


TX-506

Description

The TX-506 series TCXO offers high frequency combined with very low phase noise, available with CMOS and Sinewave output. The low phase noise oscillator is using a direct crystal frequency to avoid subharmonics. The analog TCXO IC offers the latest compensation technology to achieve tight stabilities from -40° to 85°C.

Features

- Frequency range ¹ of 20 - 125 MHz
- Phase Noise floor typical -175 dBc/Hz
- Low power consumption
- Tighter Tolerance on request
- Standard Frequencies : 20, 38.4, 80, 100, 120, 125 MHz

Applications

- Test and Measurement Equipment
- Communication Equipment
- Military Applications

Performance Specifications

Frequency Stabilities ¹						
Parameter	Min	Typical	Max	Units	Condition	Options ³
vs. operating temperature range (referenced to +25°C)	-0.5		+0.5	ppm	-40 to +85°C	
	-1		+1	ppm	-40 to +85°C	
Initial tolerance	-1		+1	ppm	at time of shipment, nominal EFC V _s ±5% static Load ±10% static after 30 days of operation	
vs. supply voltage change	-0.2		+0.2	ppm		
vs. load change	-0.1		+0.1	ppm		
vs. aging / year	-1		+1	ppm		
vs. aging /10 years	-3		+3	ppm		
Supply Voltage (Vs)						
Supply voltage (Vs)	3.135	3.3	3.465	VDC		
Supply voltage (Vs)	4.75	5	5.25	VDC		
Current consumption			50	mA	steady state @25°C, HCMOS or Sinewave	
RF Output						
Signal	HCMOS					
Load	13.5	15	16.5	pF		
Signal Level (Vol)			0.3	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	2.6			VDC	with Vs=3.3V and 15pF Load	
Duty Cycle	40		60	%	@ (Voh-Vol)/2	

Performance Specifications

RF Output					
Signal	Sinewave				
Load	45	50	55	Ohm	
Output Power	8	10	12	dBm	at nominal load and 5V supply
Output Power	6	8	10	dBm	at nominal load and 3.3V supply

