

Preliminary

Helping Customers Innovate, Improve & Grow



Features

- Low G-Sensitivity
- High shock resistance
- Vibration hardened
- Tight Tolerances
- Low Phase Noise

Applications

- Vibration Environment
- Airborne and Military Equipment
- Portable Equipment
- Tactical Weapons

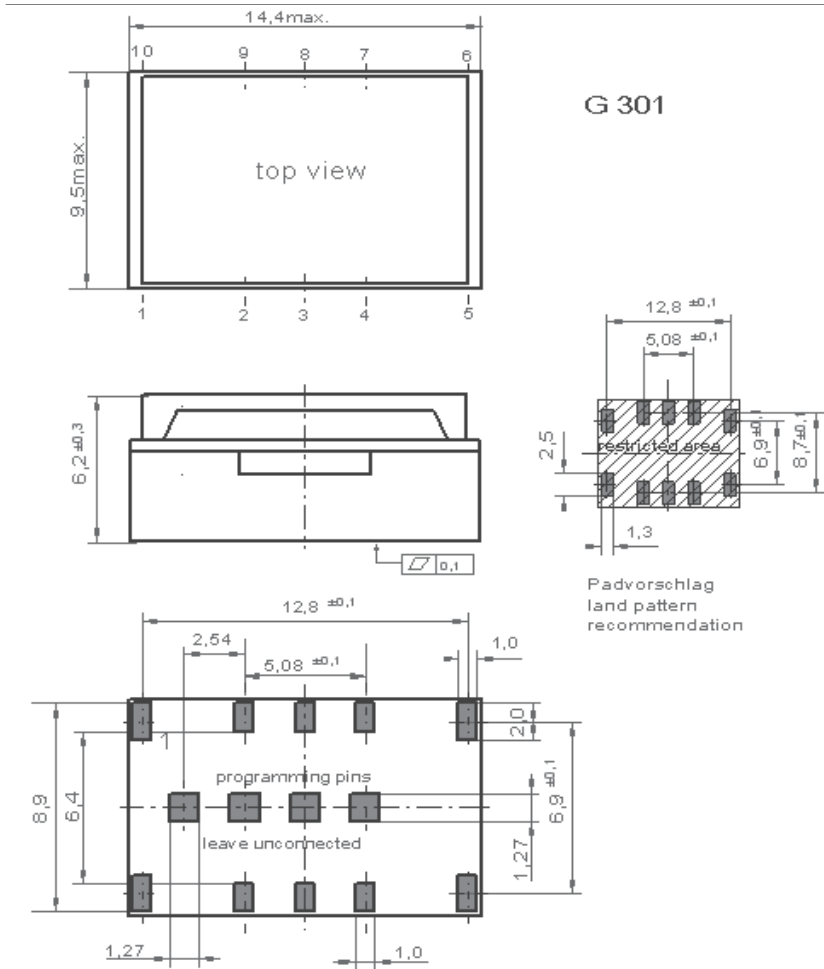
Performance Specifications

Frequency Stabilities ¹ (Frequency Range - 10 to 120 MHz)						
Parameter	Min	Typical	Max	Units	Condition	Options ⁵
vs. operating temperature range (referenced to +25°C)	-15.0		+15.0	ppm	-20 to +70°C	
	-25.0		+25.0	ppm	-40 to +85°C	
	-40.0		+40.0	ppm	-55 to +105°C	
Initial tolerance	-10.0		+10.0	ppm	25°C	
vs. supply voltage change	-3.0		+3.0	ppm	V _s ±5% static	
vs. load change	-2.0		+2.0	ppm	Load ±10% static	
vs. aging / 1 year	-1.0		+1.0	ppm	after 30 days of operation	
vs. aging / 10 years	-5.0		+5.0	ppm	after 30 days of operation	

