

Helping Customers Innovate, Improve & Grow



**Features**

- Reflow Process Compatible*
- Surface Mount Package*
- AT-Cut Crystal*
- SONET Minimum Clock Specification*
- Low Phase Noise*
- Tight Tolerances*

**Typical Applications**

- Base Stations*
- Test Equipment*
- Synthesizers*

<b>Previous Vectron Model Number</b>	C1310
<b>Frequency Range</b>	1 MHz – 700 MHz
<b>Standard frequencies</b>	10; 20; 24.705; 30.720; 32.768; 50; 68.768; 76.8; 77.76MHz; 100; 125; 150; 155.52; 156.25; 175; 200; 250; 280; 312.5MHz; 340; 400; 622,08 MHz

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

Parameter	Min	Typ	Max	Units	Operating temperature range
vs. operating temperature range (Referenced to +25°C)	-10.0		+10.0	ppm	-20 ... +70°C
Parameter	Min	Typ	Max	Units	Operating temperature range
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 temperature range
vs. operating temperature range					-20 ... +70°C
Parameter	Min	Typ	Max	Units	Conditions
overall tolerance	-20.0		+20.0	ppm	( 15 Years aging, temp, initial, supply, load )

## Supply Voltage (Vs)

Parameter	Min	Typ	Max	Units	Condition
Supply voltage (Vs)	4.75	5.0	5.25	VDC	@ HCMOS < 155 MHz @ PECL < 155 MHz
Current consumption			40	mA	
Current consumption			90	mA	
Supply voltage (Vs)	3.135	3.3	3.465	VDC	@ LVHCMOS < 155 MHz @ LVPECL < 155 MHz @ LVDS < 155 MHz
Current consumption			30	mA	
Current consumption			80	mA	
Current consumption			25	mA	

## RF Output

Parameter	Min	Typ	Max	Units	Condition
Signal	HCMOS				@15 pF 10 to 90% @Vs/2
Load		15.0		pF	
Rise and Fall Time			5	ns	
Duty cycle	40		60	%	
Signal	PECL				Vs-2V 20-80%
Load		50		Ω	
Rise and Fall Time			1	ns	
Duty cycle	45		55	%	
Signal	LVDS				10 to 90 %
Load		100		Ω	
Rise and Fall time			1	ns	
Duty cycle	40		60	%	
Signal	Sinewave				
Load		50		Ω	
Output Power	-3	0	3	dBm	

## Additional Parameters

Parameter	Min	Typ	Max	Units	Condition
Phase Noise		-85		dBc/Hz	10 Hz @49,408 MHz
		-120		dBc/Hz	100 Hz HCMOS
		-145		dBc/Hz	1 kHz 3,3V
		-155		dBc/Hz	10 kHz
		-160		dBc/Hz	100 kHz
Jitter		0,2		ps RMS	@ 12 kHz to 20 MHz

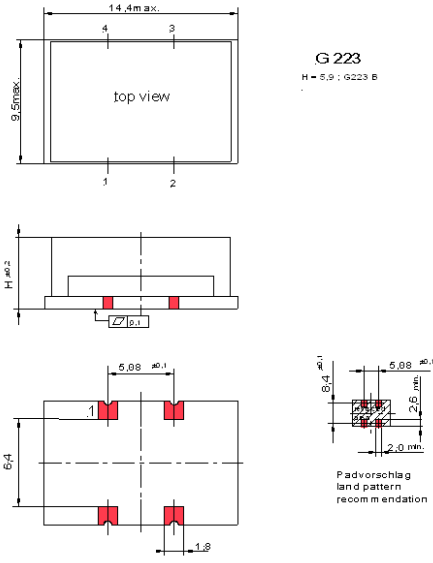
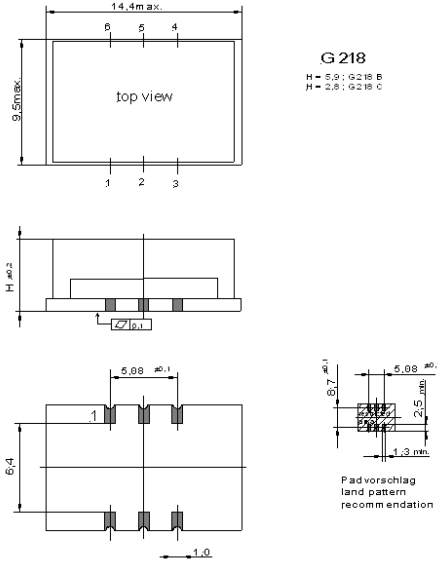
## Additional Parameters

