



VX-505

## 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

Parameter	Frequency Stabilities <sup>1</sup>				Condition <sup>2</sup>
	Min	Typical	Max	Units	
vs. operating temperature range (referenced to +25°C)	-45		+45	ppm	-55 to +125°C
Initial tolerance	-30		+30	ppm	@V <sub>c</sub> =V <sub>s</sub> /2 V <sub>s</sub> ±5% Load ±10%
vs. supply voltage change	-2		+2	ppm	
vs. load change	-1		+1	ppm	
vs. aging / 20 Years	-8		+8	ppm	

## Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition <sup>2</sup>	
Supply voltage (standard)	3.135	3.3	3.465	VDC		Options <sup>5</sup>
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 <sup>5</sup>
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		-76 -112 -138 -153 -161 -166		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz	@100MHz LVCMOS 3.3V
Jitter		0.049		ps RMS	@ 12kHz .. 20MHz	
Phase Noise		-75 -105 -130 -145 -153		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	@ 153.6 MHz PECL 3.3V
Jitter		0.1		ps RMS	@ 12kHz .. 20MHz	
Phase Noise		-60 -95 -121 -141 -150		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	@ 491.52 MHz PECL 3.3V
Jitter		0.03		ps RMS	@ 12kHz .. 20MHz	

# Performance Specifications

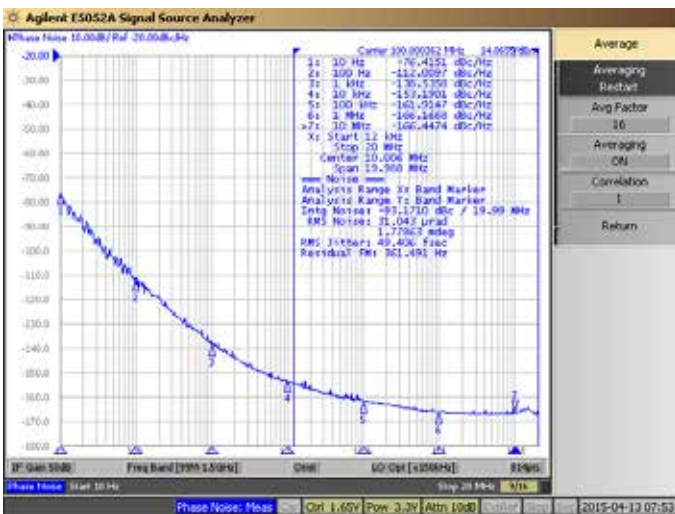
## Additional Parameters

Subharmonics		-40	dBc	For f > 200 MHz
Weight		2.0 g		
Processing & Packing	Handling & Processing Note			
<b>Absolute Maximum Ratings</b>				
Supply voltage (Vs)		6.0	V	
Operable Temperature Range	-55	+125	°C	
Storage Temperature Range	-55	+125	°C	

