VX-505

Voltage Controlled Crystal Oscillator
Extended Temperature

Features

- AT-Cut Crystal
- Surface Mount FR4 based package
- Reflow Process Compatible
- Extended temperature range -55..+125°C
- Low Phase Noise
- Tight Stabilities
- Frequency Range 20 - 800MHz
- Standard Frequencies 20; 30,72; 32,768; 38,88; 44.8; 61.44; 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; 491.52; 640; 672; 737.28; 800MHz

Applications

- Communication
- Industrial
- Harsh Environmental
- Military

Performance Specifications

Frequency Stabilities[1]					
Parameter	Min	Typical	Max	Units	Condition[2]
vs. operating temperature range (referenced to +25°C)	-45		+45	ppm	-55 to +125°C
Initial tolerance	-30		+30	ppm	@Vc=Vs/2
vs. supply voltage change	-2		+2	ppm	V_S ±5%
vs. load change	-1		+1	ppm	Load ±10%
vs. aging / 20 Years	-8		+8	ppm	

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Performance Specifications

Parameter	Min	Typical	Max	Units	Condition[2]	
Supply Voltage (Vs)						
Supply voltage (standard)	3.135	3.3	3.465	VDC		Options[5]
Current consumption			40	mA	@ HCMOS	
Current consumption			90	mA	@ PECL	
Supply voltage	4.75	5	5.25	VDC		
Current consumption			30	mA	@ HCMOS	
Current consumption			80	mA	@ PECL	
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	%		
Frequency Tuning (EFC)						
Tuning Range	±60.0		±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	2			MΩ		
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		-75 -105 -130 -145 -153 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	@ 153.6 MHz PECL 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

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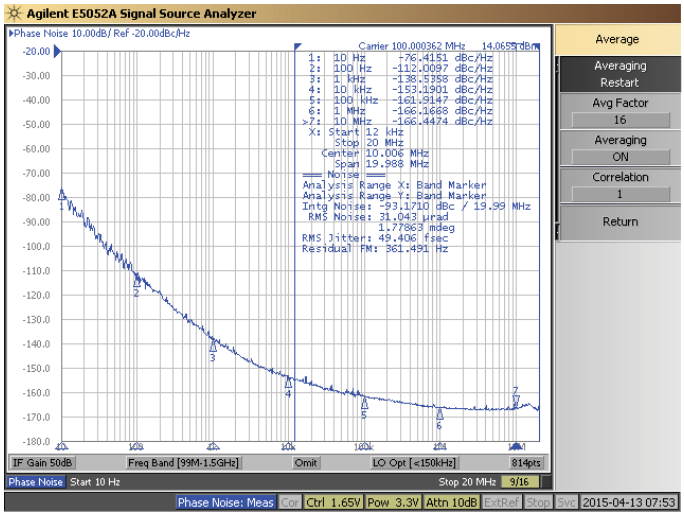
Performance Specifications

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	-55		+125	°C	
Storage Temperature Range	-55		+125	°C	

