



VS-506

Voltage Controlled SAW Oscillator
Low G-Sensitivity

Helping Customers Innovate, Improve & Grow



Description

The VS-506 VCSO (Voltage Controlled Saw Oscillator) from Vectron is a high frequency, ultra low phase noise and low g-sensitivity oscillator designed to support harsh environmental applications. The VS-506 provides 12fs rms jitter in a 12kHz to 20MHz integration bandwidth, is available from 0.8 to 3.0GHz and is offered in a hermetic sealed package.

Features

- Frequency Range 0.8 to 3.0 GHz
- Ultra low jitter performance
- Typical Jitter: 12fsec rms, 12kHz to 20MHz
- G-Sensitivity <1.2ppb/g
- Shock > 10.000g
- Supply 3.3 & 5V
- Output: Sinewave
- 9x14 mm hermetic package

Applications

- Harsh Environment
- Military
- Test & Measurement

Performance Specifications

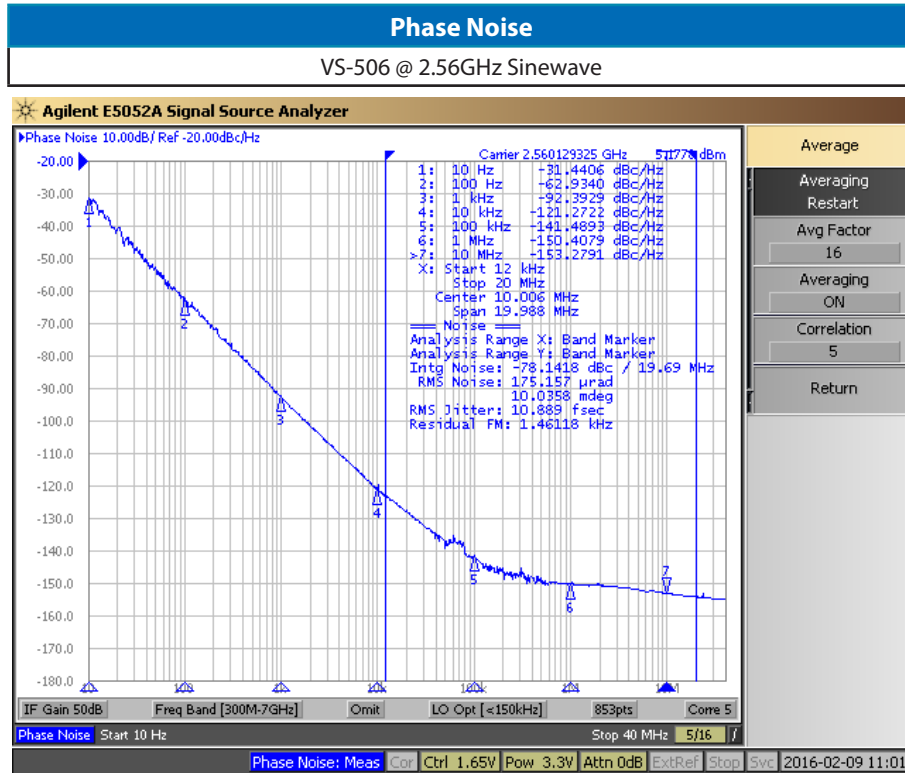
Pulling Characteristics					
Parameter	Min	Typ	Max	Units	Notes
Absolute Pull Range (APR)	±20			ppm	Includes df vs: •Operating temperature range +10 .. 85°C •Aging 10 years •Supply Voltage Change 5% •Load change 10%
Tuning Slope					Positive
Control Voltage Range	0.5	2.5	4.5	V DC	with $V_s = 5V$
	0	1.65	3.3	VDC	with $V_s = 3.3V$
Frequency control input impedance	20			kΩ	
Modulation bandwidth	100			kHz	@ -3dB
Supply Voltage (V_s)					
Supply voltage (standard)	4.75	5.00	5.25	V DC	
Current consumption			65	mA	
Supply voltage (standard)	3.135	3.3	3.465	V DC	
Current consumption			100	mA	