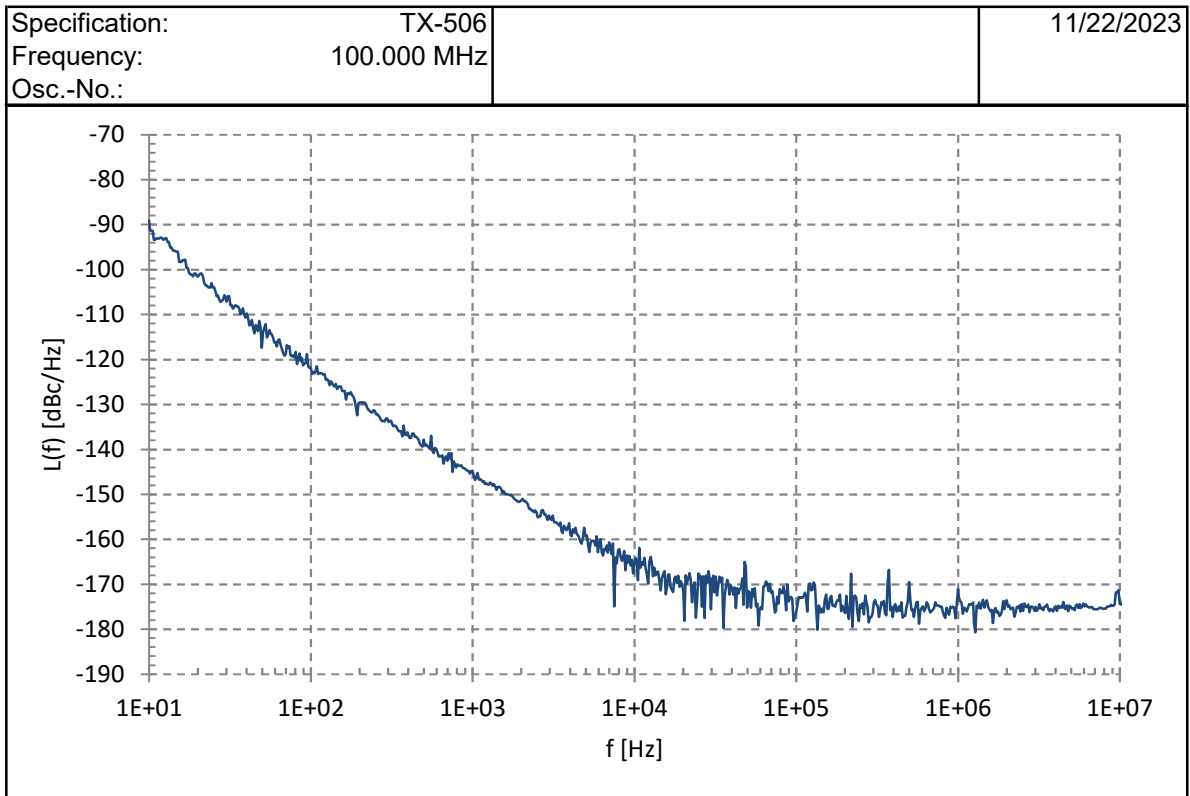
Frequency Tuning (EFC)						
Parameter	Min	Typical	Max		Condition	
Tuning Range	Fixed TCXO; No frequency tuning					Option
Tuning Range	±6			ppm	Standard EFC	
Linearity	<10%					
Tuning Slope	Positive					
Control Input Impedance	10			kohm		
Control Voltage Range	0.3	1.65	3.0	VDC	with Vs=3.3V	
Control Voltage Range	0.5	2.5	4.5	VDC	with Vs=5V	
Additional Parameters						
Phase Noise ²		-90 -120 -145 -165 -172 -174		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1MHz	@ 100MHz Sinewave 5V
Jitter		0.023		psec RMS	@ 12 kHz to 20 MHz	
Phase Noise ²		-90 -120 -146 -166 -172 -175		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10Hz 100Hz 1kHz 10kHz 100kHz 1MHz	@ 38.4MHz CMOS 3.3V
Jitter		0.022		psec RMS	@ 12 kHz to 5 MHz	
G-sensitivity		1.5		ppb/g		
Weight			2.0			
Processing & Packing	Handling & Processing Note					
Additional Environmental Conditions						
Sine Vibration	MIL-STD-883 Meth 2007 Cond A - 20g 20-2000Hz in each 3 axes					
Shock	MIL-STD-202 Meth 213B Cond F , 1500 g / 0.5 ms					
Temperature cycling	MIL-STD-883G Meth.1010.8 Cond.B, 1000cycles -55 to +125°C; cycle time 30min.					
High Temperature Operating Life (HTOL)	JESD22-A108, 1000h @ 105°C power on					
ESD HBM	JESD22-A114F Class B, 10* 1000V					
RoHS compliance	100% RoHS 6 compliant					
Moisture Sensitivity Level	MSL 1					

Absolute Maximum Ratings					
supply voltage (Vs)			6.0	V	with Vs=3.3 VDC and 5VDC
Operable Temperature Range	-40		+105	°C	
Storage Temperature Range	-40		+125	°C	

