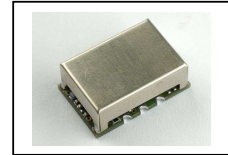


## Typical Applications

Base Stations  
 Test Equipment  
 Synthesizers

## Features

Surface Mount Package  
 Reflow Process Compatible  
 AT-Cut Crystal  
 SONET Minimum Clock Specification



## Previous Vectron Model Numbers

SPO50, 9140

## Frequency range

8 MHz – 700 MHz

## Standard frequencies

10; 24.705; 30.720; 32.768; 50; 68.768 MHz;  
 77.76 MHz; 155.52; 622,08 MHz

## Frequency stabilities<sup>1</sup> [Standard]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code <sup>5</sup>
vs. operating temperature range (Referenced to +25°C)	-10.0		+10.0	ppm	-20 ... +70°C	D105
Parameter	Min	Typ	Max.	Units	Condition	
Initial tolerance	-5.0		+5.0	ppm	V <sub>S</sub> ± 5% Load ± 5%	
vs. supply voltage change	-1.0		+1.0	ppm		
vs. load change	-1.0		+1.0	ppm		
vs. aging /1. Year	-3.0		+3.0	ppm		
vs. aging / year (following Years)	-1.0		+1.0	ppm		

## Frequency stabilities<sup>1</sup> [meets SONET Minimum Clock Specification - Option]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code <sup>5</sup>
vs. operating temperature range					-20 ... +70°C	D205
Parameter	Min	Typ	Max.	Units	Condition	
overall tolerance	-20.0		+20.0	ppm	( 15 Years aging, temp, initial, supply, load )	

## Supply voltage

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code <sup>5</sup>
Supply voltage (Vs)	4.75	5.0	5.25	VDC		SV050
Current consumption			40	mA	@ HCMOS < 155 MHz	
Current consumption			90	mA	@ PECL < 155 MHz	
Supply voltage (Vs)	3.135	3.3	3.465	VDC		SV033
Current consumption			30	mA	@ LVHCMOS < 155 MHz	
Current consumption			80	mA	@ LVPECL < 155 MHz	
Current consumption			25	mA	@ LVDS < 155 MHz	

**RF output**

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code <sup>9</sup>
Signal	HCMOS					RFH
Load		15.0		pF		
Rise and Fall time			5	ns	@ 15 pF 10 to 90 %	
Duty cycle	40		60	%	@ Vs/2	
Signal	PECL					RFP
Load		50		Ω	Vs - 2V	
Rise and Fall time			1	ns	20 to 80 %	
Duty cycle	45		55	%		
Signal	LVDS					RFL
Load		100		Ω		
Rise and Fall time			1	ns	10 to 90 %	
Duty cycle	40		60	%		

**Additional parameters**

Parameter	Min	Typ	Max.	Units	Condition
Phase Noise		-75		dBc/Hz	10 Hz @ 155 MHz
		-110		dBc/Hz	100 Hz PECL
		-135		dBc/Hz	1 kHz 3,3V
		-142		dBc/Hz	10 kHz
		-142		dBc/Hz	100 kHz
Jitter		1		ps RMS	@ 10 kHz to 20 MHz
Weight			2	g	
Processing & Packing	handling&processing note				

**Enclosures**

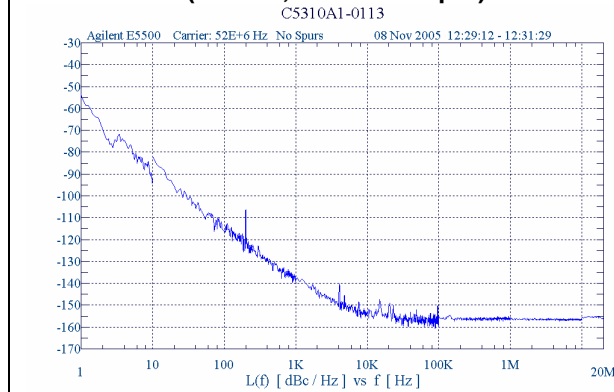
Type G223A for HCMOS and LVHCMOS Version			Type G218B for PECL; LVPECL and LVDS Version		
Package Codes:					
Code A1	Height "H" 5,9	Pin Length "L" NA	Code B1	Height "H" 5,9	Pin Length "L" NA
<p>G 223 H = 5,9; G223 B</p> <p>Padvorschlag land pattern recommendation</p> <p>Dimensions: mm</p>			<p>G 218 H = 5,9; G218 B H = 2,8; G218 C</p> <p>Padvorschlag land pattern recommendation</p> <p>Dimensions: mm</p>		