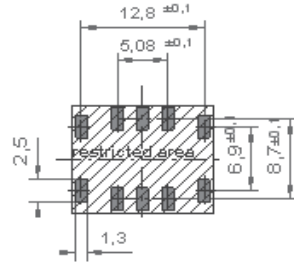
Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard) Current consumption	3.135	3.3	3.465	VDC mA	@LVCMOS	Option ⁵
Supply voltage Current consumption	4.75	5.0	5.25	VDC mA	@HCMOS	
RF Output						
Signal [standard]	HCMOS					
Load	13.5	15	16.5	pF		
Signal Level (Vol)			0.3	VDC	@ Vs=3.3V and 15pF Load	
Signal Level (Vol)			0.5		@ Vs=5.0V and 15pF Load	
Signal Level (Voh)	3.0			VDC	@ Vs=3.3V and 15pF Load	
Signal Level (Voh)	4.5				@ Vs=5.0V and 15pF Load	
Duty Cycle	40		60	%	@ (Voh-Vol)/2	
Rise and Fall time			5	ns	@15 pF 10 to 90 %	
Frequency Tuning (EFC)						
Tuning Range	±50.0			ppm	Frequency > 30 MHz	
	±100.0			ppm	Frequency < 30 MHz	
Linearity	<10%					
Tuning Slope	Positive					
Control Voltage Range	0.3	1.65	3.0	VDC	@ Vs=3.3V	
Control Voltage Range	0.5	2.5	4.5	VDC	@ Vs=5.0V	
Frequency control input impedance	10			kOhm		
Additional Parameters						
Phase Noise ³		-95	-80	dBc/Hz	10 Hz	@ 77.76 MHz HCMOS 3.3V
		-123	-110	dBc/Hz	100 Hz	
		-142	-135	dBc/Hz	1 kHz	
		-153	-145	dBc/Hz	10 kHz	
		-155	-150	dBc/Hz	100 kHz	
Jitter		0.2		ps RMS	@ 12 kHz to 20 MHz	
Weight			8.0	g		
Processing & Packing	Handling & Processing Note					
Additional Environmental Conditions						
Random Vibration	MIL-STD-202G; Method 214A; Condition II-D				0.1g2/Hz / 30 grms	
Shock	MIL-STD-202G; Method 213B; Condition F				1000 g / 0.5 ms	
Absolute Maximum Ratings						
supply voltage (Vs)			6.0	V		
Output Load			50	pF		
Operable Temperature Range	-55		+105	°C		
Storage Temperature Range	-55		+105	°C		

