



Preliminary

Helping Customers Innovate, Improve & Grow



TX-508

Features

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

Applications

- Vibration Environment
- Portable Equipment
- Land Mobile Radio

Performance Specifications

Frequency Stabilities¹ (Standard Frequency range - 10 to 100 MHz)

Parameter	Min	Typical	Max	Units	Condition	Options ³
vs. operating temperature range (referenced to +25°C)	-2.5		+2.5	ppm	-40 to +85°C	Options ³
	-1.0		+1.0	ppm	-40 to +85°C	
	-2.5		+2.5	ppm	-20 to +70°C	
	-1.0		+1.0	ppm	-20 to +70°C	
	-1.0		+1.0	ppm	-0 to +50°C	
	-0.5		+0.5	ppm	-0 to +50°C	
Initial tolerance	-1.5		+1.5	ppm	at time of shipment, nominal EFC, 25°C V _s ±5% static Load ±10% static after 30 days of operation after 30 days of operation	
vs. supply voltage change	-0.3		+0.3	ppm		
vs. load change	-0.2		+0.2	ppm		
vs. aging / 1 year	-1.0		+1.0	ppm		
vs. aging / 10 year	-2.5		+2.5	ppm		

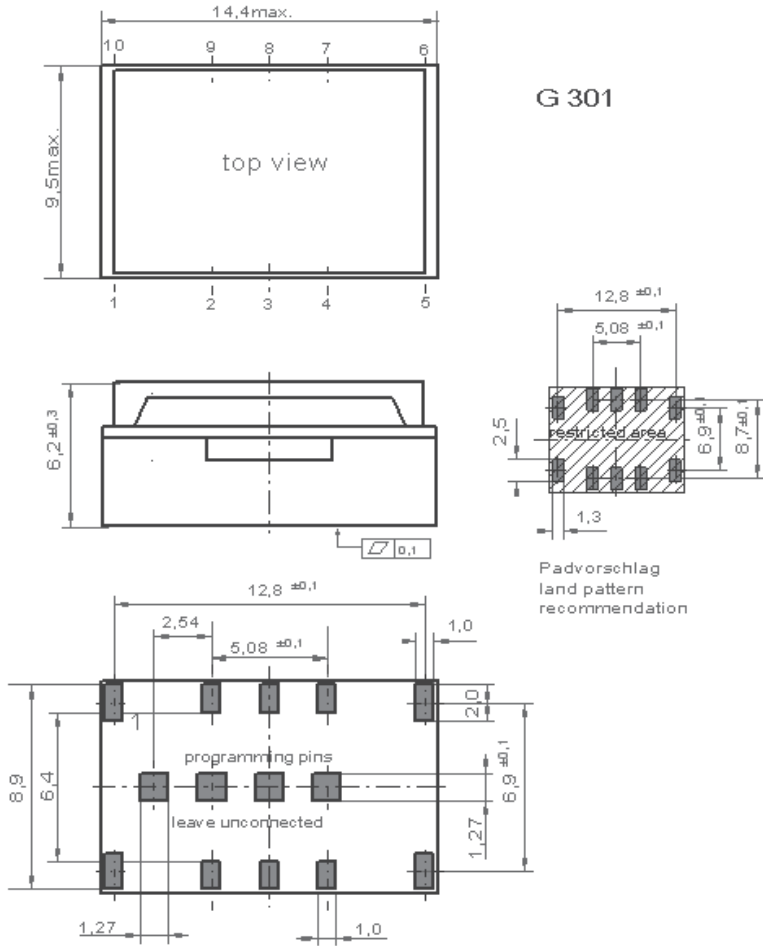
Frequency Stabilities¹ (Stratum 3 TCXO Frequency range - 10 to 100 MHz)

vs. operating temperature range (referenced to +25°C)	-0.8		+0.8	ppm	-40 to +85°C -20 to +70°C -20 to +70°C -0 to +50°C	Options ³
	-0.8		+0.8	ppm		
	-0.28		+0.28	ppm		
	-0.28		+0.28	ppm		
Initial tolerance	-1.0		+1.0	ppm	at time of shipment, nominal EFC, 25°C V _s ±5% static Load ±10% static after 30 days of operation Note: * Stratum 3 per GR-1244-CORE: <±4.6 ppm for all causes and 20 Years aging, Holdover: <±0.37 ppm over 24 hours	
vs. supply voltage change	-0.3		+0.3	ppm		
vs. load change	-0.1		+0.1	ppm		
vs. aging / 20 years	-2.5		+2.5	ppm		
overall tolerance	-4.6		+4.6	ppm		

