



VX-504

Features

- AT-Cut Crystal
- Surface Mount FR4 based package
- Low Phase Noise
- Low G-Sensitivity
- Tight Stabilities
- Frequency Range 30 - 160MHz
- Standard Frequencies 32,768; 38,4; 44,8; 61.44; 76.8; 81.92; 92.16; 100; 102.4; 112; 122.88; 125; 134.4; 153.6; 155.52; 160MHz

Applications

- Wireless Communication
- Test & Measurement
- Harsh Environment
- Industrial
- Military

Performance Specifications

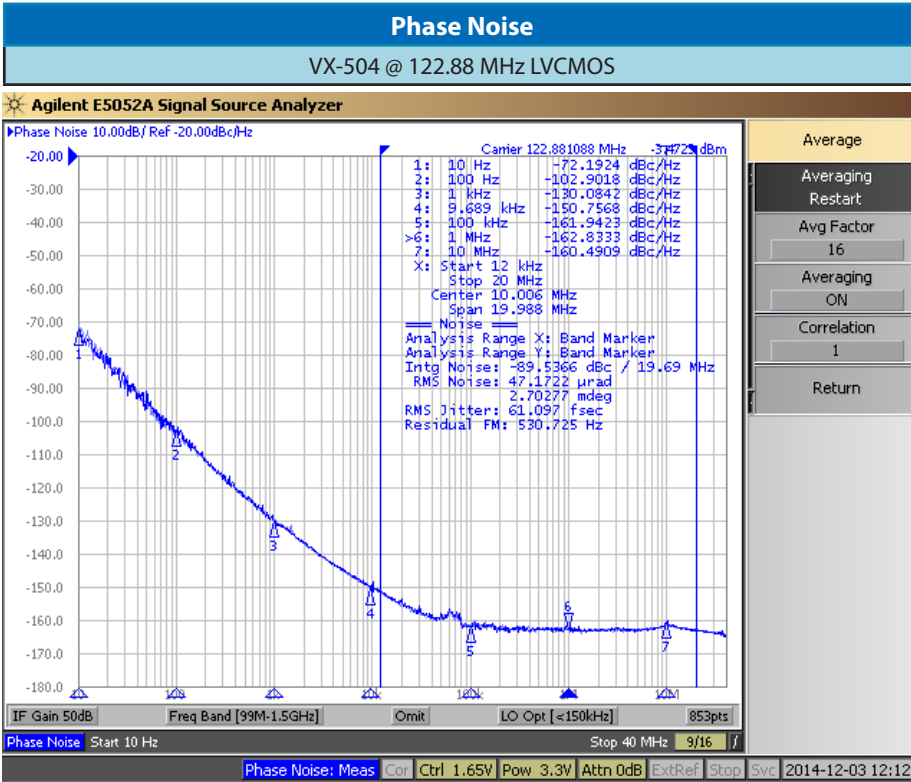
Frequency Stabilities ¹						
Parameter	Min	Typical	Max	Units	Condition ²	
vs. operating temperature range (referenced to +25°C)	-30		+30	ppm	-40 to +85°C	
Initial tolerance	-15		+15	ppm	@V _C =V _S /2 V _S ±5% Load ±10%	
vs. supply voltage change	-3		+3	ppm		
vs. load change	-2		+2	ppm		
vs. aging / 1 Year	-2		+2	ppm		
vs. aging (15 years)	-7		+7	ppm		

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			25	mA	@ HCMOS	
Supply voltage	4.75	5	5.25	VDC		
Current consumption			20	mA	@ HCMOS	
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	
Frequency Tuning (EFC)						
Tuning Range	±65.0	±80	±180.0	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		-72 -103 -130 -150 -161		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	@122MHz LVCMOS 3.3V
Jitter		0.06		ps RMS	@ 12kHz .. 20MHz	
G-Sensitivity		0.3		ppb/g	@0.06g ² /Hz	

