VECTRON INTERNATIONAL
A DOVER COMPANY

PX-501
Clock Oscillator

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

Previous Vectron Model Number C1310

Frequency Range 1 MHz – 700 MHz

Standard frequencies 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[1] [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	
vs. supply voltage change	-1.0		+1.0	ppm	V_S ± 5%
vs. load change	-1.0		+1.0	ppm	Load ± 5%
vs. aging /1. Year	-3.0		+3.0	ppm	
vs. aging / year (followingYears)	-1.0		+1.0	ppm	

Frequency stabilities[1] [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	
Current consumption			40	mA	@ HCMOS < 155 MHz
Current consumption			90	mA	@ PECL < 155 MHz
Supply voltage (Vs)	3.135	3.3	3.465	VDC	
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
Signal		HCMOS			
Load		15.0		pF	
Rise and Fall Time			5	ns	@15 pF 10 to 90%
Duty cycle	40		60	%	@Vs/2
Signal		PECL			
Load		50		Ω	Vs-2V
Rise and Fall Time			1	ns	20-80%
Duty cycle	45		55	%	
Signal		LVDS			
Load		100		Ω	
Rise and Fall time			1	ns	10 to 90 %
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

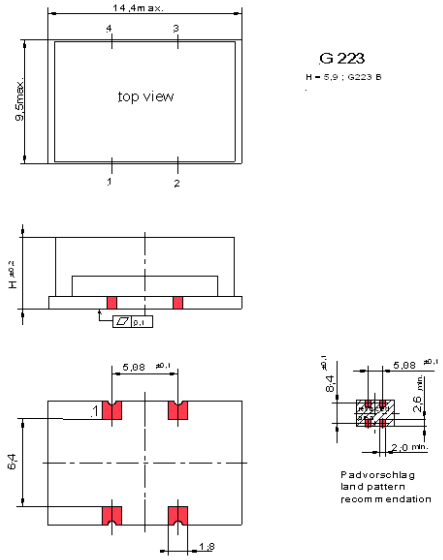
Parameter	Min	Typ	Max	Uniits	Condition		
Phase Noise		-80		dBc/Hz	10	Hz	@125 MHz
		-115		dBc/Hz	100	Hz	PECL
		-135		dBc/Hz	1	kHz	3,3V
		-141		dBc/Hz	10	kHz	
		-141		dBc/Hz	100	kHz	
Jitter		0,6		ps RMS	@ 12 kHz to 20 MHz		
Parameter	**Min**	**Typ**	**Max**	**Units**	**Condition**		
Phase Noise		-62		dBc/Hz	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

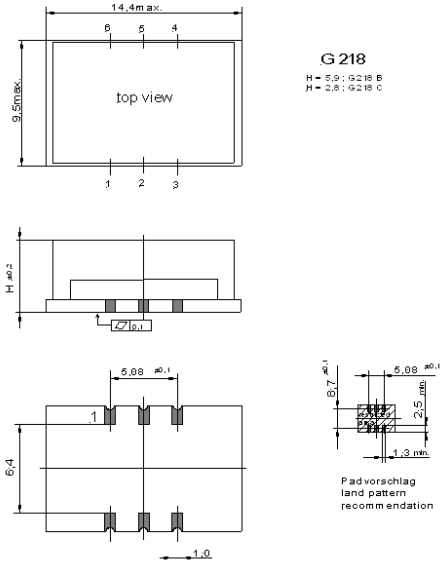
Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			7	V	
Operable temperature range	-30		+80	°C	
Storage temperature range	-40		+90	°C	

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[5]	Height "H"	Pin Length "L"	Options[5]
5,9	NA		5,9	NA	