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 ³
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	Fixed TCXO; No adjust					
Tuning Range	±5.0	±12	±20	ppm	S3 Version	
	±8.0	±14	±20	ppm	Standard Version	
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 ²		-95	-80	dBc/Hz	10 Hz	@ 77.76 MHz HCMOS 3.3 V
		-123	-110	dBc/Hz	100 Hz	
		-142	-135	dBc/Hz	1 kHz	
		-154	-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				0.1g ² /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	-40		+85	°C		
Storage Temperature Range	-55		+105	°C		

Outline Drawing / Enclosure



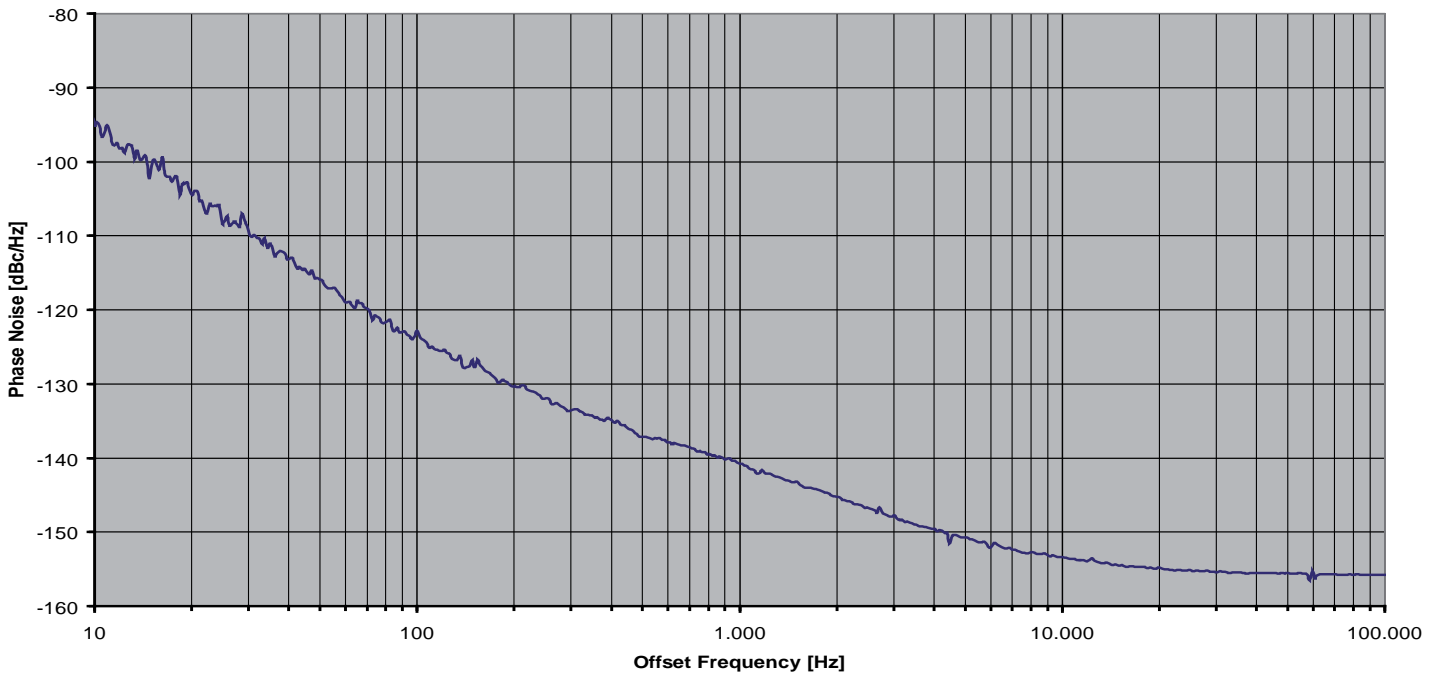
TX-508	
Height "H"	Pin Length "L"
5.9	NA