Outline Drawing / Enclosure



G 301



Padvorschlag
land pattern
recommendation

Dimensions in mm

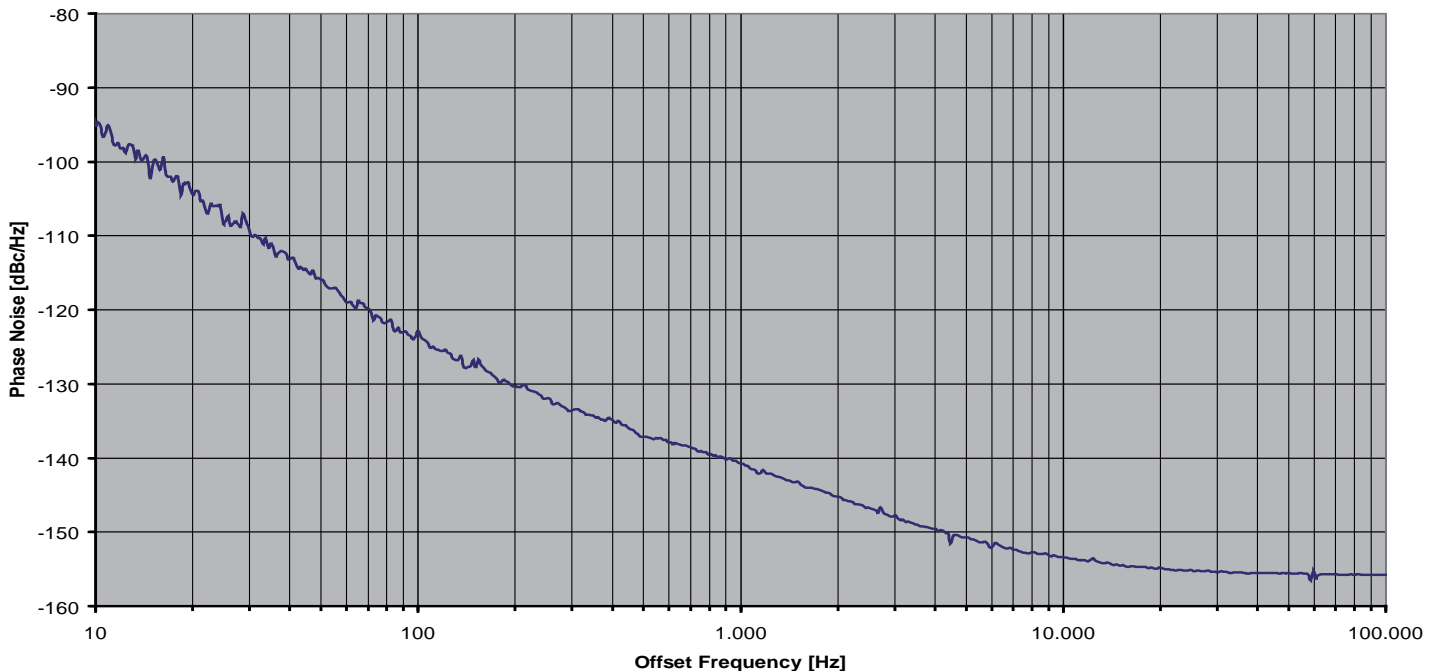
VX-508	
Height "H"	Pin Length "L"
5.9	NA

Pin Connections	
1	N/C
2	N/C
3	N/C / Enable (optional)
4	Ground (Case)
5	NC
6	NC
7	RF-Output
8	NC
9	Supply Voltage (Vs)
10	NC