Dimensions: mm



Dimensions: mm

Pin Connections	Pin Connections
1 NC / Enable (optional)	1 N/C
2 Ground (Case)	2 N/C / Enable (optional)
3 RF Output	3 Ground (Case)
4 Supply Voltage Input (Vs)	4 RF Output
	5 Complementary RF Output / (N/C: HCMOS only)
	6 Supply Voltage Input (Vs)
Outline Drawing: G223B	Outline Drawing: G218B

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

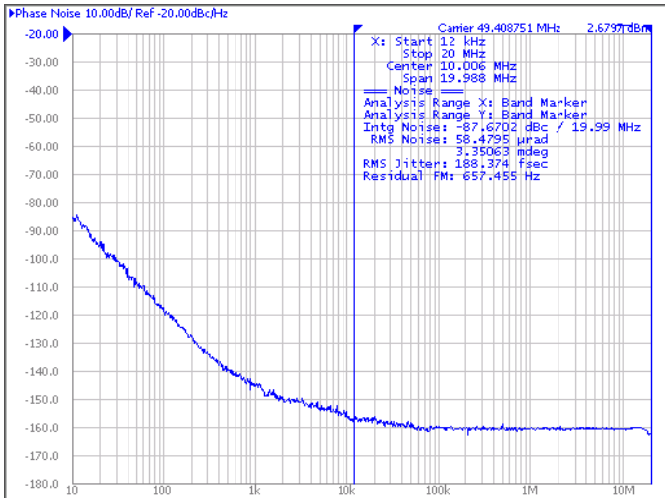
PX-501

Frequency

● AYYWW

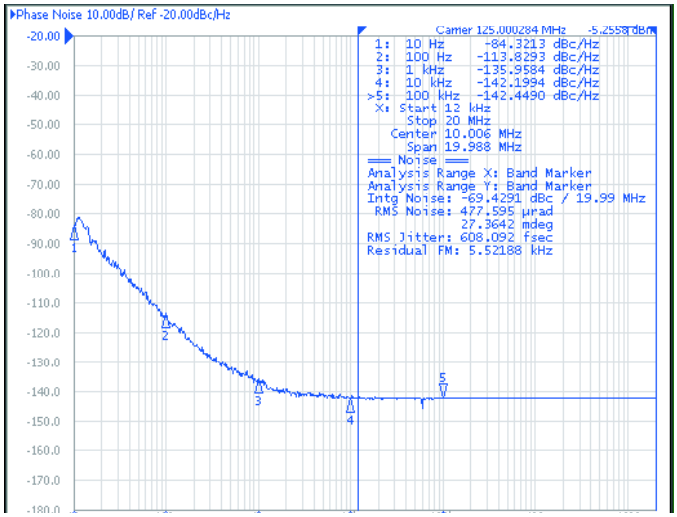
Typical Phase Noise and Jitter

49,408 MHz; HCMOS output



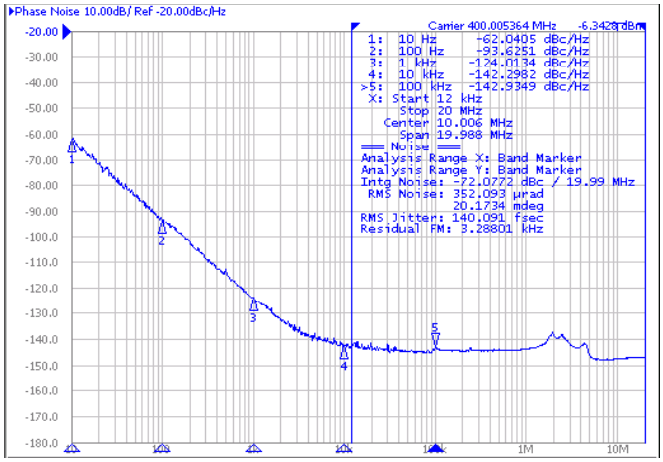
Frequency range [Hz]	Jitter [ps rms]
12kHz to 20MHz	0.188ps

