VS-403

Voltage Controlled SAW Oscillator
Ultra High Frequency

Helping Customers Innovate, Improve & Grow

VS-403

Description

The VS-403 VCSO (Voltage Controlled Saw Oscillator) from Vectron is a ultra high frequency, low phase noise and jitter oscillator. The VS-403 provides 14fs rms jitter in the 12kHz to 20MHz integration bandwidth and is available from 5GHz to 7GHz.

Features

- Frequency Range 5 to 7 GHz
- Ultra low jitter performance
- Typical Jitter: 14fsec rms, 12kHz to 20MHz
- 3.3V supply voltage
- Output sinewave
- 13x20 mm SMD package
- See table on Page 5 for standard frequencies

Applications

- High Speed ADCs
- Test & Measurement
- Wireless BTS
- Military

Performance Specifications

Pulling Characteristics					
Parameter	Min	Typ	Max	Units	Notes
Absolute Pull Range (APR)	±0			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	
Supply Voltage (Vs)					
Supply voltage	3.135	3.3	3.465	VDC	
Current consumption			100	mA	@ Sinewave

Performance Specifications (Continued)

RF Output					
Parameter	Min	Typ	Max	Units	Notes
Signal		Sinewave			
Load	45	50	55	Ω	
Output Power	-5	0	3	dBm	
Subharmonics			-23	dBc	
Phase Noise: 100Hz offset		-55		dBc/Hz	@ 5.898GHz Sinewave 3.3V
Phase Noise: 1kHz offset		-83		dBc/Hz	
Phase Noise: 10kHz offset		-108		dBc/Hz	
Phase Noise: 100kHz offset		-128		dBc/Hz	
Phase Noise: 1MHz offset		-140		dBc/Hz	
Phase Noise: 10MHz offset		-147		dBc/Hz	
Jitter: 12kHz to 20MHz offset		14		fs rms	

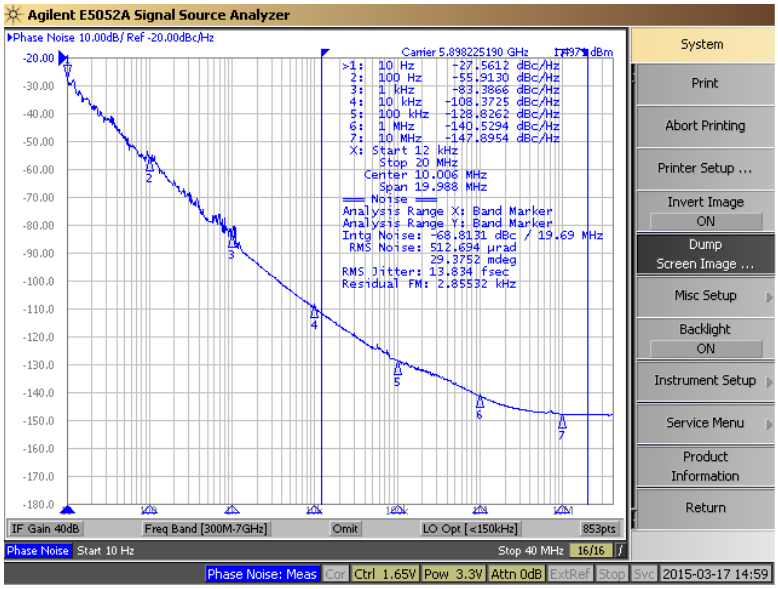
Additional Parameters		
Weight	2.0g	
Processing and Packing	Handling and Processing Note	

Absolute Maximum Ratings					
Parameter	Min		Max	Units	Notes
Supply Voltage (V_S)			4.0	V	
Operable Temperature Range	-40		+85	ºC	
Storage Temperature Range	-40		+95	ºC	