Parameter	Min	Typ	Max	Units	Condition	
Phase Noise		-80		dBc/Hz	10	Hz @125 MHz
		-115		dBc/Hz	100	Hz PECL
		-135		dBc/Hz	1	kHz 3,3V
		-141		dBc/Hz	10	kHz
		-141		dBc/Hz	100	kHz
Jitter		0,6		ps RMS	@ 12 kHz to 20 MHz	
Parameter	Min	Typ	Max	Units	Condition	
Phase Noise		-62		dBc/Hz	10	Hz @400 MHz
		-93		dBc/Hz	100	Hz PECL
		-124		dBc/Hz	1	kHz 3,3V
		-142		dBc/Hz	10	kHz
		-143		dBc/Hz	100	kHz
Jitter		0,2		ps RMS	@ 12 kHz to 20 MHz	
Weight			2	g		
Processing & Packing	handling & processing note					

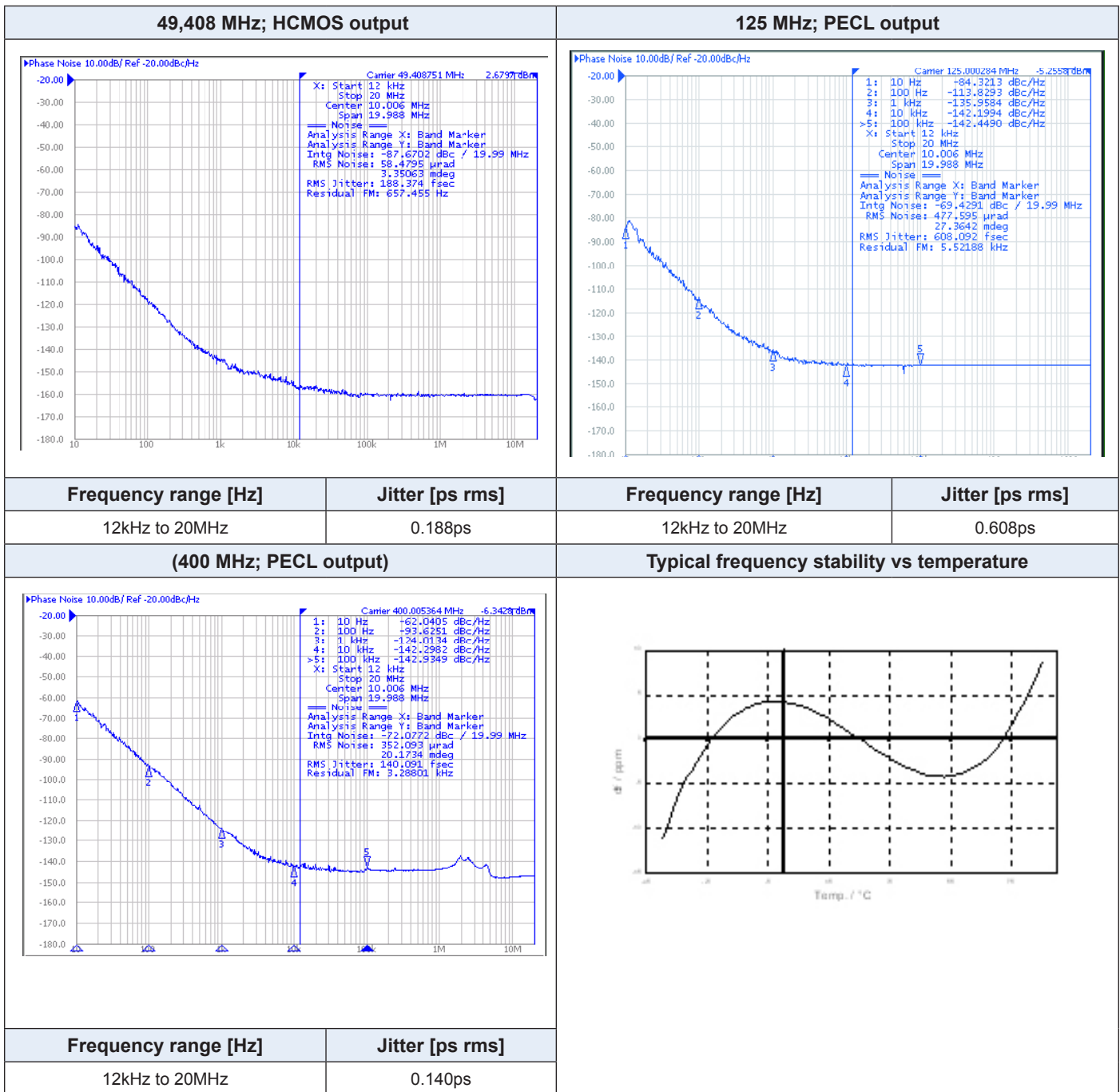
## Absolute Maximum Ratings

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

# Enclosure

Type G223 "A" for HCMOS and LVHCMOS Version			Type G218 "B" for HCMOS; PECL; LVPECL and LVDS Version				
Height "H"	Pin Length "L"	Options <sup>5)</sup>	Height "H"	Pin Length "L"	Options <sup>5)</sup>		
5,9	NA		5,9	NA			