Performance Specifications (Continued)

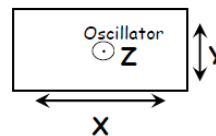
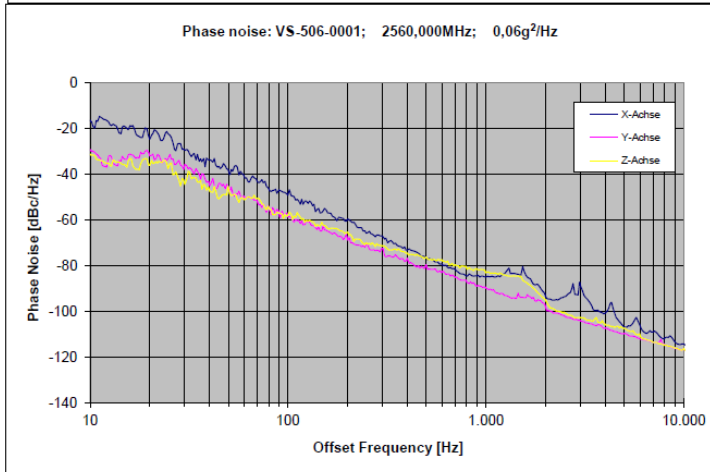
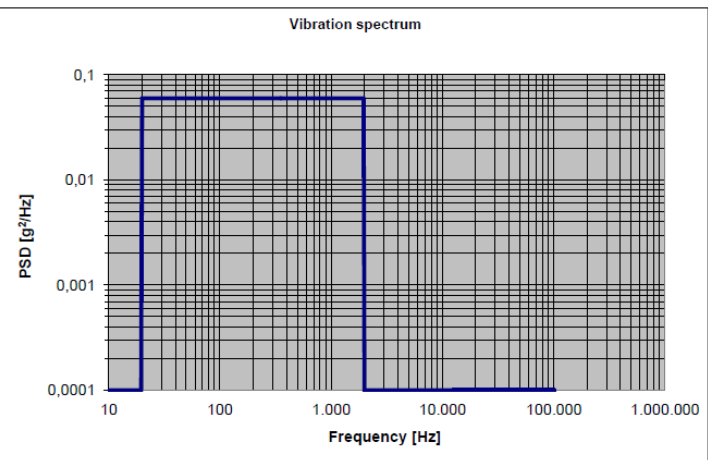
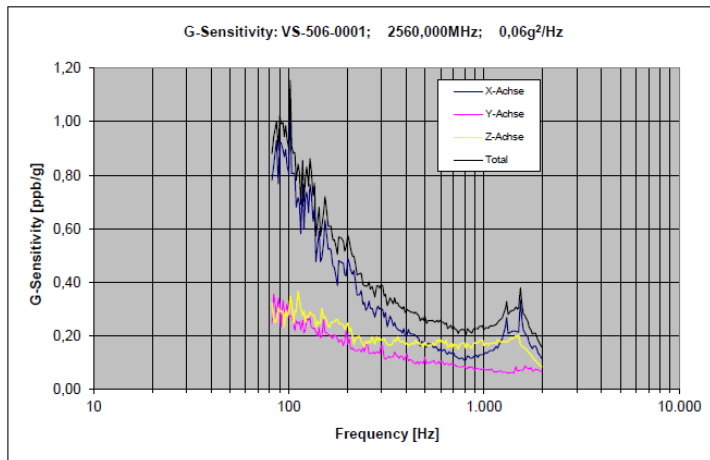
RF Output					
Parameter	Min	Typ	Max	Units	Notes
Signal	Sinewave				
Load	45	50	55	Ω	
Output Power	0	3	6	dBm	
Phase Noise: 100Hz offset		-62		dBc/Hz	@ 2.56GHz Sinewave 3.3V
Phase Noise: 1kHz offset		-92		dBc/Hz	
Phase Noise: 10kHz offset		-121		dBc/Hz	
Phase Noise: 100kHz offset		-141		dBc/Hz	
Phase Noise: 1MHz offset		-150		dBc/Hz	
Phase Noise: 10MHz offset		-153		dBc/Hz	
Jitter: 12kHz to 20MHz offset		11		fs rms	