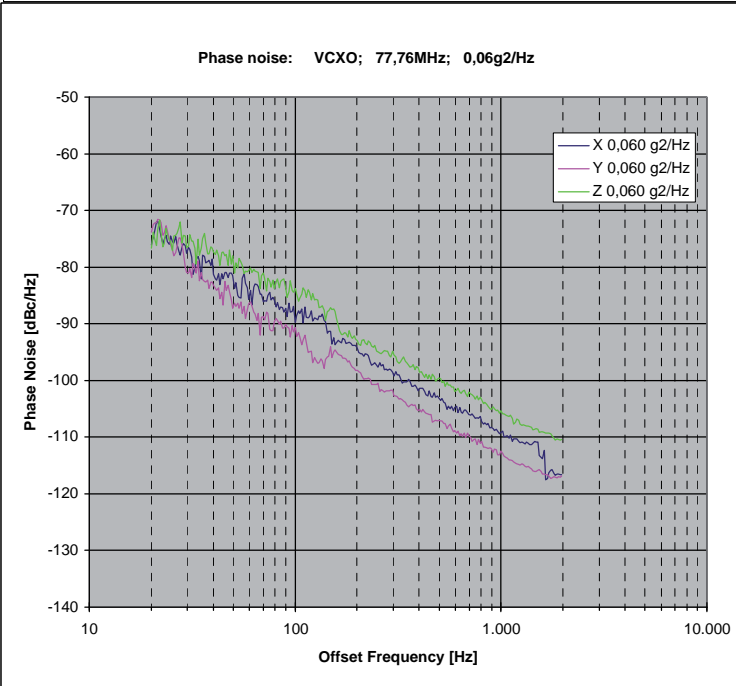
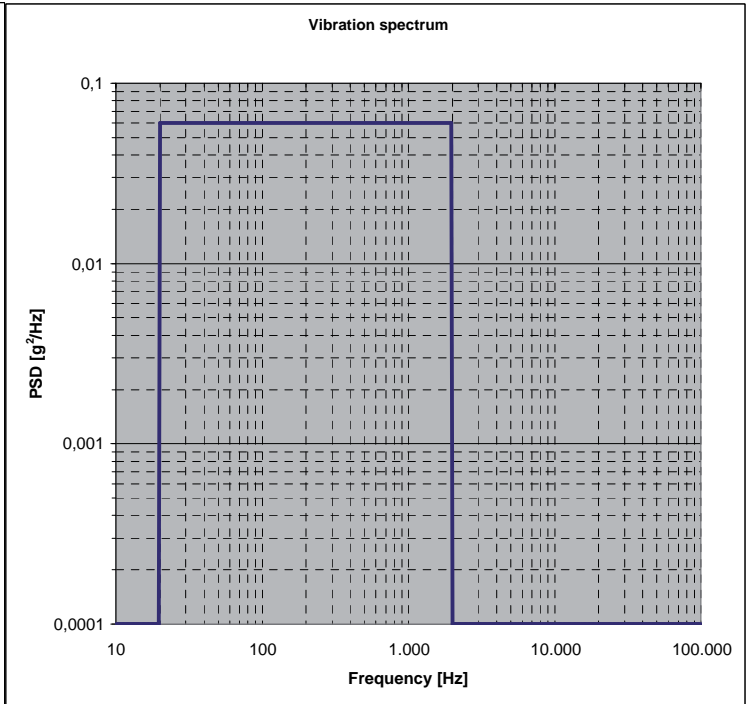
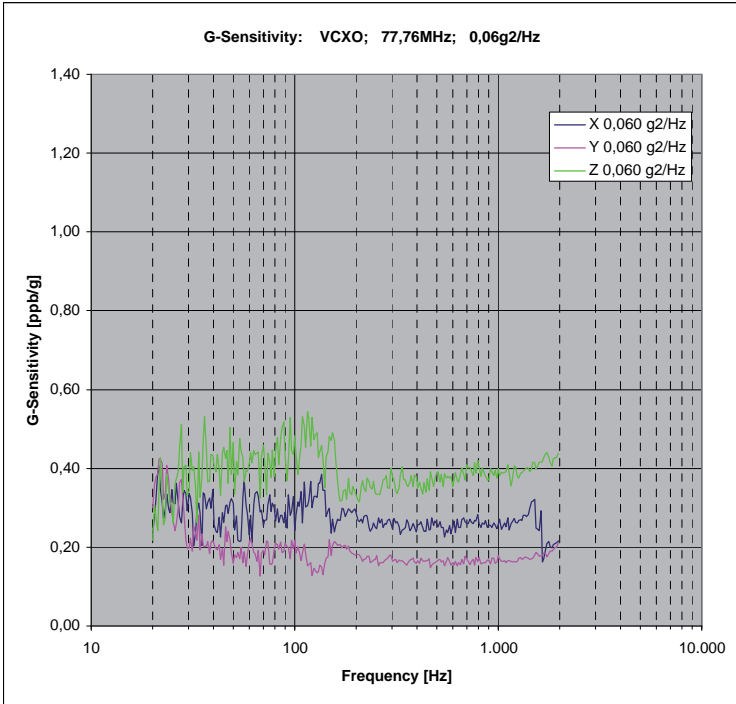
Enable true table (optional)		
Pin 2	Pin 4	Pin 5
High	Data	N/C
Open	Data	N/C
Low	High Tristate	N/C