Typical Performance

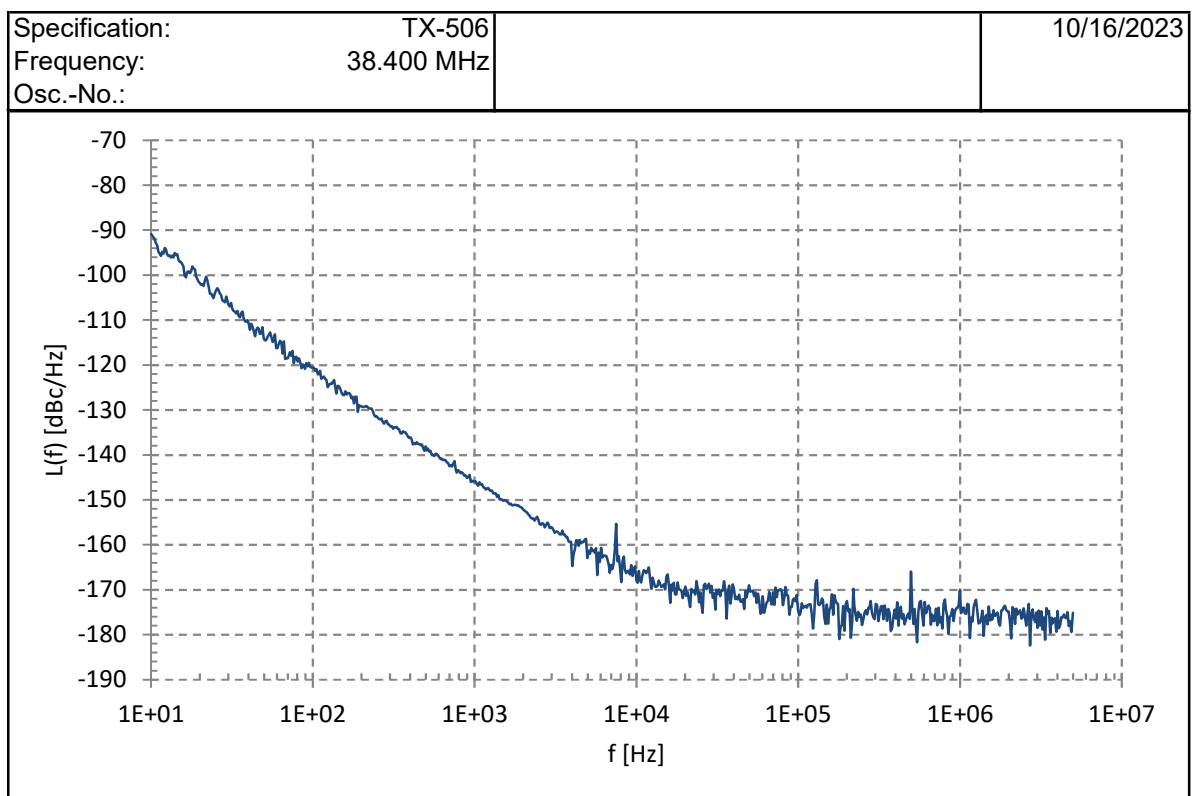
Phase Noise²

TX-506 @ 100MHz, Sine Wave, 5V supply



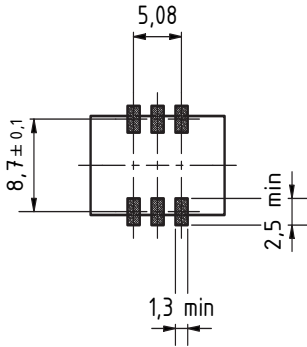
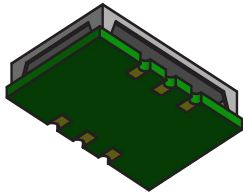
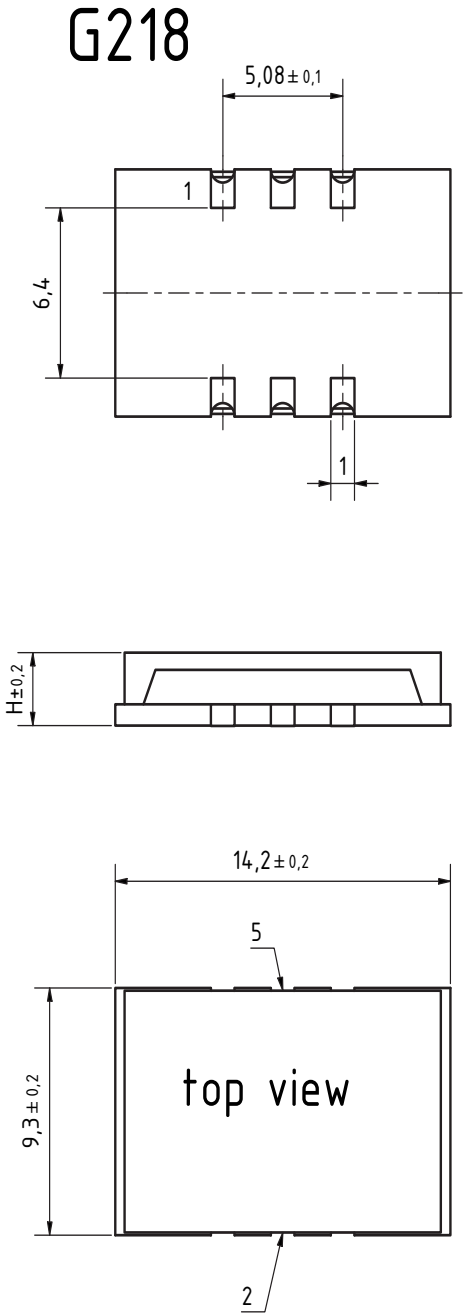
Phase Noise²