Additional Parameters					
Parameter	Min		Max	Units	Notes
Weight	10.0g				
Subharmonics			-20	dBc	
G-Sensitivity		1.2		ppb/g	
Shock	10000			g	MIL-STD-883; method 2002.4; Condition E; Duration 0.2 ms; 10000g
Processing and Packing	Handling and Processing Note				
Absolute Maximum Ratings					
Parameter	Min		Max	Units	Notes
Supply Voltage (V_s)			6.0	V	
Operable Temperature Range	-40		+85	$^{\circ}\text{C}$	
Storage Temperature Range	-55		+105	$^{\circ}\text{C}$	

Typical Performance



G-Sensitivity
 VS-506 @ 2.56GHz Sinewave



„Low g-sensitivity Product Solutions“

https://www.vectron.com/products/g_sensitivity/gsensitivity_index.htm

„Description of g-sensitivity and equations:“

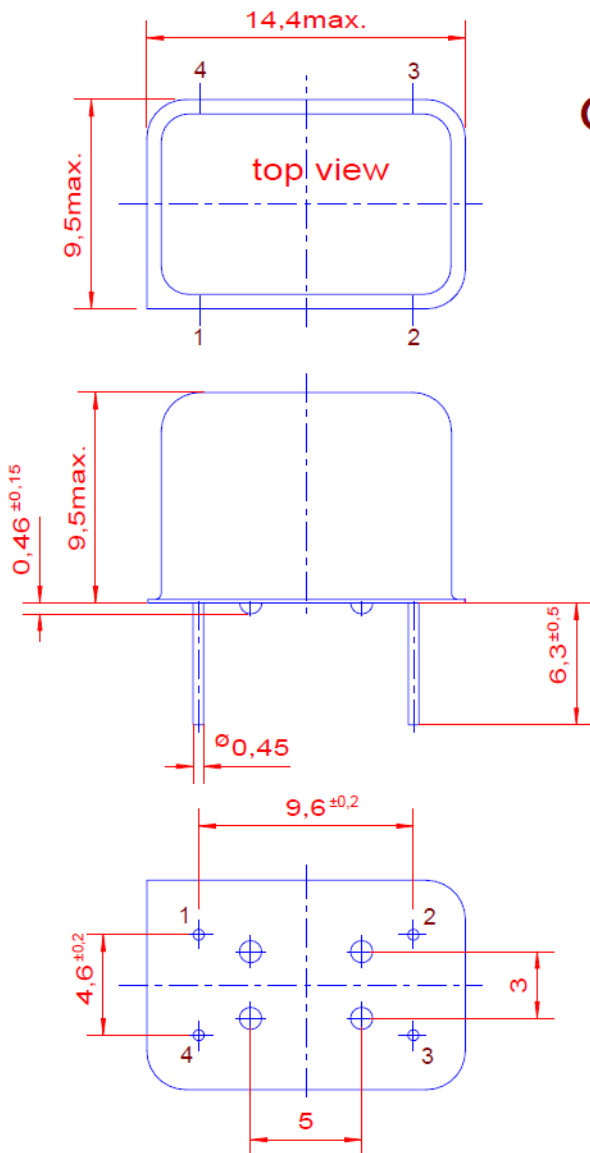
https://www.vectron.com/products/g_sensitivity/Viq-tutorial%20on%20g-sensitivity.pdf