<p style="text-align: center;">Pin Connections</p> <p>1 NC / Enable (optional) 2 Ground (Case) 3 RF Output 4 Supply Voltage Input (Vs)</p> <p style="text-align: right;">Outline Drawing: G223B</p>	<p style="text-align: center;">Pin Connections</p> <p>1 N/C 2 N/C / Enable (optional) 3 Ground (Case) 4 RF Output 5 Complementary RF Output 6 Supply Voltage Input (Vs)</p> <p style="text-align: right;">Outline Drawing: G218B</p>
<p>Marking</p> <p>C1310A1-xxxx frequency * VI AYYWW</p>	

**Absolute Maximum Ratings**

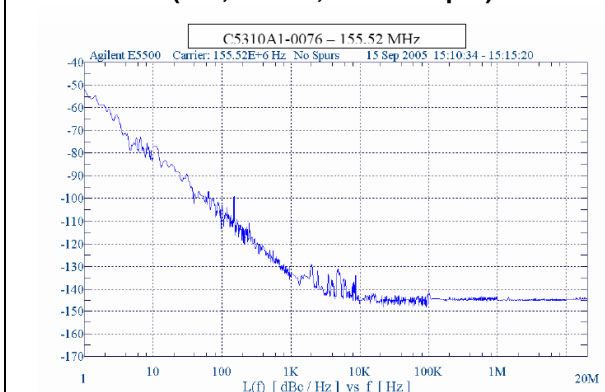
Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			7	V	
Operable temperature range	-30		+80	°C	
Storage temperature range	-40		+90	°C	

**Typical Phase Noise and Jitter  
(52 MHz; HCMOS output)**



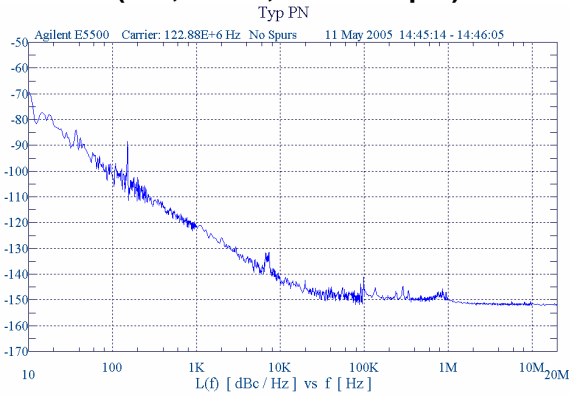
Frequency range [Hz]	S <sub>0</sub> (f) [dB]	Jitter [ps rms]
100Hz to 1.5MHz	-77dB	0.432ps
50kHz to 1.5MHz	-91dB	0.086ps
12kHz to 20MHz	-80dB	0.306ps

**(155,52 MHz; PECL output)**



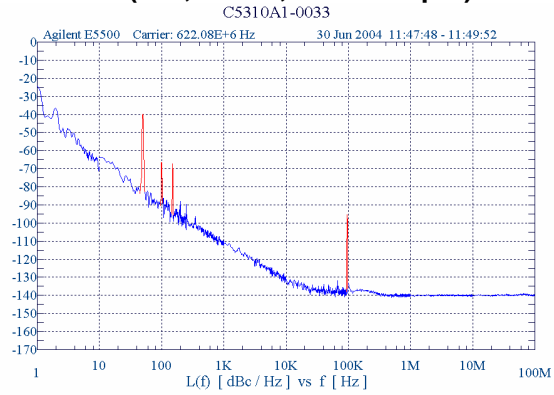
Frequency range [Hz]	S <sub>0</sub> (f) [dB]	Jitter [ps rms]
500Hz to 1.5MHz	-73.96dB	0.205ps
65kHz to 1.5MHz	-75.87dB	0.165ps
12kHz to 20MHz	-65.34dB	0.553ps