## Typical Phase Noise and Jitter

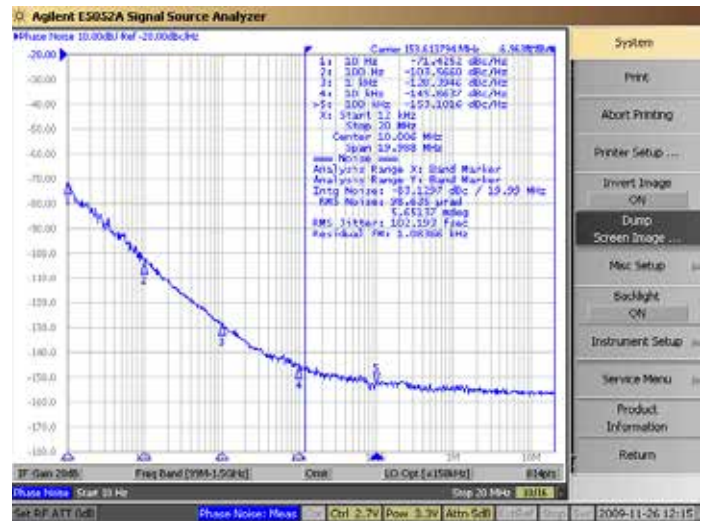
### Phase Noise

VX-501 @ 100 MHz LVCMOS



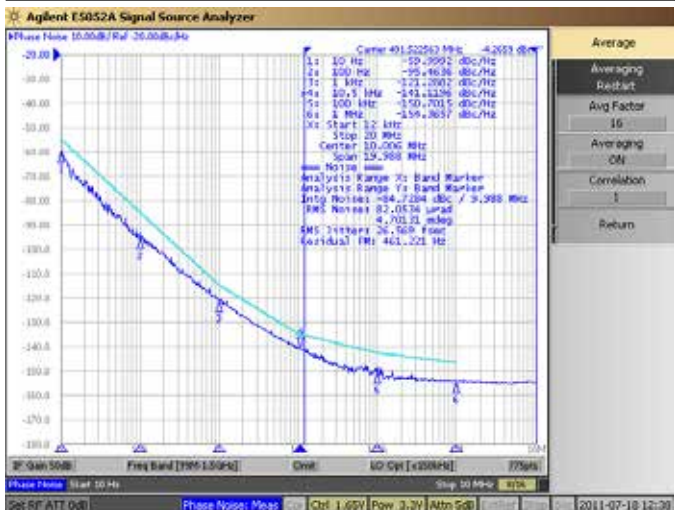
### Phase Noise

VX-501 @ 153.6 MHz LVPECL



### Phase Noise

VX-501 @ 491.52 MHz LVPECL

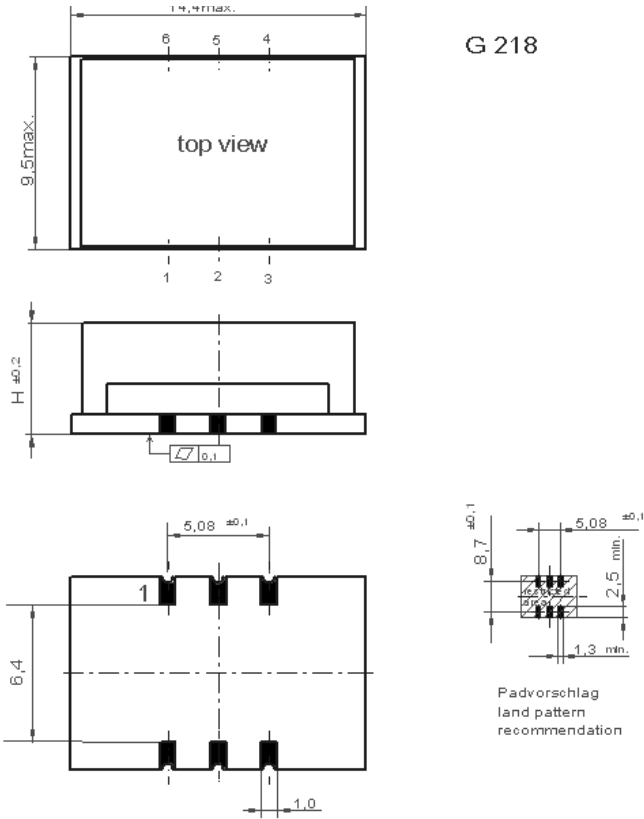


# Enclosure

## Package Codes

Type	Height "H"
G218C	2.8

G 218



## 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)

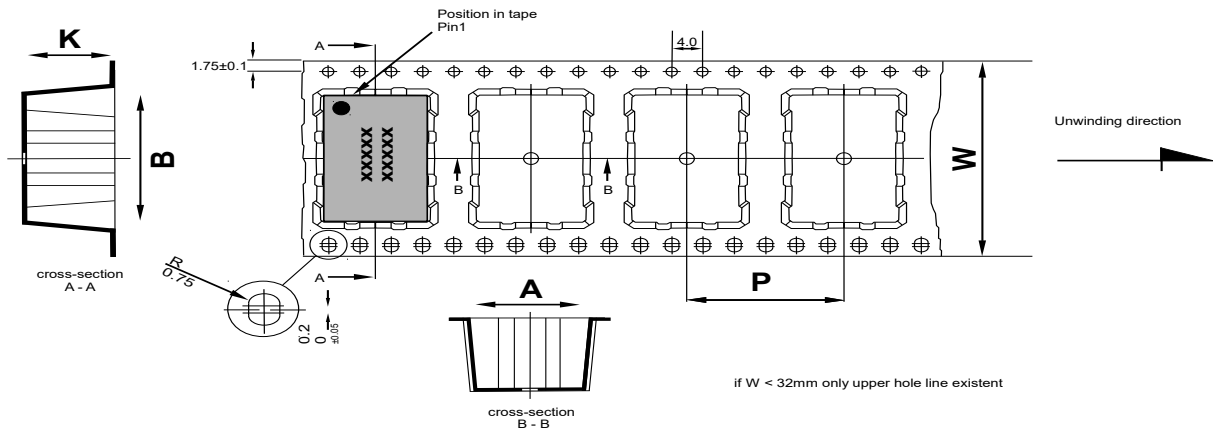
## Marking

VX-505-xxxx
Frequency
● AYYWW

## Enable true table (optional)

	HCMOS		LVPECL	
	Pin 4	Pin 5	Pin 4	Pin 5
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 upon 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
G218C	24	83.3	1700	12