125 MHz; PECL output



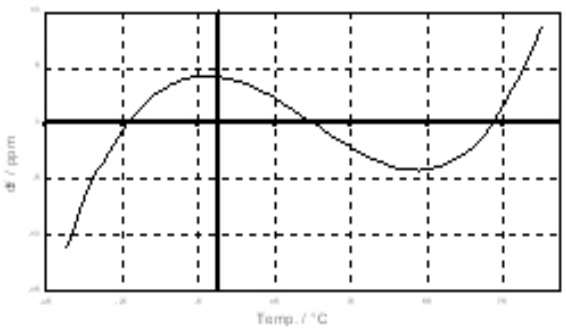
Frequency range [Hz]	Jitter [ps rms]
12kHz to 20MHz	0.608ps

(400 MHz; PECL output)



Frequency range [Hz]	Jitter [ps rms]
12kHz to 20MHz	0.140ps

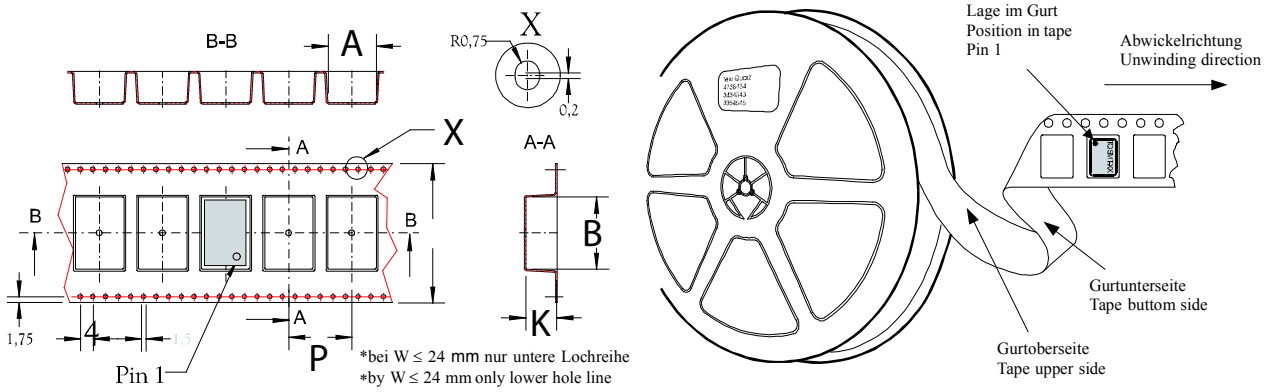
Typical frequency stability vs temperature



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

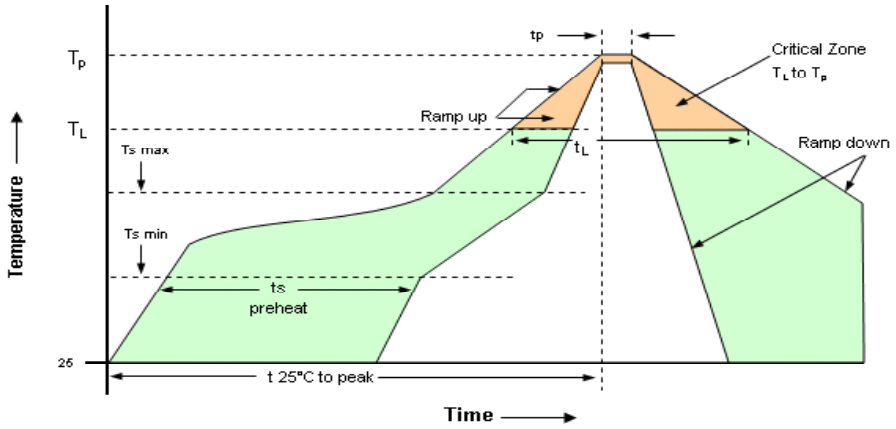


Production tolerance complying DIN IEC 286-3

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

Recommanded 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 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
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