VX-501

Low Noise Discrete
Voltage Controlled Crystal Oscillator

Features

- Surface Mount FR4 based package
- Reflow Process Compatible
- Low Phase Noise and Jitter
- Tight Stabilities
- Frequency Range 10 - 1200MHz
- Standard Frequencies 10; 16,384; 30,72; 32,768; 38,88; 44.8; 52; 61.44; 68.736; 76.8; 77.76; 81.92; 92.16;100; 112; 122.88; 125; 134.4; 153.6; 155.52; 160; 179.2; 184.32; 195; 208; 245.76; 320; 368.64; 400; 448; 471.8592; 491.52; 622.08; 640
- 672; 737.28; 800; 832; 1000; 1040; 1200.1MHz
- Previous Model Number: C5310

Applications

- Communication
- Test & Measurement
- Medical
- Military

Performance Specifications

Frequency Stabilities[1]						
Parameter	Min	Typical	Max	Units	Condition[2]	
vs. operating temperature range (referenced to +25°C)	-15		+15	ppm	-20 to +70°C	
Initial tolerance vs. supply voltage change vs. load change vs. aging / 1st Year vs. aging (following years)	-10 -3 -1 -2 -1		+10 +3 +1 +2 +1	ppm ppm ppm ppm ppm	@Vc=Vs/2 V_S ±5% Load ±10%	
vs. operating temperature range (referenced to +25°C)	-30		+30	ppm	-40 to +85°C	Options[5]
Initial tolerance vs. supply voltage change vs. load change vs. aging / 1st Year vs. aging (following years)	-15 -3 -2 -2 -1		+15 +3 +2 +2 +1	ppm ppm ppm ppm ppm	@Vc=Vs/2 V_S ±5% Load ±10%	

Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition[2]	
Supply voltage (standard)	3.135	3.3	3.465	VDC		Options[5]
Current consumption			40	mA	@ HCMOS, Sinewave	
Current consumption			90	mA	@ PECL, LVDS	
Supply voltage	4.75	5	5.25	VDC		
Current consumption			30	mA	@ HCMOS, Sinewave	
Current consumption			80	mA	@ PECL, LVDS	
RF Output						
Signal	HCMOS					Options[5]
Load		15		pF		
Rise and Fall time			5	ns	@ 15 pF 10 to 90%	
Duty cycle	40		60	%	@ Vs / 2	
Signal	PECL					
Load		50		Ω		
Rise and Fall time			1	ns	20 to 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		
Frequency Tuning (EFC)						
Tuning Range	±65.0	±90	±200.0	ppm		
Linearity	10 %					
Tuning Slope	Positive					
Control Voltage Range	0 0.5	1.65 2.5	3.3 4.5	VDC VDC	with Vs = 3.3V with Vs = 5V	
Frequency Control Input Impedance	100			kΩ		
Additional Parameters						
Phase Noise Jitter		-76 -112 -138 -153 -161 -166 0.049		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz ps RMS	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz @ 12kHz .. 20MHz	@100MHz LVCMOS 3.3V
Phase Noise Jitter		-59 -90 -118 -137 -144 0.1		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz ps RMS	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz @ 12kHz .. 20MHz	@ 300 MHz LVDS 3.3V
Phase Noise Jitter		-60 -95 -121 -141 -150 0.03		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz ps RMS	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz @ 12kHz .. 20MHz	@ 491.52 MHz PECL 3.3V

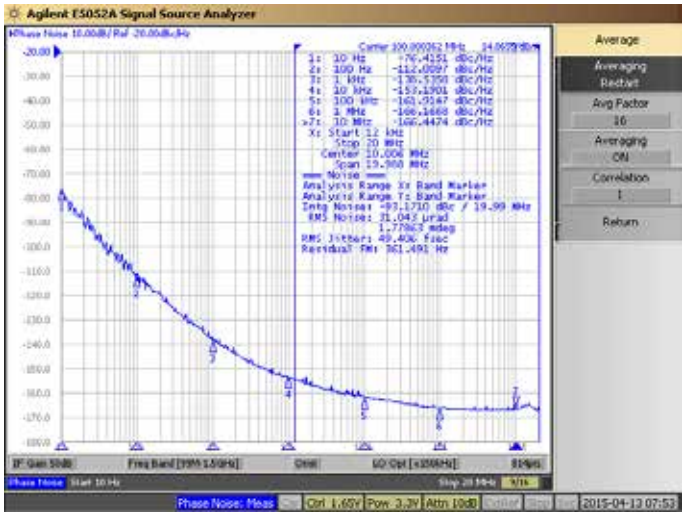
Performance Specifications

Additional Parameters					
Subharmonics			-40	dBc	For f > 200 MHz
Weight			2.0 g		
Processing & Packing	Handling & Processing Note				
Absolute Maximum Ratings					
Supply voltage (Vs)			6.0	V	
Operable Temperature Range	-40		+85	°C	
Storage Temperature Range	-40		+95	°C	