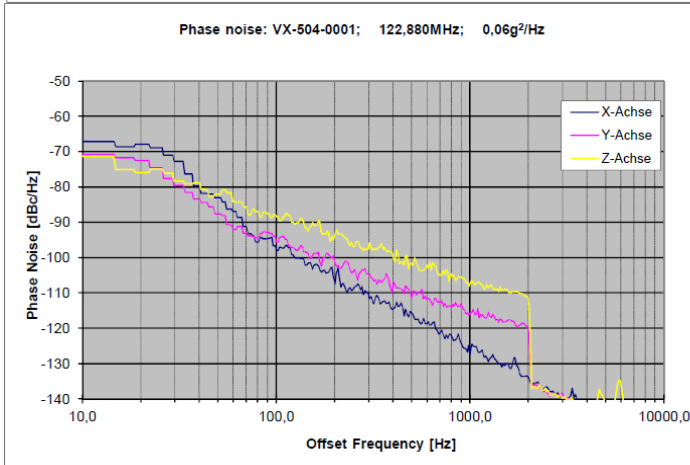
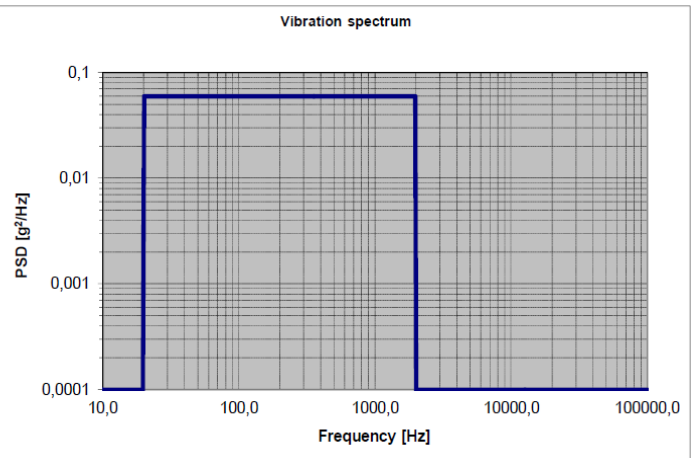
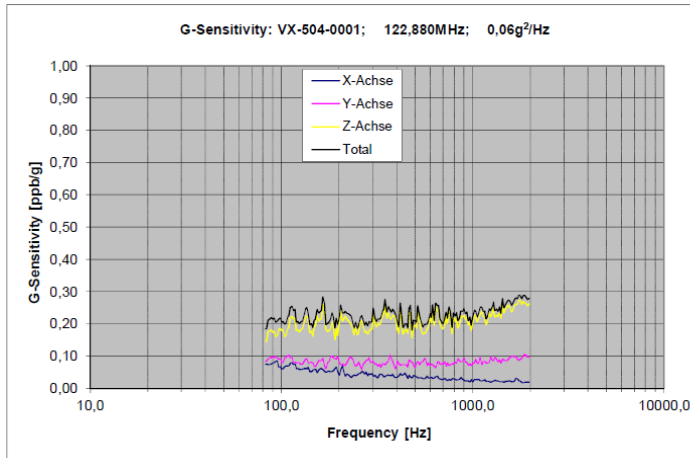
Additional Parameters						
Weight			2.0 g			
Processing & Packing	Handling & Processing Note					
Absolute Maximum Ratings						
Supply voltage (Vs)			6.0	V		
Operable Temperature Range	-40		+85	°C		
Storage Temperature Range	-40		+105	°C		

Typical Phase Noise and Jitter



G-Sensitivity

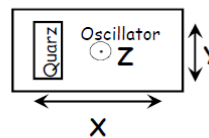
VX-504 @ 122.88 MHz LVCMOS



Calculation equation according to Vig-Tutorial

$$g\text{-sensitivity: } G = \frac{2 \cdot f_v}{A_{peak} \cdot f_0} \cdot 10^{\frac{L(f)}{20}}$$

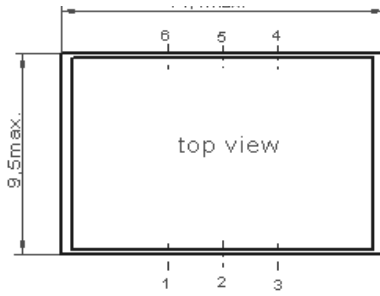
$$\text{Peak g-level: } A_{peak} = \sqrt{PSD \cdot 2}$$



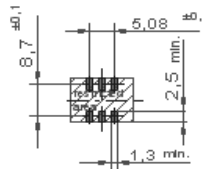
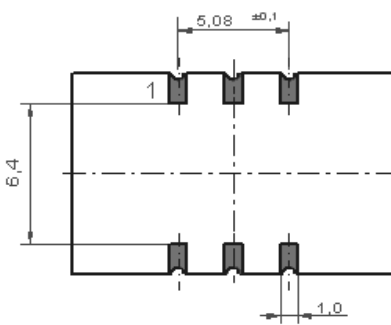
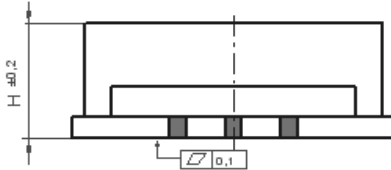
Enclosure