Typical Phase Noise @ 77.76 MHz HCMOS

Typical phase noise @ 77,76MHz
static conditions



Typical G-Sensitivity @77.76 MHz; HCMOS

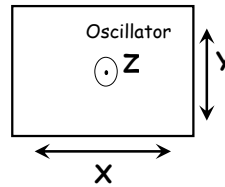


Calculation equation according to Vig-Tutorial

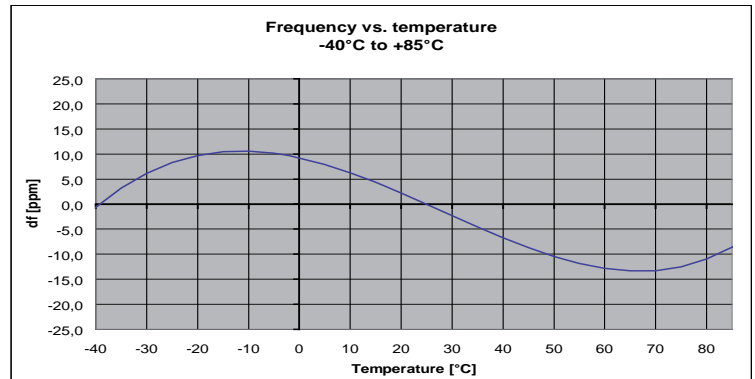
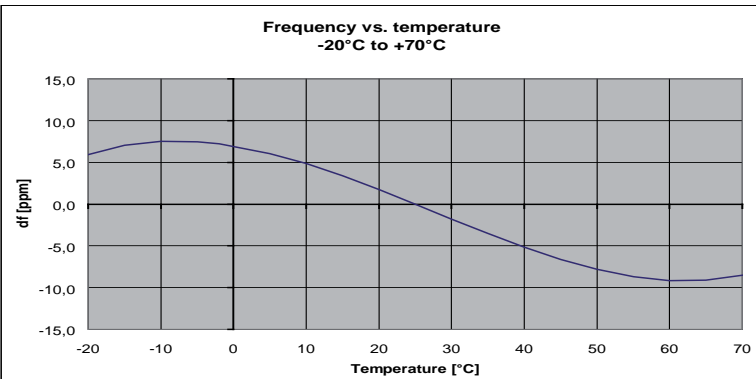
$$g\text{-sensitivity: } G = \frac{2 \cdot f_v}{A_{peak} \cdot f_0} \cdot 10^{\frac{L(f_v)}{20}}$$



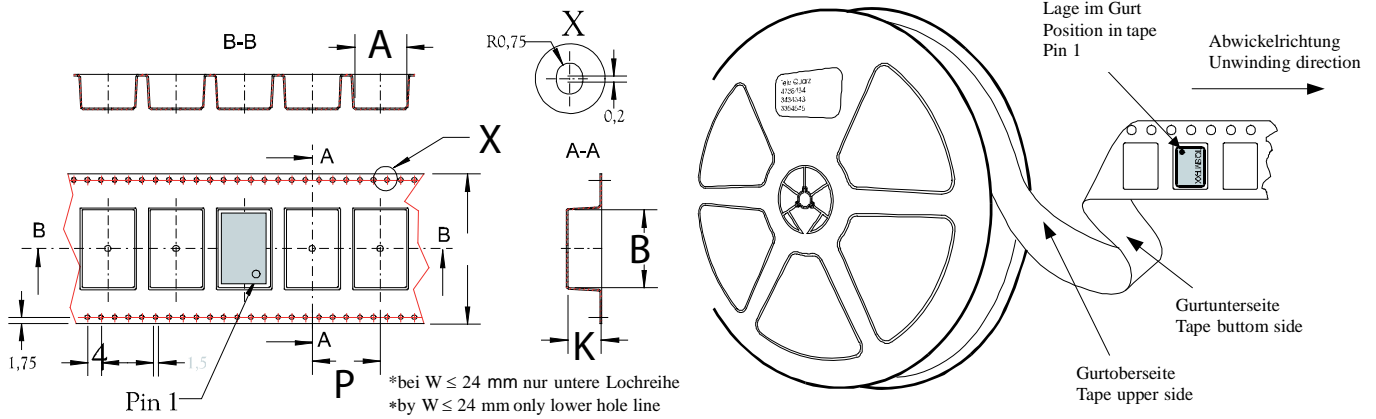
$$\text{Peak g-level: } A_{peak} = \sqrt{PSD \cdot 2}$$