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

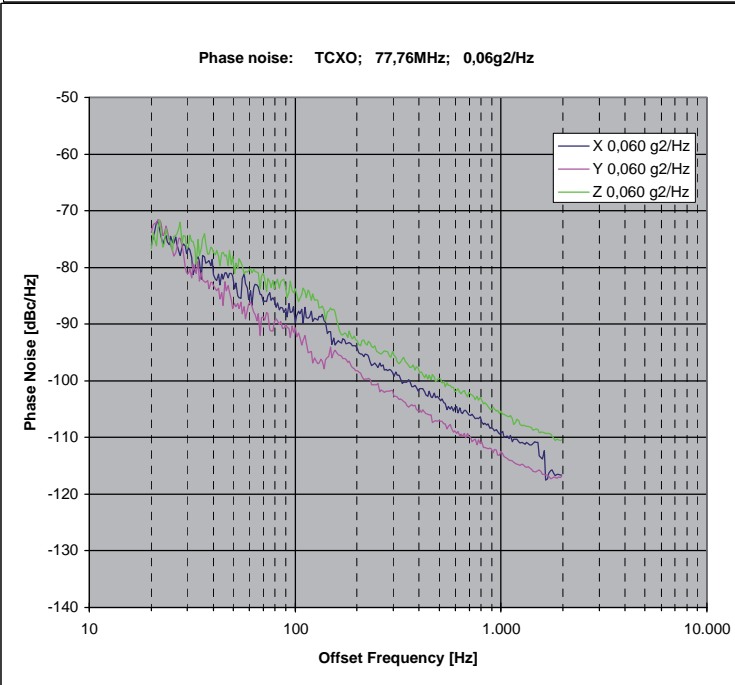
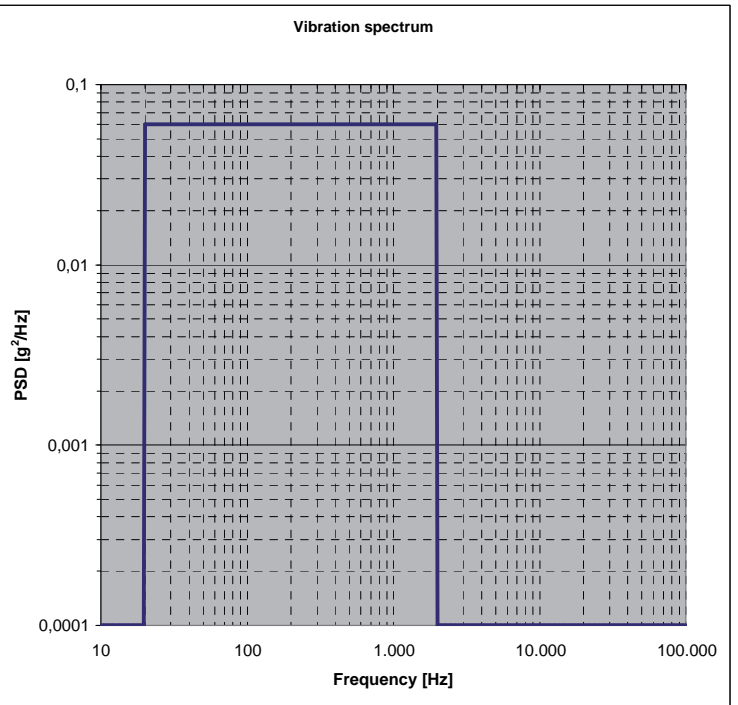
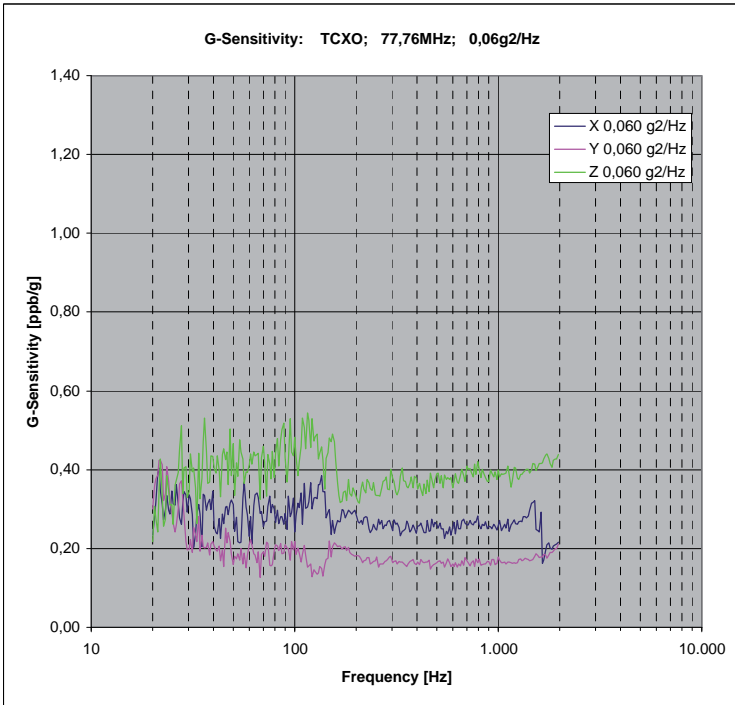
Enable true table (optional)	
Pin 3	Pin 7
High	Data
Open	Data
Low	High Tristate

