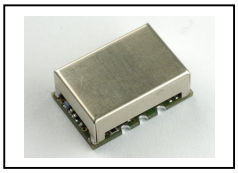
C5310 VCXO

Typical Applications
Base Stations
Test Equipment
Switching
Portable Equipment

Features
Surface Mount Package
Reflow Process Compatible
AT-Cut Crystal



Previous Vectron Model Numbers
SVO50; SVO100; SVO110

Frequency range
1 MHz – 700 MHz

Standard frequencies
16.384; 30.720; 32.768; 38.880 MHz;
51.840; 52.00; 68.736; 77.760; 155,52; 622,08 MHz

Frequency stabilities[1] [Frequency < 80 MHz]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code[5]
vs. operating temperature range (Referenced to +25°C)	-15.0		+15.0	ppm	-20 … +70°C	D105
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	-10.0		+10.0	ppm	@vc=Vs/2 fo < 80 MHz	
vs. supply voltage change	-3.0		+3.0	ppm	V_S ± 5%	
vs. load change	-1.0		+1.0	ppm	Load ± 10% fo < 80 MHz	
vs. aging /1. Year	-3.0		+3.0	ppm		
vs. aging / year (followingYears)	-1.0		+1.0	ppm		

Frequency stabilities[1] [Frequency > 80 MHz]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code[5]
vs. operating temperature range (Referenced to +25°C)	-30.0		+30.0	ppm	-40 … +85°C	F305
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	-15.0		+15.0	ppm	@vc=Vs/2 fo > 80 MHz	
vs. supply voltage change	-3.0		+3.0	ppm	V_S ± 5%	
vs. load change	-2,0		+2.0	ppm	Load ± 10% fo > 80 MHz	
vs. aging /1. Year	-3.0		+3.0	ppm		
vs. aging / year (followingYears)	-1.0		+1.0	ppm		

Supply voltage

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

RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code[5]
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	%		

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Frequency Tuning (EFC)

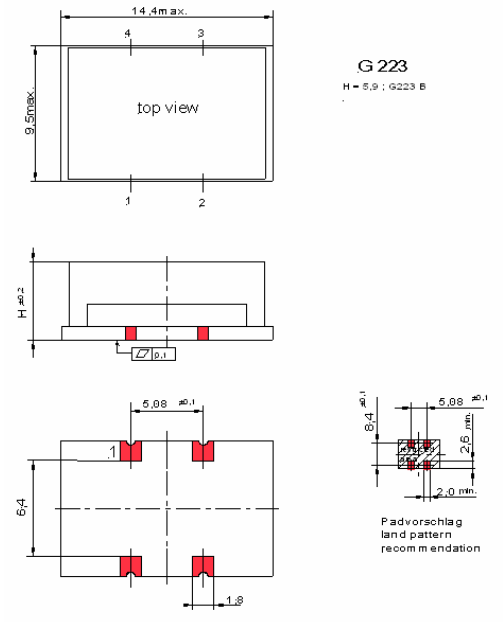
Parameter	Min	Typ	Max.	Units	Condition
Tuning Range	±75.0 ±100.0	±90.0 ±140.0	+200.0 ±200.0	ppm ppm	Frequency > 40MHz Frequency <40MHz and 155.52 MHz
Linearity			10	%	
Tuning Slope	Positive				
Control Voltage Range	0.0 0.5	1.65 2.5	3.3 4.5	VDC VDC	with Vs=3.3VDC with Vs=5.0VDC
Frequency control input impedance	10			k Ω	

Additional parameters

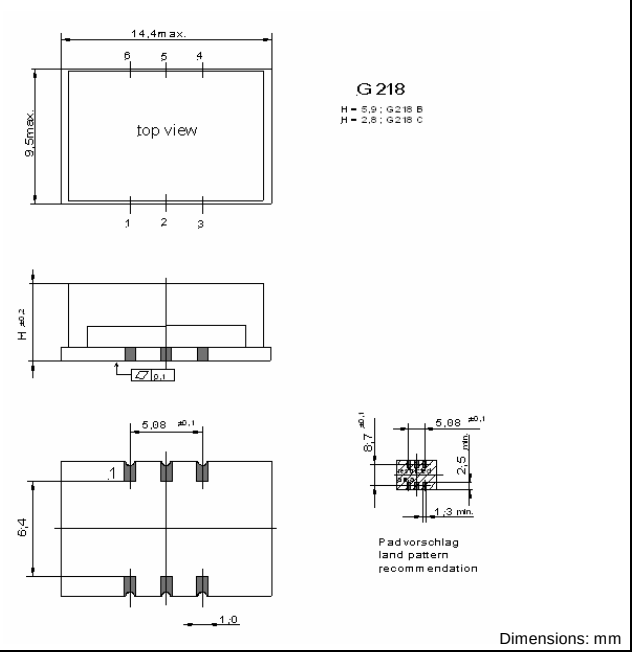
Parameter	Min	Typ	Max.	Units	Condition	
Phase Noise		-75		dBc/Hz	10 Hz	@155 MHz
		-110		dBc/Hz	100 Hz	PECL
		-135		dBc/Hz	1 kHz	3,3V
		-142		dBc/Hz	10 kHz	
		-142		dBc/Hz	100 kHz	
Jitter		1		ps RMS	@ 10 kHz to 20 MHz	
Weight			2	g		
Processing & Packing	handling&processing note					