 <p style="text-align: center;">G 223 H = 5,9 : G223 B</p> <p style="text-align: center;">Dimensions: mm</p>			 <p style="text-align: center;">G 218 H = 5,9 : G218 B H = 2,8 : G218 C</p> <p style="text-align: center;">Dimensions: mm</p>				
Pin Connections			Pin Connections				
<ol style="list-style-type: none"> <li>1 NC / Enable (optional)</li> <li>2 Ground (Case)</li> <li>3 RF Output</li> <li>4 Supply Voltage Input (Vs)</li> </ol> <p style="text-align: center;">Outline Drawing: G223B</p>			<ol style="list-style-type: none"> <li>1 N/C</li> <li>2 N/C / Enable (optional)</li> <li>3 Ground (Case)</li> <li>4 RF Output</li> <li>5 Complementary RF Output / (N/C: HCMOS only)</li> <li>6 Supply Voltage Input (Vs)</li> </ol> <p style="text-align: center;">Outline Drawing: G218B</p>				
			Enable true table	HCMOS		LVPECL / LVDS	
			Pin 2	Pin 4	Pin 5	Pin 4	Pin 5
			High	Data	N/C	No Data	No Data
			Open	Data	N/C	Data	compl. Data
			Low	High Tristate	N/C	Data	compl. Data
Marking							
PX-501  Frequency  • AYYWW							