Typical Phase Noise @ 77.76 MHz HCMOS

Typical phase noise @ 77,76MHz
static conditions



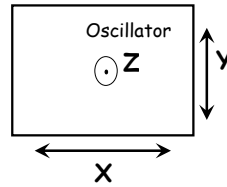
Typical G-Sensitivity @77.76 MHz; HCMOS



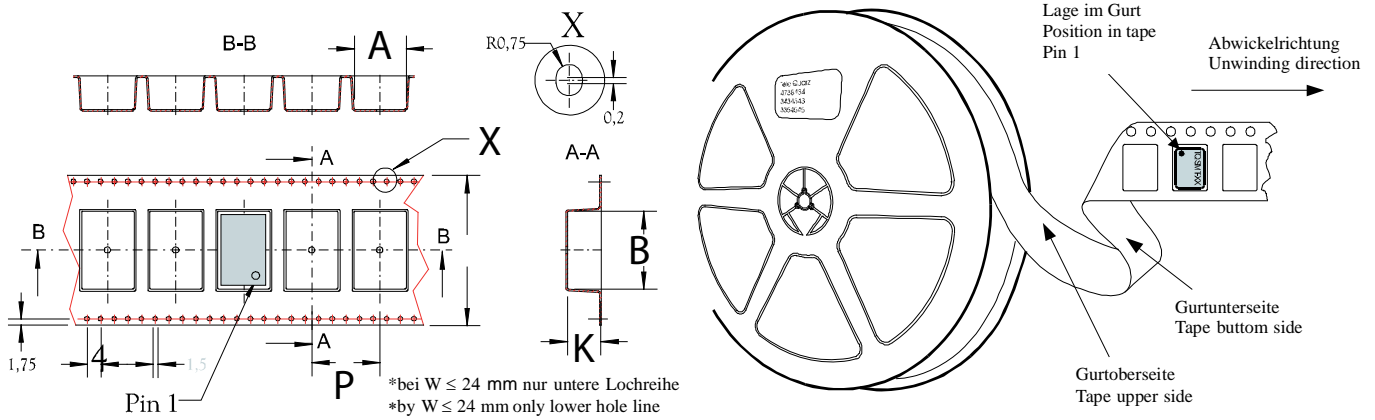
Calculation equation according to Vig-Tutorial