Outline Drawing / Enclosure

Package Codes		
Code	Height "H"	Pin Length "L"
G279	9.5	6.3

Dimensions in mm

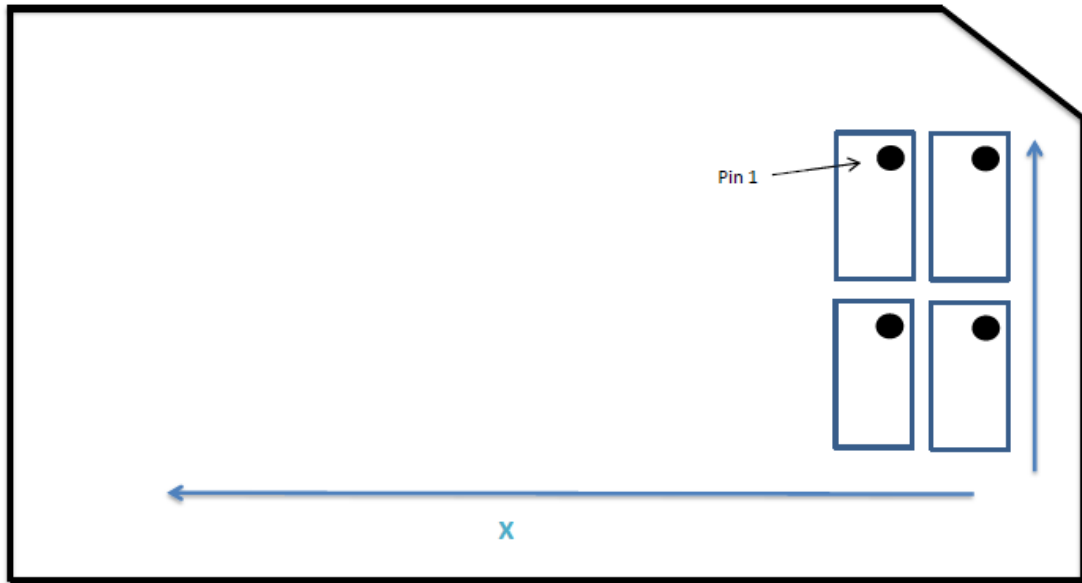
G279



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

Marking	
VS-506-xxxx	
Frequency	
•AYYWW	

Standard Shipping Method

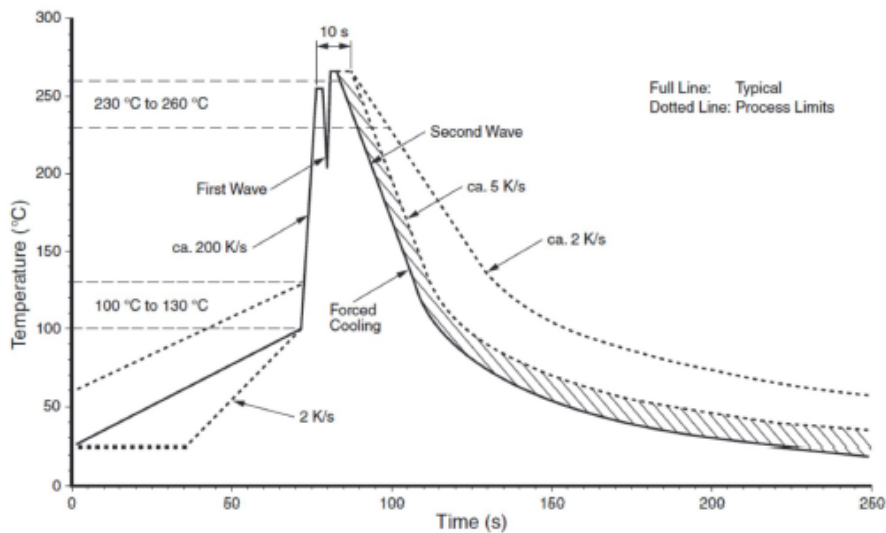


Enclosure Type	Tray Info
G279	17(X) * 7(Y) array / 119 units per tray

Recommended Wave Soldering Profile

Recommended wave soldering profile see attached:

WAVE SOLDERING PROFILE



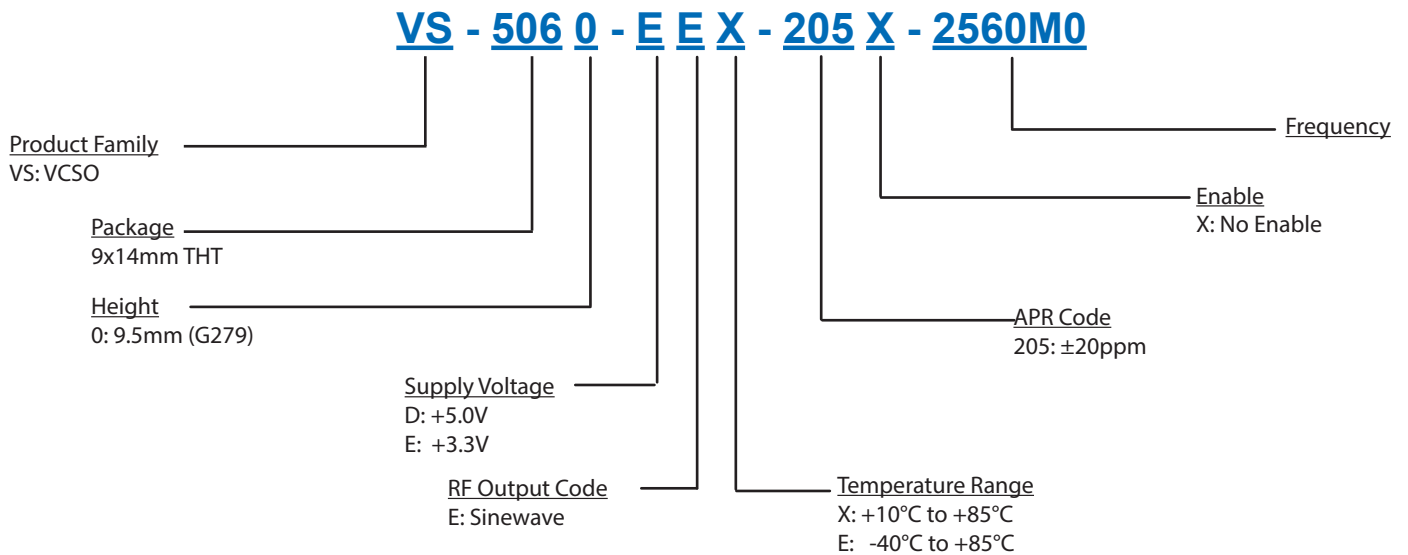
Double-Wave-Soldering, Temperature/Time - Profile (Lead-Temperature)

Notes

- This document should serve as recommendation only. Other parameters may also affect soldering, so these profiles do not guarantee absolute success.
- Soldering profile should be determined by the manufacturer of the solder paste, providing there is no contradiction with the recommendations in this document.

Note: All temperatures refer to topside of the package, measured on the package body surface. SMD oscillators must be on the top side of the PCB during the reflow process.

Ordering Information



Standard Frequencies (MHz)

632.8125	784.489605	832	867.1875	873.5154185	949.976022	980.604559
993.4096915	1000	1024.23965	1034.337568	1040	1067.686799	1200
1265.625	1280	1568.97921	1687.5	1701.32	1707.08	1734.375
1747.030837	1747.62305	1748.366885	1769.145	1875	1879.437686	1884.052863
1899.952044	1961.209118	1968.75	1986.819383	2000	2048.4793	2068.675135
2104.658326	2135.373597	2187.5	2400	2457.6	2560	2812.5
2949.12						

Other Frequencies 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.

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