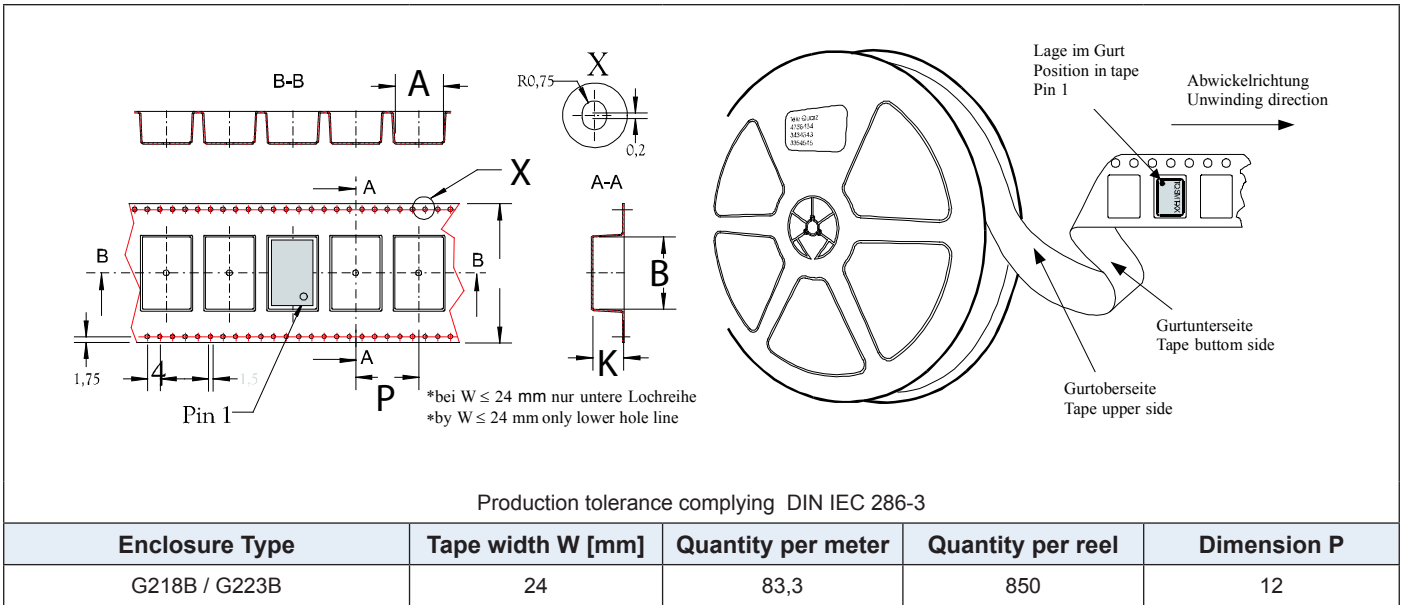
## Typical Phase Noise and Jitter



### Notes:

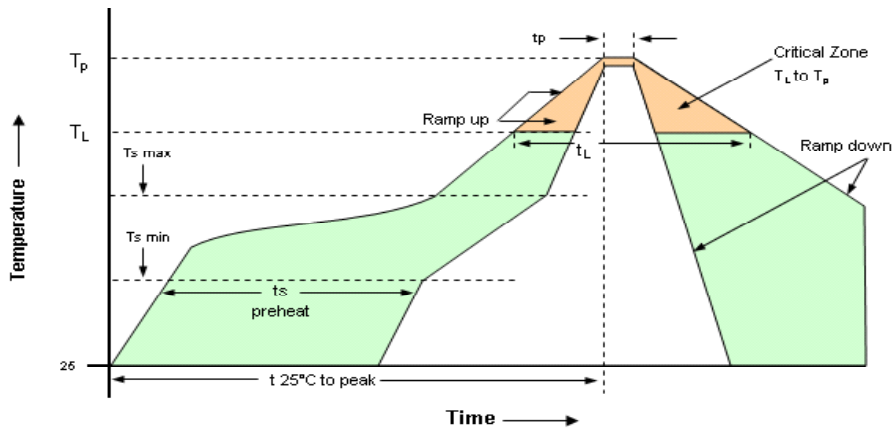
- 1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
- 2 Unless otherwise stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature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

## Standard Shipping Methode



## 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
$T_{Smax}$ 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.			

## How to order this product:

Use this worksheet to forward the following information to your factory representative:

Model	Height	-	Supply Voltage Code	RF Output Code	Temperature Range	-	Stability	X	-	Frequency
PX-501	0	-	E	A	J	-	105	X	-	10MHz

Height: \_\_\_\_\_  
 0: A 5,9 mm  
 1: B 5,9

Supply Voltage Code:  
 E: 3,3 V  
 D: 5 V

RF Output Code:  
 A: HCMOS  
 C: PECL  
 D: LVDS  
 E: Sinewave

Temperature Range/Stability Code:  
 J-105: -20...+70°C ±10ppm  
 J-205: -20...+70°C ±20ppm over all