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

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

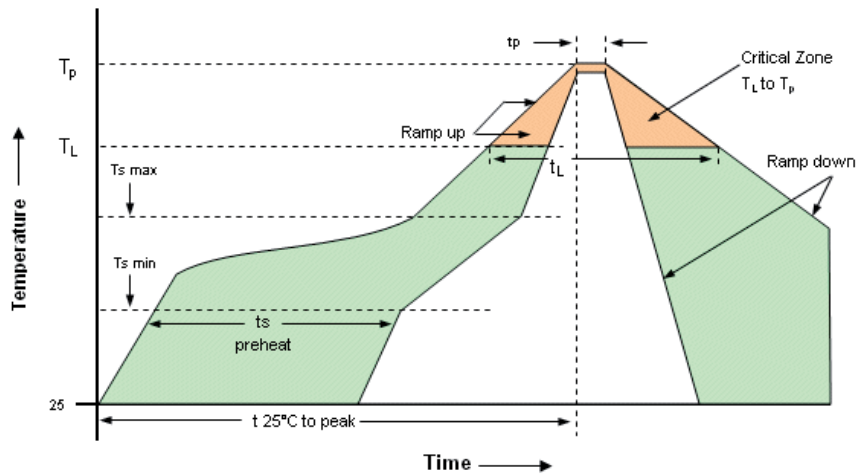


Standard Shipping Method (TX-508)



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G214	24	83,3	850	12

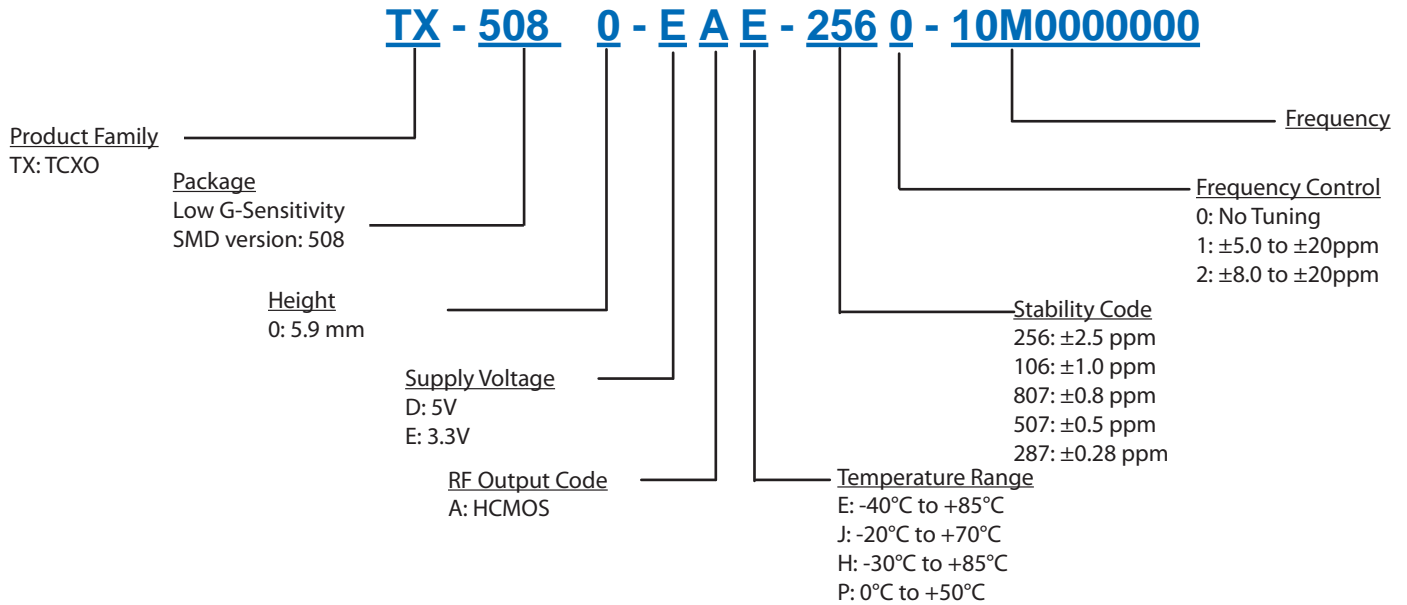
Recommended Reflow Profile



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. Phase noise degrades with increasing output frequency.
3. Contact factory for availability.

Subject to technical modification.

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).

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