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



Dimensions: mm



Dimensions: mm

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Pin Connections	Pin Connections
1 Control Voltage (Vc) 2 Ground (Case) 3 RF Output 4 Supply Voltage Input (Vs) Outline Drawing: G168A	1 Control Voltage (Vc) 2 N/C / Enable (optional) 3 Ground (Case) 4 RF Output 5 Complementary RF Output 6 Supply Voltage Input (Vs) Outline Drawing: G183B

true table	LVDS		LVPECL	
Pin 2	Pin 4	Pin 5	Pin 4	Pin 5
High	Data	compl. Data	Low	High
Open	Data	compl. Data	Data	compl. Data
Low	High Tristate	High Tristate	Data	compl. Data

Marking

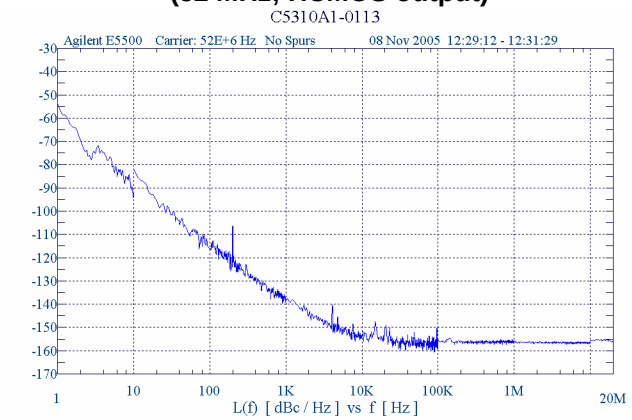
C5310A1-xxxx
frequency
* VI AYYWW

Absolute Maximum Ratings

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

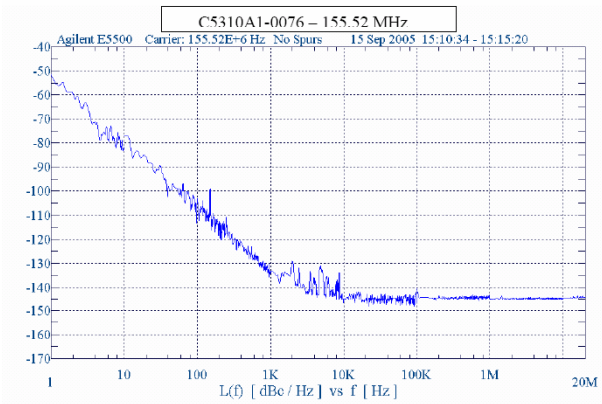
Typical Phase Noise and Jitter

(52 MHz; HCMOS output)



Frequency range [Hz]	Sϕ(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]	Sϕ(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

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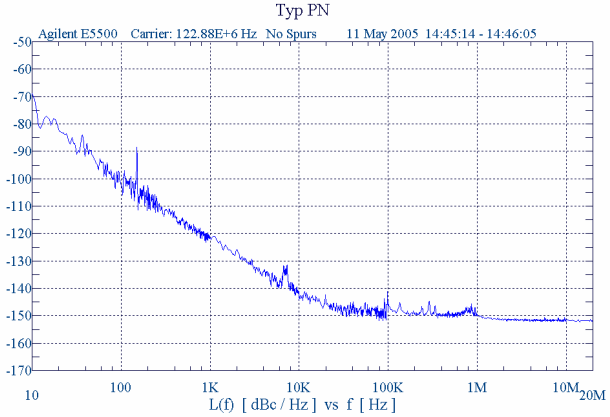
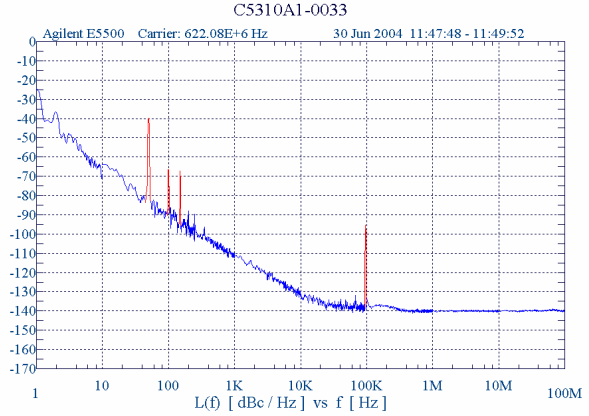
Typical Phase Noise and Jitter

(122,88MHz; LVDS output)