Typical Phase Noise and Jitter

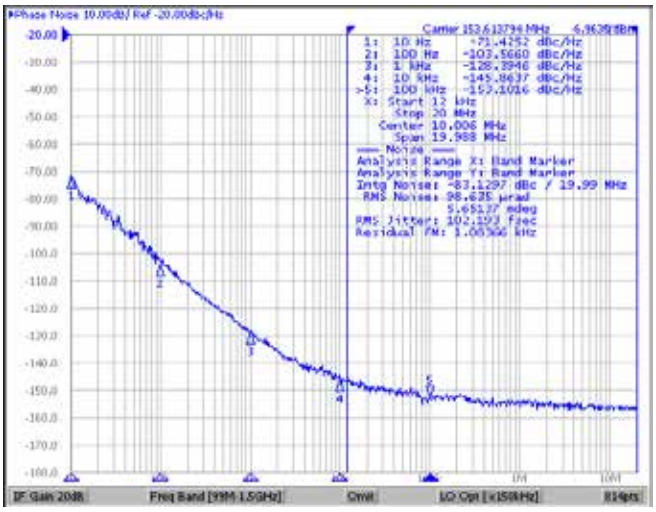
Phase Noise

VX-501 @ 100 MHz LVCMOS



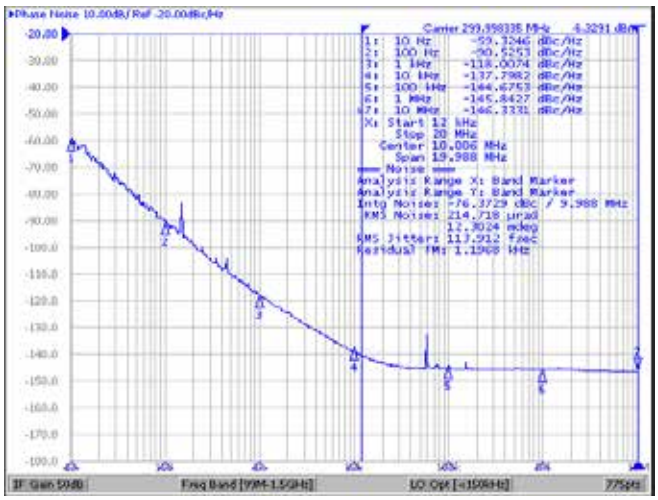
Phase Noise

VX-501 @ 153.6 MHz LVPECL



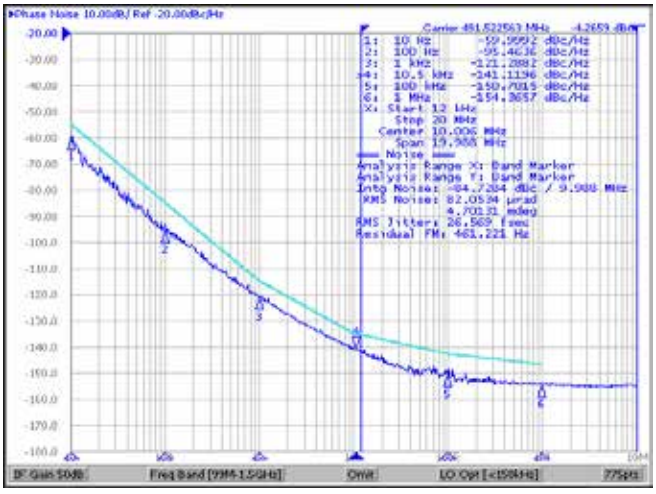
Phase Noise

VX-501 @ 300 MHz LVDS



Phase Noise

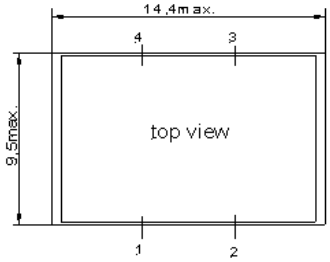
VX-501 @ 491.52 MHz LVPECL



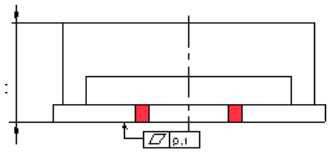
Enclosure

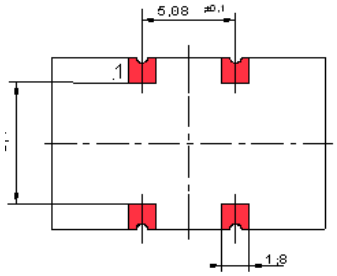
Package Codes	
Type	Height "H"
G223B	5.9

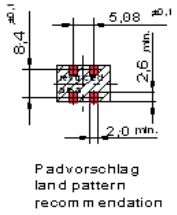
Package Codes	
Type	Height "H"
G218B	5.9
G218E	4.7
G218C	2.8



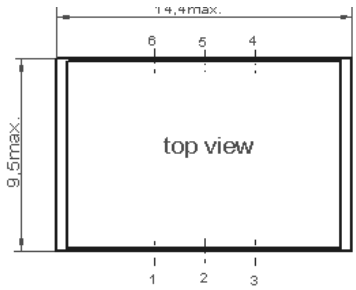
G 223



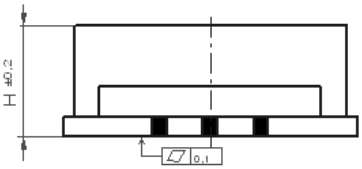


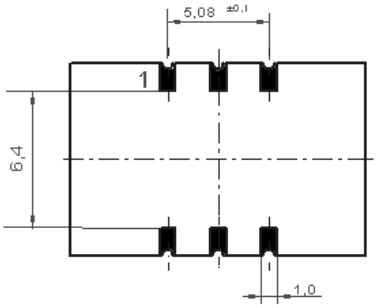


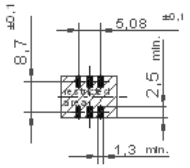
Padvorschlag
land pattern
recommendation