Typical Phase Noise and Jitter

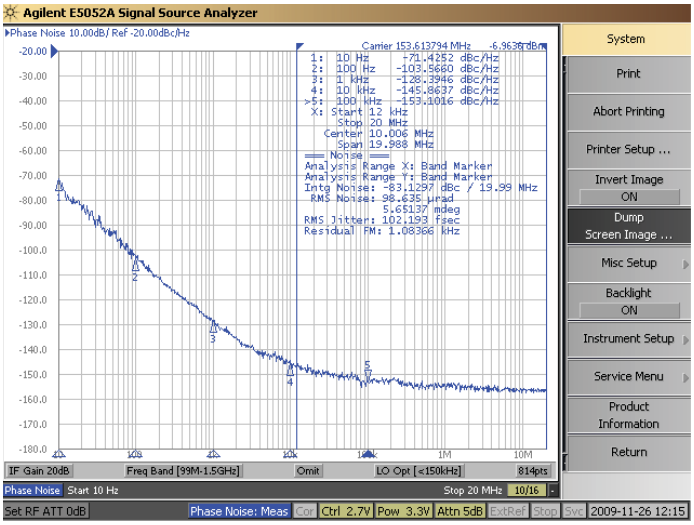
Phase Noise

VX-505 @ 100 MHz LVCMOS



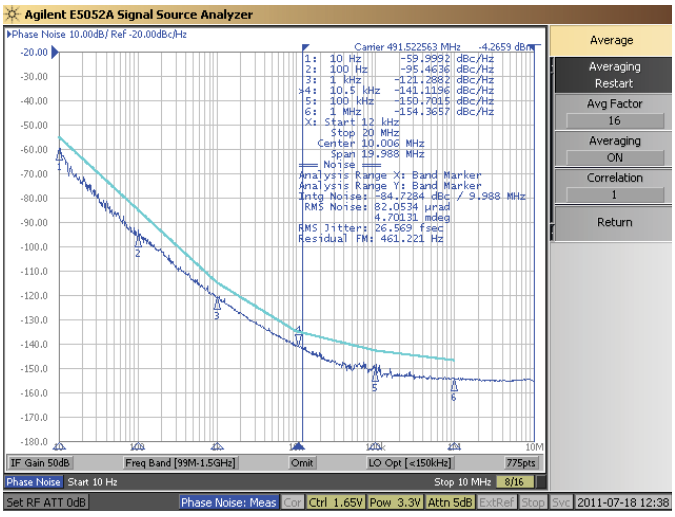
Phase Noise

VX-505 @ 153.6 MHz LVPECL



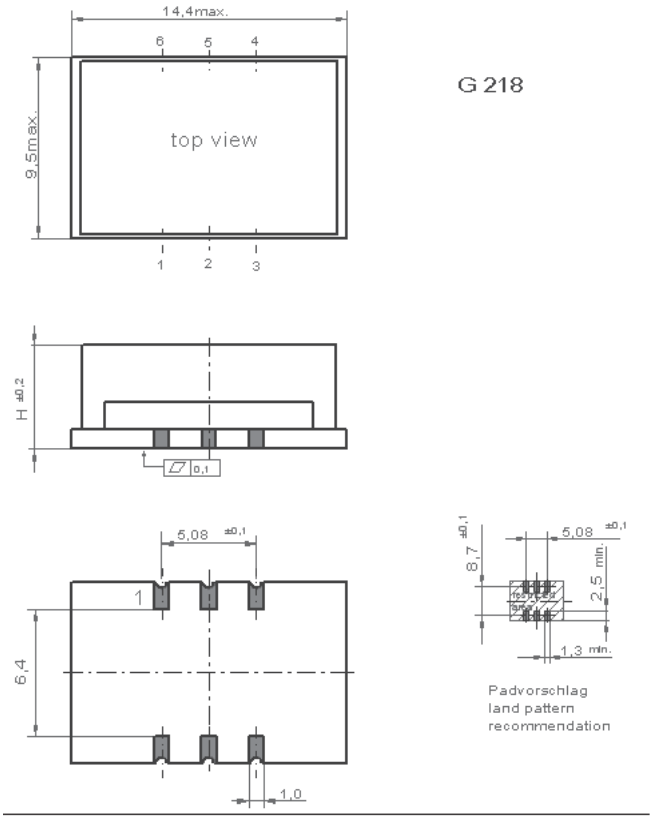
Phase Noise

VX-505 @ 491.52 MHz LVPECL



Enclosure

Package Codes	
Type	Height "H"
G218C	2.8



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

Marking
VX-505-xxxx
Frequency
● AYYWW

Enable true table (optional)				
	HCMOS		LVPECL	
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