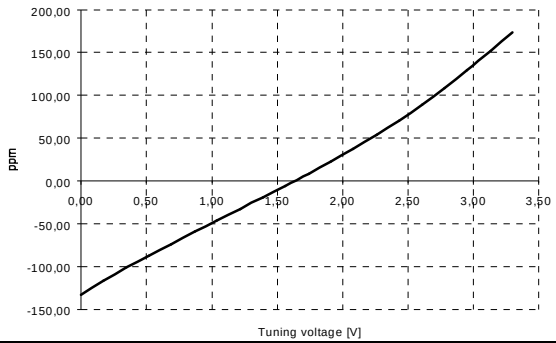
Frequency range [Hz]	Sϕ(f) [dB]	Jitter [ps rms]
100Hz to 1.5MHz	-75dB	0.230ps
50kHZ to 1.5MHz	-84dB	0.082ps
12kHz to 20MHz	-75dB	0.230ps

(622,08MHz; PECL output)

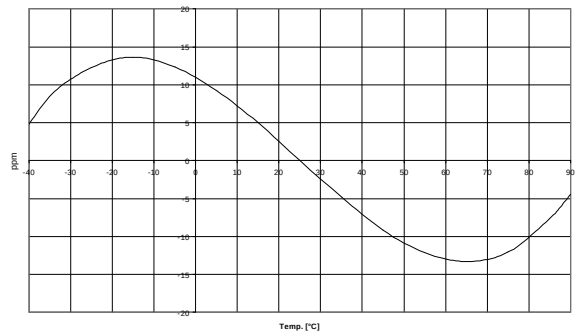


Frequency range [Hz]	Sϕ(f) [dB]	Jitter [ps rms]
1kHz to 5MHz	-67.09dB	0.113ps
250kHZ to 5MHz	-68.18dB	0.100ps
12kHz to 20MHz	-61.95dB	0.204ps

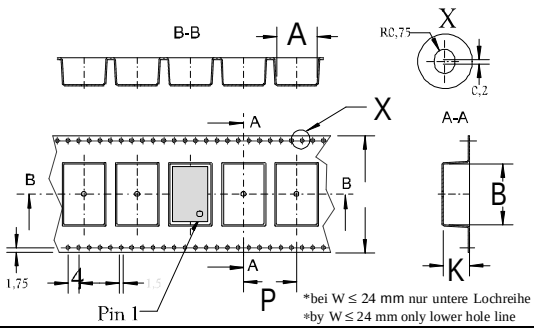
Typical tuning slope

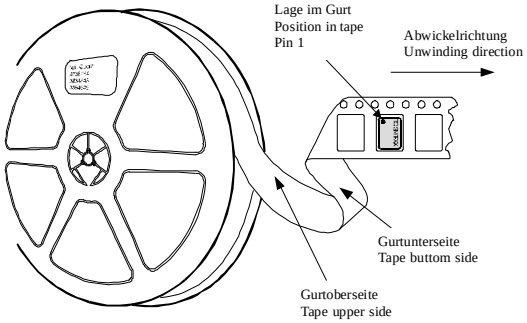


Typical frequency stability vs tp



Standard Shipping Method





Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P	Production tolerance complying DIN IEC 286-3
G218B / G223B	24	83,3	850	12	

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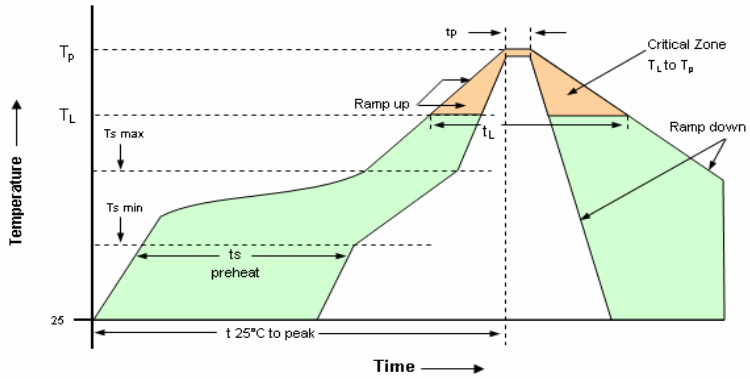
Recommended Reflow Profile

Solderprofile:



Profile Feature	Pb-Free Assembly /Sn-Pb Assembly	Profile Feature	Pb-Free Assembly /Sn-Pb Assembly
Average ramp-up rate (T_L to Tp)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min (Ts_{min}) -Temperature Min (Ts_{max}) -Time (min to max) (ts)	150°c 200°c 60-180 seconds	Time maintained above - Temperature (T_L) - Time (t_L)	 217°C 60-150 seconds
Ts_{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 (tp)	20-40 seconds
Peak Temperature (Tp)	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:

Step 1	Use this worksheet to forward the following information to your factory representative:			
Model	**Stability Code**	**Supply Voltage Code**	**RF Output Code**	**Package Code**
C5310				
Example: C5310	*D105*	*SV050*	*RFH*	*A1*

Step 2	The factory representative will then respond with a Vectron Model Number in the following Configuration:		
Model	**Package Code**	**Dash**	**Dash Number**
C5310	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C5310A1-0001

Notes:

1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2 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)
3 Phase noise degrades with increasing output frequency.
4 Subject to technical modification.
5 Contact factory for availability.

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