G 218







Padvorschlag
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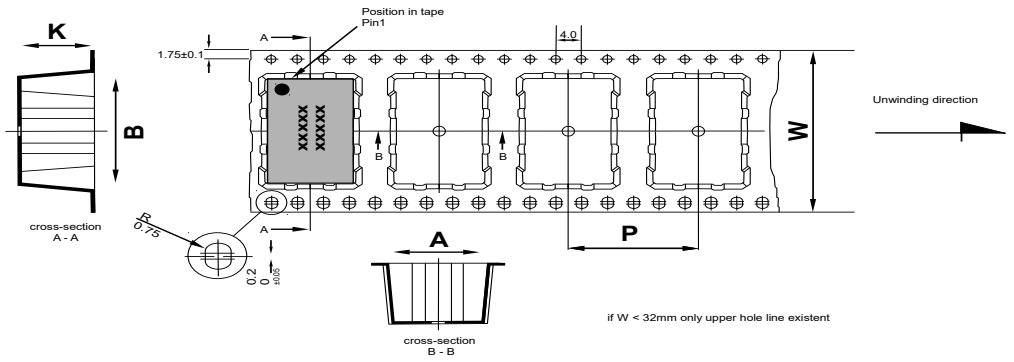
Pin Connections	
1	Control Voltage (Vc)
2	Ground
3	RF Output
4	Supply Voltage Input (Vs)

Pin Connections	
1	Control Voltage (Vc)
2	N.C. / Enable (Option)
3	Ground
4	RF Output
5	RF Output complementary (PECL / LVDS) N.C. (CMOS)
6	Supply Voltage Input (Vs)

Marking
VX-501-xxxx
Frequency
● AYYWW

Enable true table (optional)				
	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

Standard Shipping Method



Dimension in mm:
A, B and K are dependent uppon component dimensions
production tolerance complying DIN IEC 286-3

All dimensions in millimeters unless otherwise stated

Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G218B/G218E/G223B	24	83.3	850	12
G218C	24	83.3	1700	12