Typical Performance

Phase Noise

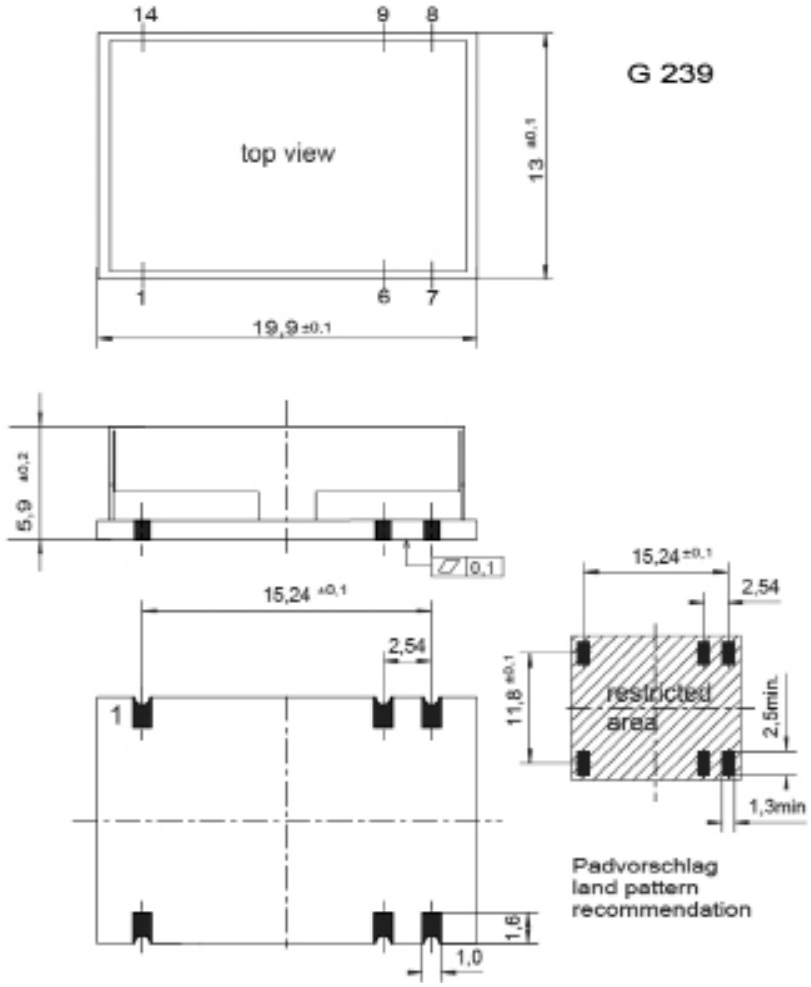
VS-403 @ 5.898GHz Sinewave



Outline Drawing / Enclosure

Package Codes		
Code	Height "H"	Pin Length "L"
G239	5.9	NA

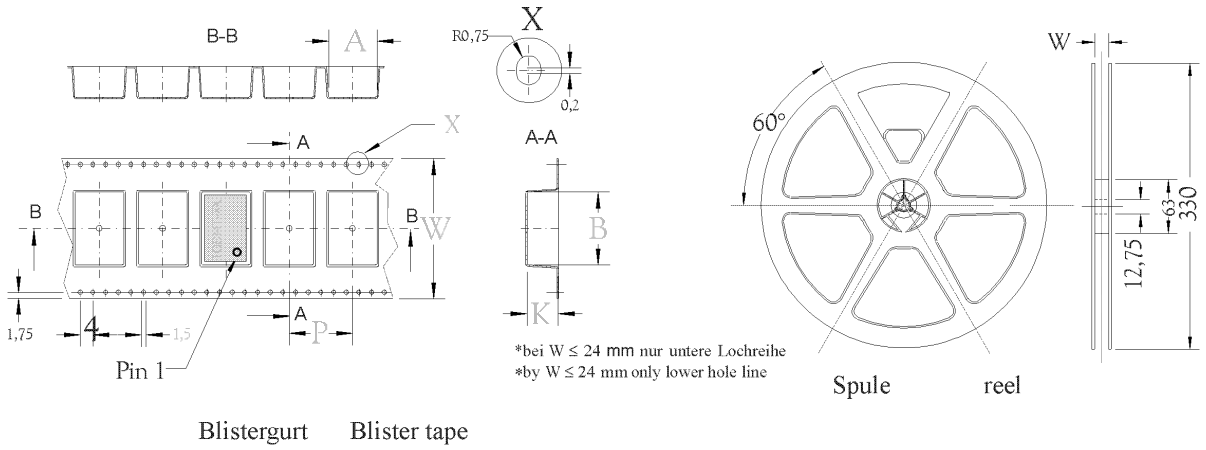
Dimensions in mm

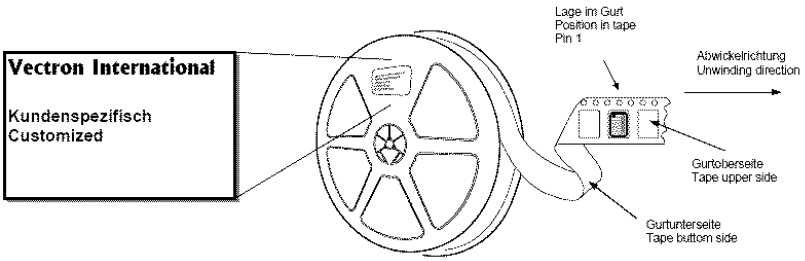


Pin Assignment (Sinewave)	
1	Control Voltage (V_C)
6	GND
7	GND
8	RF Out
9	N.C.
14	Supply Voltage Input (V_S)

Marking
VS-403-xxxx
Frequency
•AYYWW

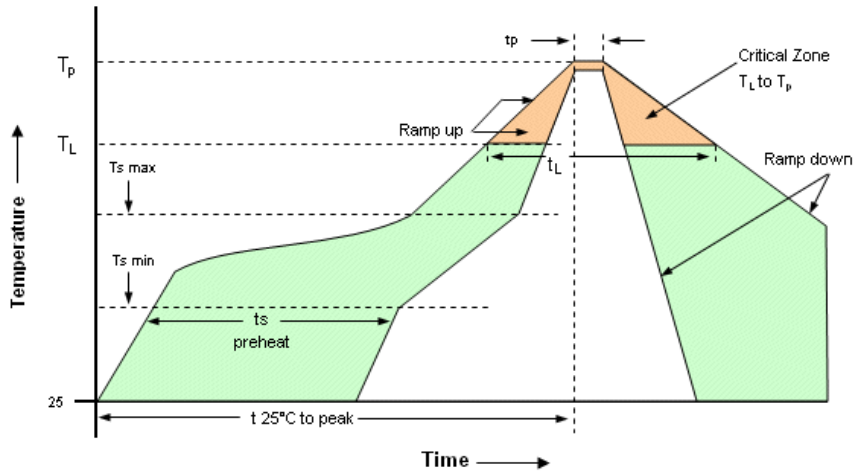
Standard Shipping Method





Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G239	24		500	12

Recommended Reflow Profile



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

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

VS - 403 0 - E E X - 005 X - 5898M24

- Product Family: VS: VCSO
- Package: 13x20mm SMT
- Height: 0: 5.9 mm (G239)
- Supply Voltage: E: +3.3V
- RF Output Code: E: Sinewave
- Temperature Range: X: +10°C to +85°C; E: -40°C to +85°C
- APR Code: 005: ±0ppm
- Enable: X: No Enable
- Frequency

Standard Frequencies (MHz)						
5625	5898.24	6750				

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.

For Additional Information, Please Contact

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