# Recommended Reflow Profile

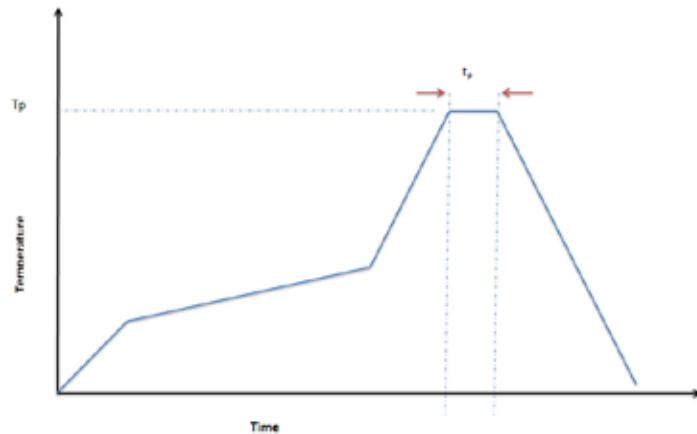
TP: max 250°C (@ solder joint, customer board level)

T<sub>p</sub>: max: 10...30 sec

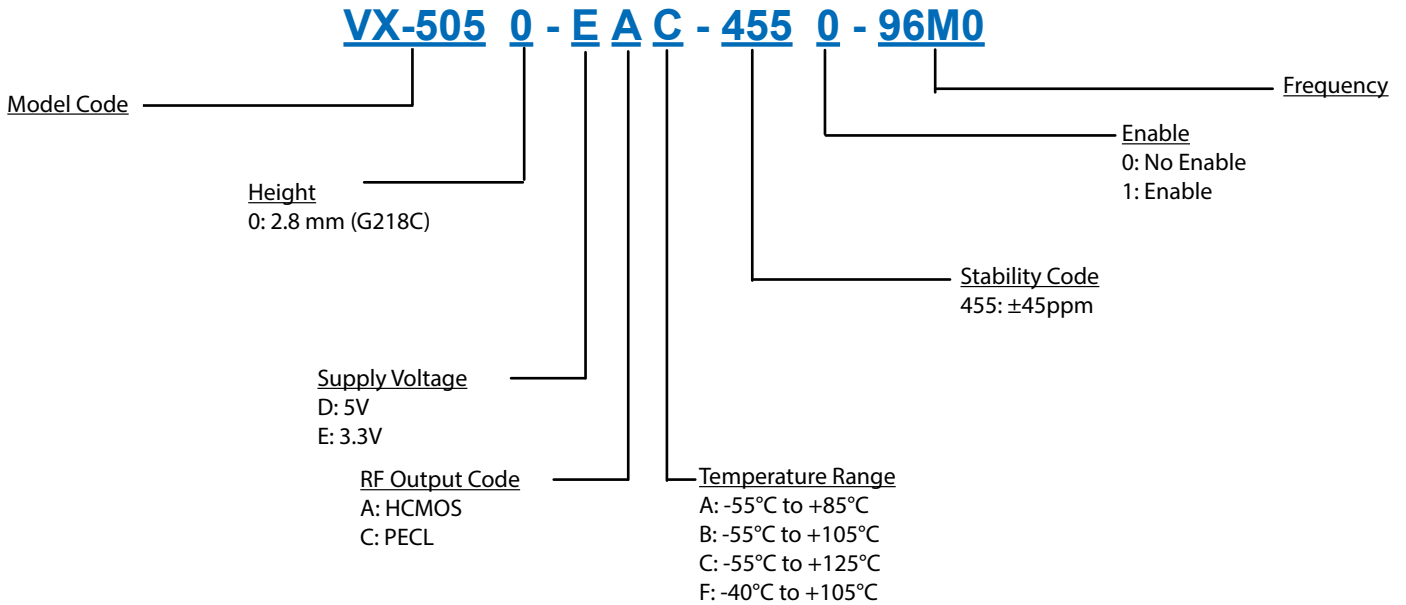
Additional Information:

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.



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