Recommended Reflow Profile

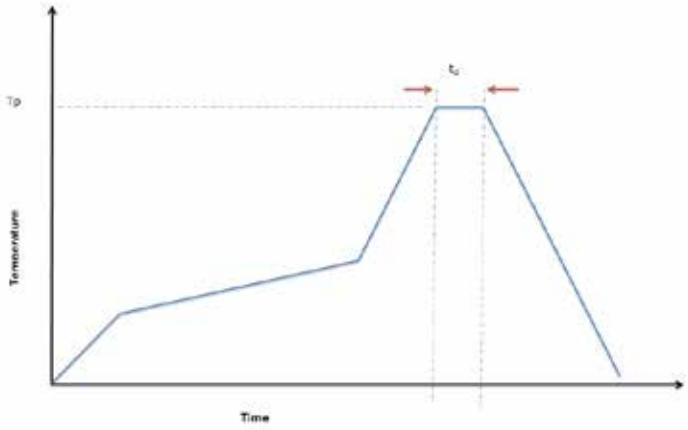
TP: max 250°C (@ solder joint, customer board level)

T_p: max: 10…30 sec

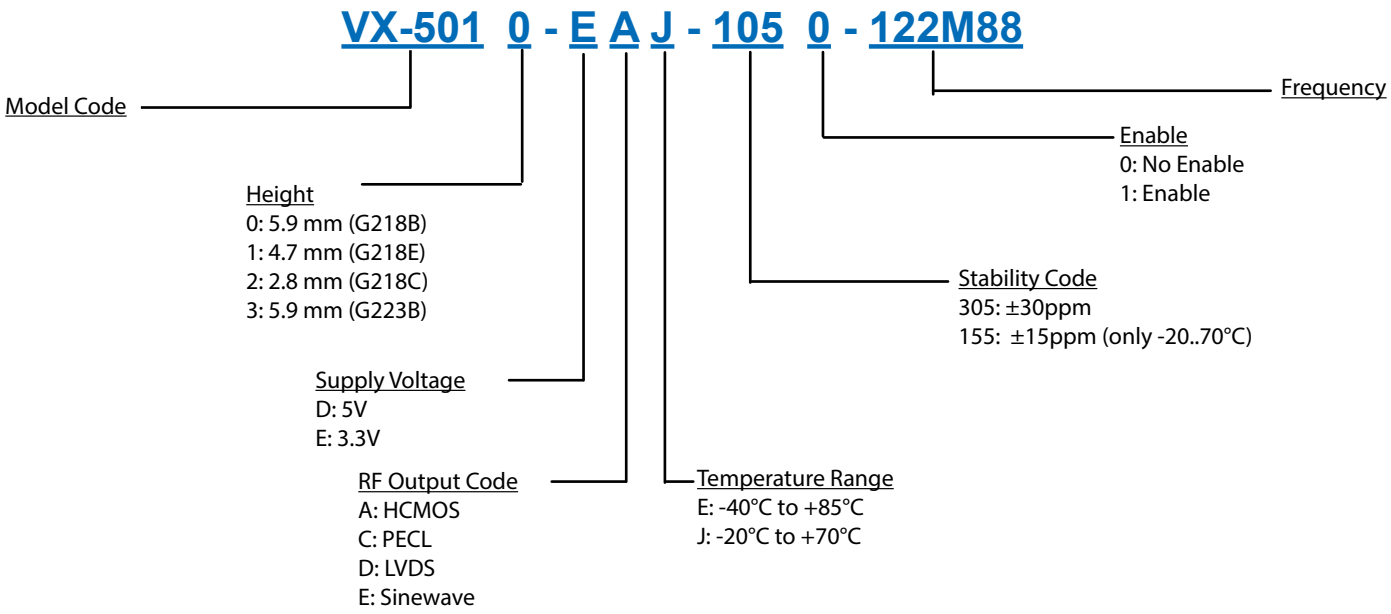
Additional Information:

This SMD oscillator has been designed for pick and place reflow soldering

SMD oscillators must be on the top side of the PCB during the reflow process.



Ordering Information



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.

Contact Information

USA:
100 Watts Street
Mt Holly Springs, PA 17065
Tel: 1.717.486.3411
Fax: 1.717.486.5920

Europe:
Landstrasse
74924 Neckarbischofsheim
Germany
Tel: +49 (0) 7268.801.0
Fax: +49 (0) 7268.801.281

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