**Typical Phase Noise and Jitter  
(122,88MHz; LVDS output)**



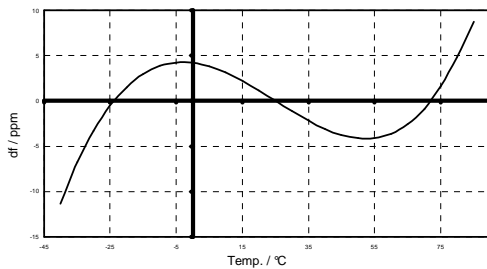
Frequency range [Hz]	S <sub>φ</sub> (f) [dB]	Jitter [ps rms]
100Hz to 1.5MHz	-75dB	0.230ps
50kHz to 1.5MHz	-84dB	0.082ps
12kHz to 20MHz	-75dB	0.230ps

**(622,08MHz; PECL output)**

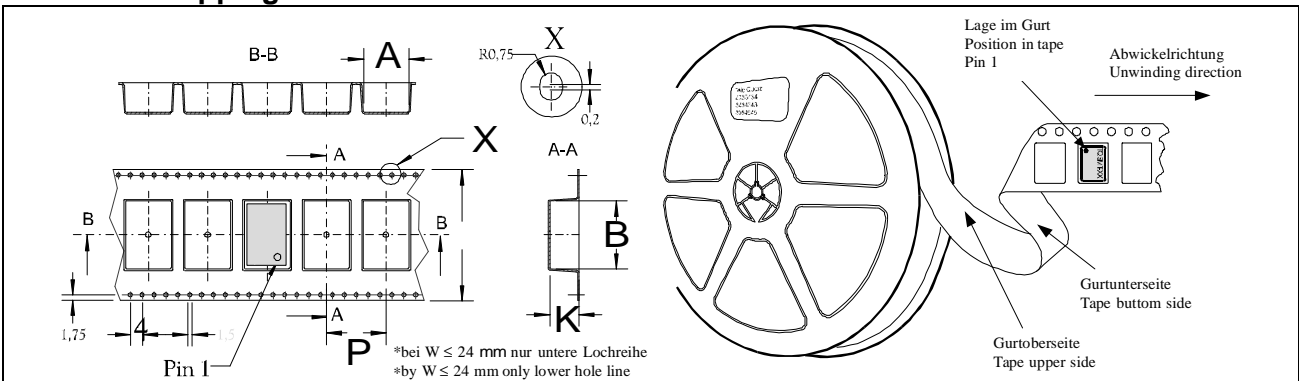


Frequency range [Hz]	S <sub>φ</sub> (f) [dB]	Jitter [ps rms]
1kHz to 5MHz	-67.09dB	0.113ps
250kHz to 5MHz	-68.18dB	0.100ps
12kHz to 20MHz	-61.95dB	0.204ps

**Typical frequency stability vs temp**



**Standard Shipping Method**

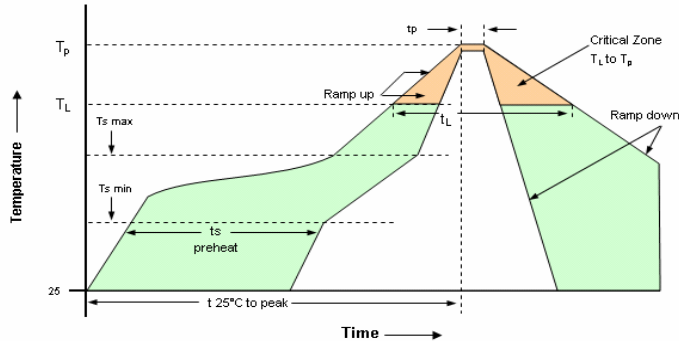


Production tolerance complying DIN IEC 286-3

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
G218B / G223B	24	83,3	850	12

## Recommended Reflow Profile

Solderprofile:



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 $T_{s \min}$ -Temperature Min $T_{s \max}$ -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
$T_{s \max}$ 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.

## How to Order this Product:

Model	Stability Code	Supply Voltage Code	RF Output Code	Package Code
C1310				

Example: C1310

D105

SV050

RFH

A1

Model	Package Code	Dash	Dash Number
C1310	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C1310A1-0001

### Notes:

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