

Package
9x14mm SMT

Height
0: 2.8mm (G218C)
1: 4.7mm (G218E)

Supply Voltage
E: +3.3V

RF Output Code
E: Sinewave
F: Balanced Sinewave

Temperature Range
E: -40°C to +85°C

Frequency

Enable
X: No Enable

APR Code
506: ±5ppm

Standard Frequencies (MHz)						
3137.95842	3328	3468.75	3494.061674	3799.904088	3922.418236	3973.638766
4000	4096.9586	4137.350272	4160	4270.747196	4800	4915.2
5120	5898.24					

Other frequencies and temperature ranges available upon request

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.



Microsemi Headquarters
One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 386-0100
Sales: +1 (949) 386-0130
Fax: +1 (949) 215-4998
email: sales.support@microsemi.com
www.microsemi.com

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