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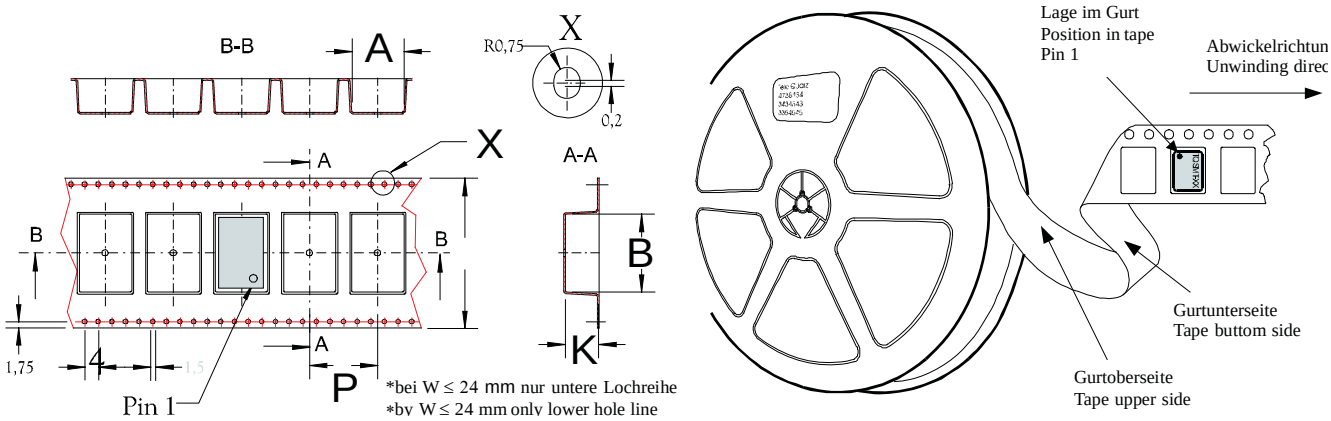
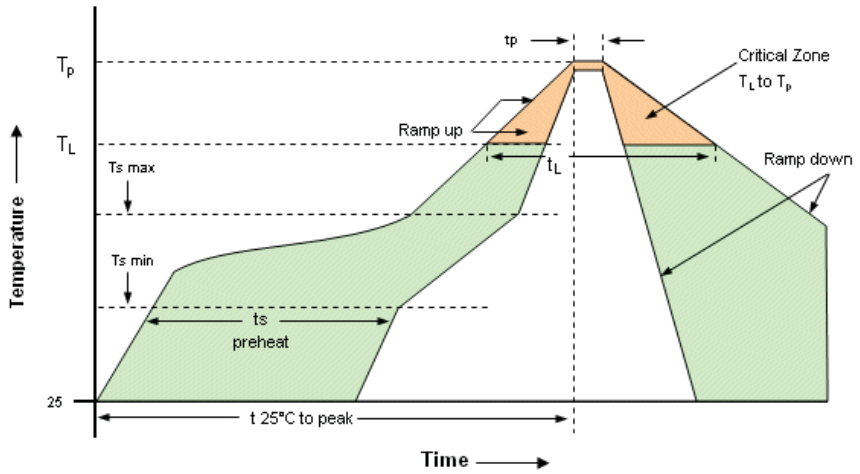
Standard Shipping Method



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G218C	24	83.3	1700	12

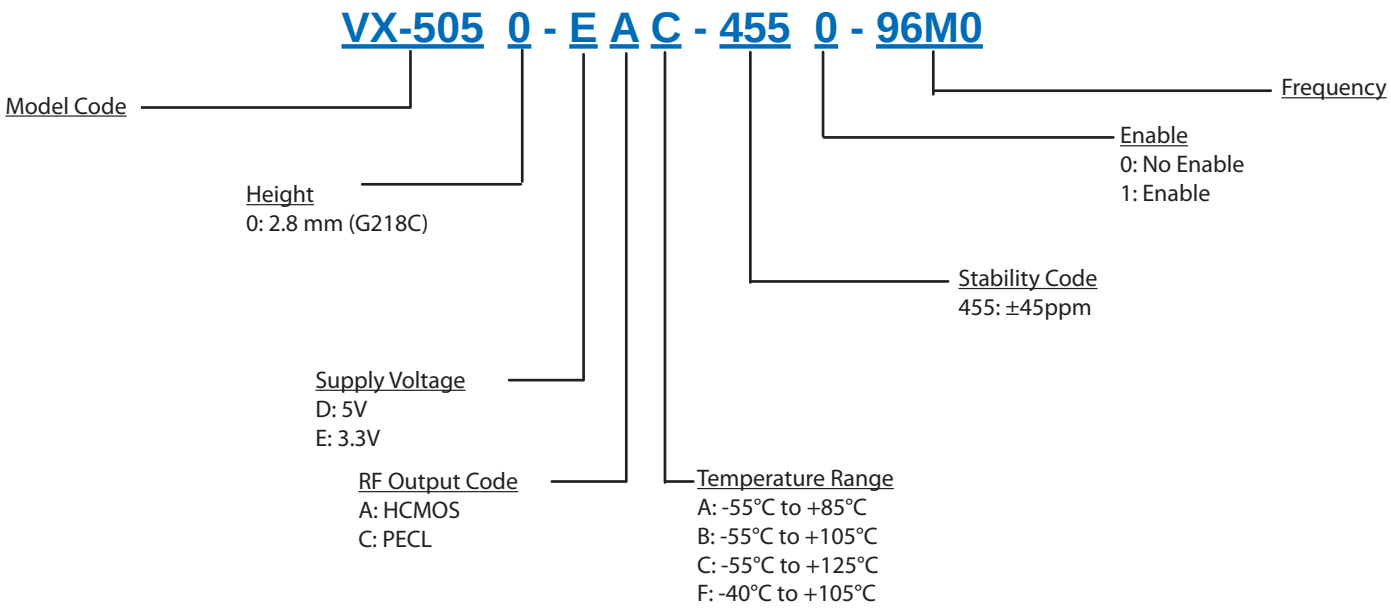
Recommended Reflow Profile



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_{Smin} -Temperature Min T_{Smax} -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
TSmax to TL -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.

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.

For Additional Information, Please Contact

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