Package Codes

Type	Height "H"
G218C	2.8



G 218



Padvorschlag
land pattern
recommendation

Pin Connections

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

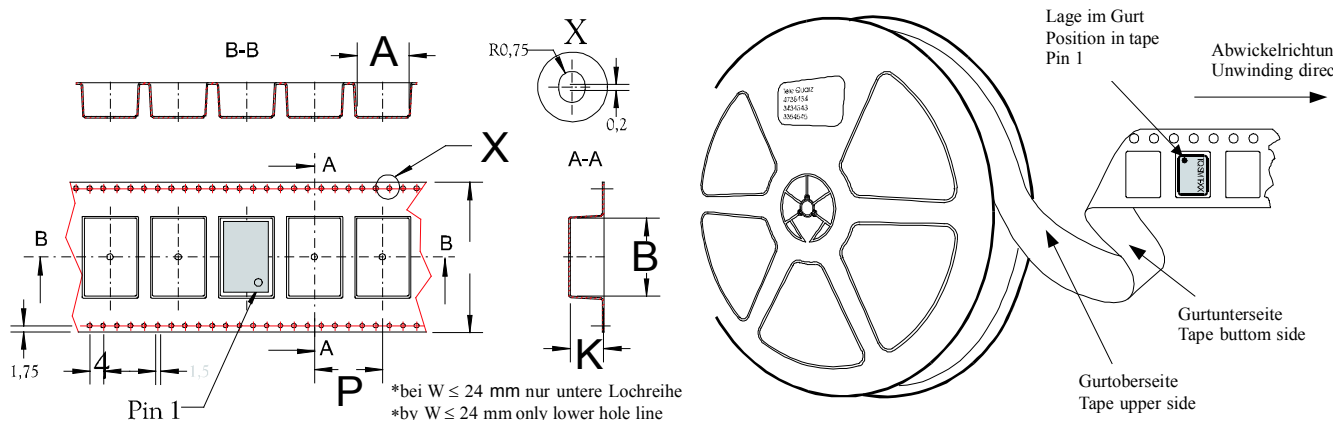
Marking

VX-504-xxxx
Frequency
● AYYWW

Enable true table (optional)

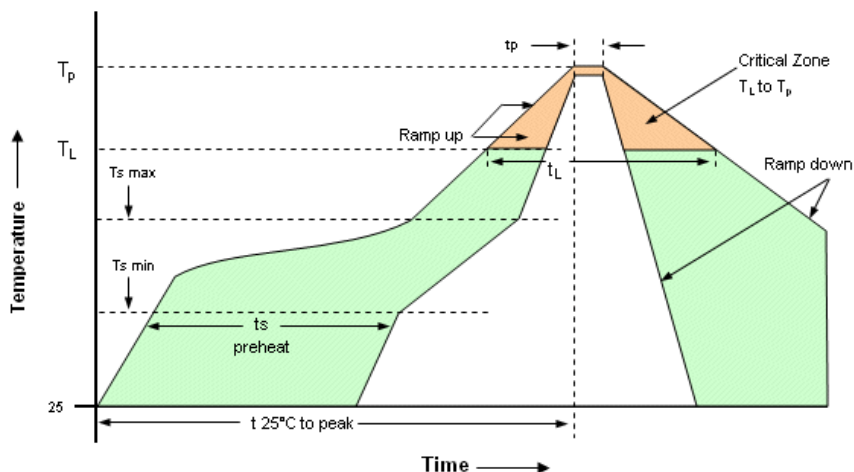
	HCMOS	
Pin 2	Pin 4	Pin 5
High	Data	N.C.
Open	Data	N.C.
Low	High Tristate	N.C.

Standard Shipping Method



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

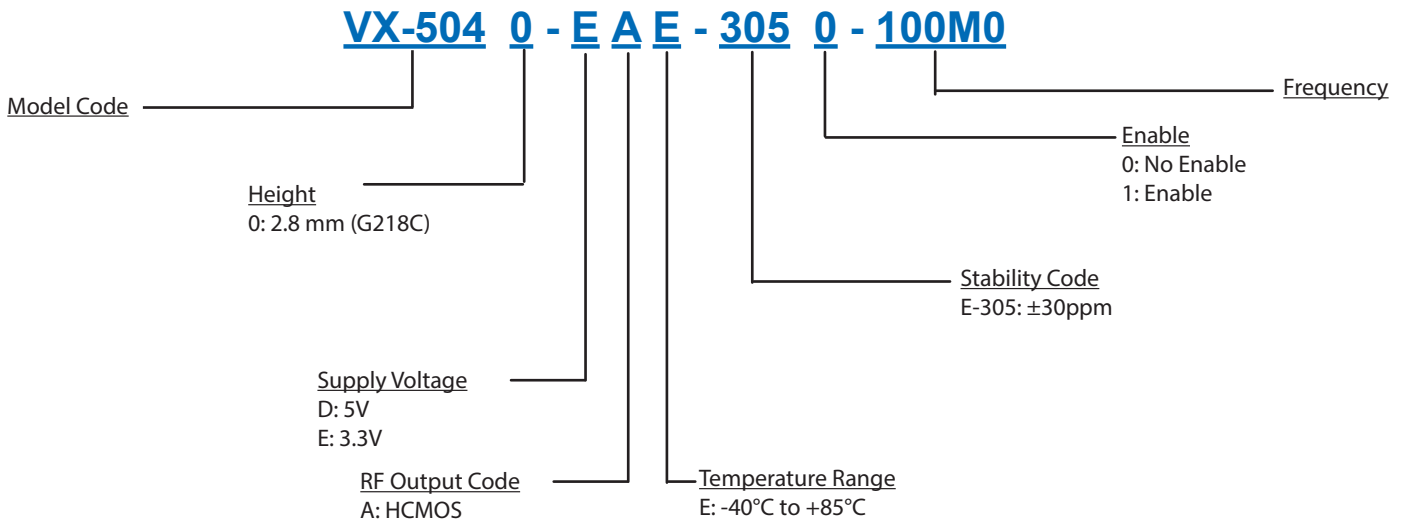
Recommended Reflow Profile



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
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.

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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