Typical Frequency Stability vs Temperature

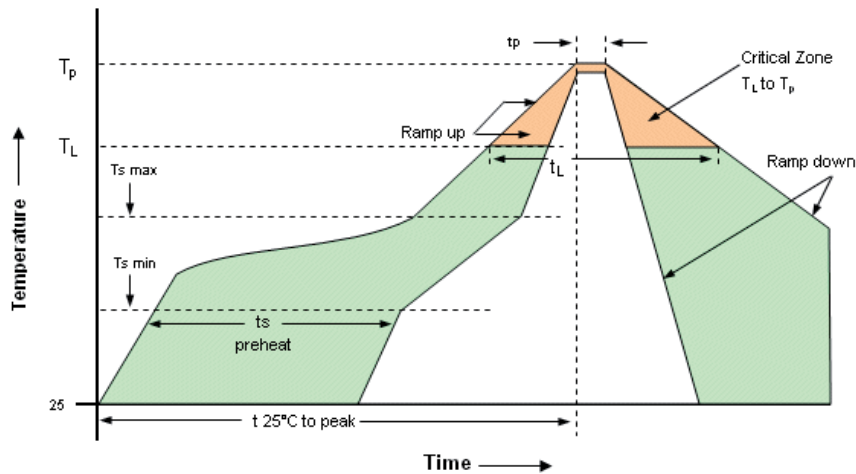


Standard Shipping Method (VX-508)



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G218	24	83,3	850	12

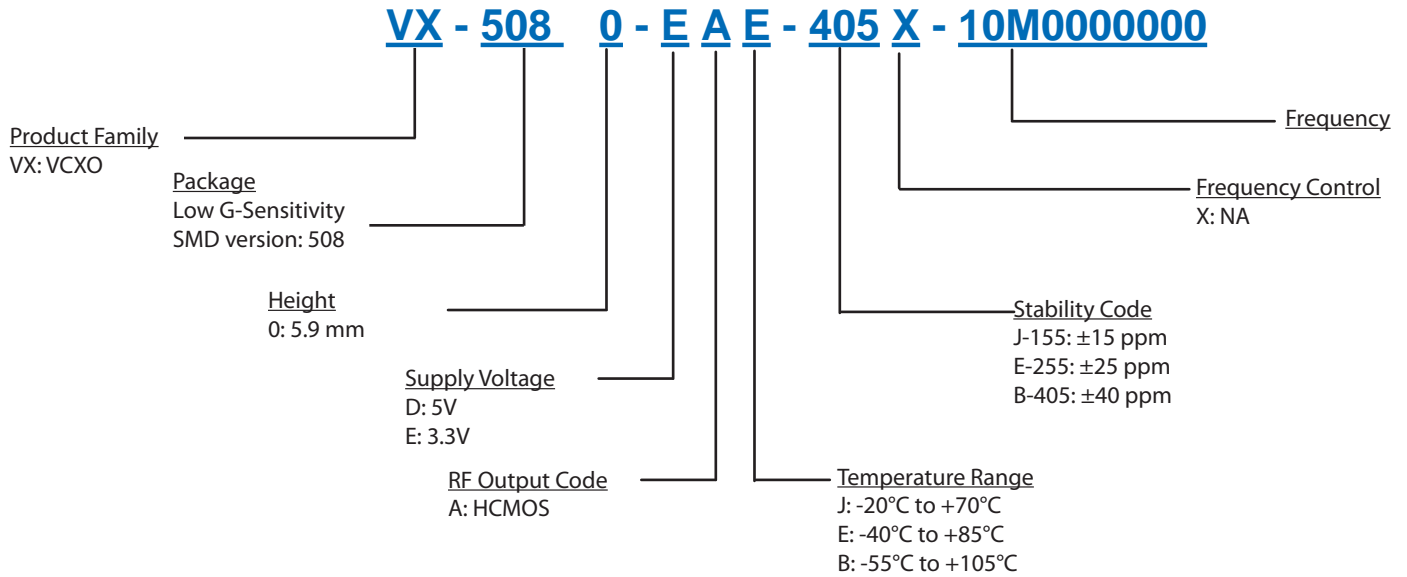
Recommended Reflow Profile



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.

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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