TX-506 @ 38.4MHz, CMOS, 3.3V



TX-506	
Type	Height "H" in mm
G218	2.8 (metal cap)

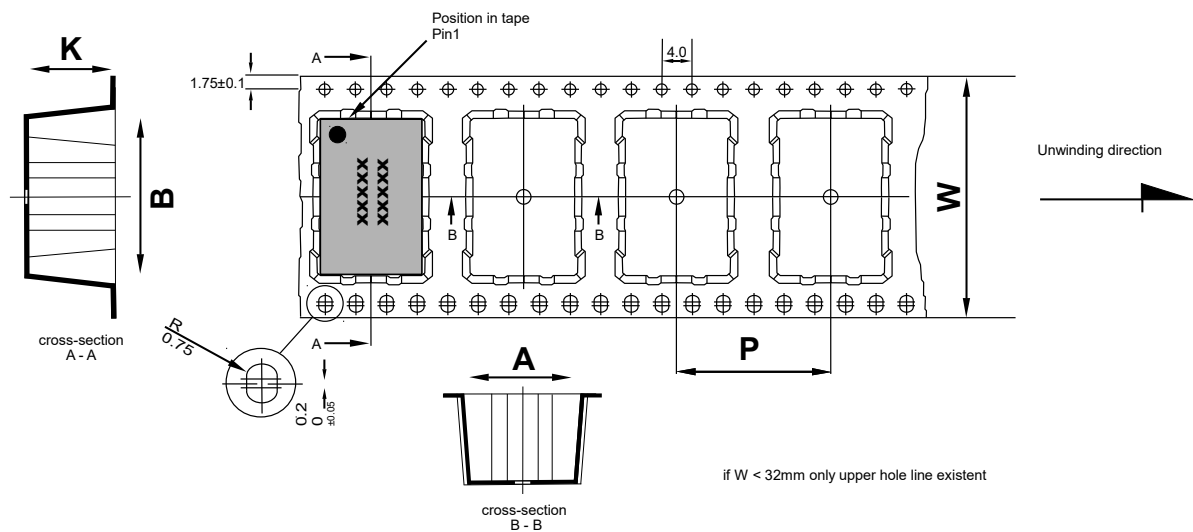
Dimensions in mm



Padvorschlag
land pattern
recommendation

Pin Connections (CMOS, Sine Wave)	
1	Control Voltage Input (Vc) or Not Connected (N.C.)
2	N.C.
3	Ground (Case)
4	RF-Output
5	N.C.
6	Supply Voltage Input (Vs)
Terminal Finish	Au over Ni (Cu 35µm / Ni 3-5µm / Au 0.05-0.1µm)

Standard Shipping Method (TX-506)



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	250	12

Recommended Reflow Profile

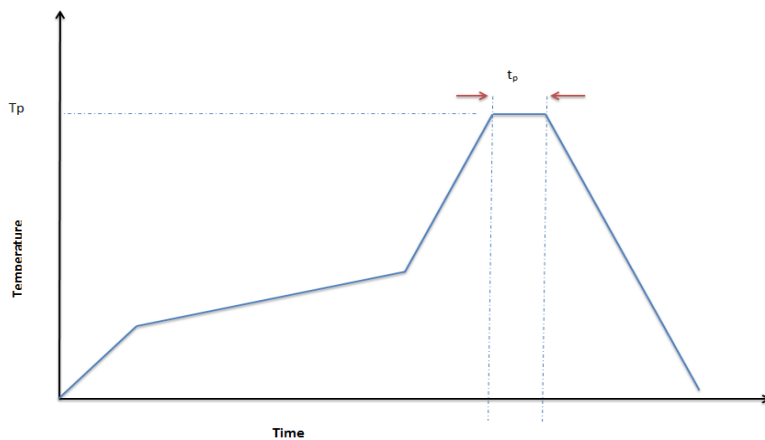
TP: max 250°C (@ solder joint, customer board level)

T_p: max: 10...30 sec

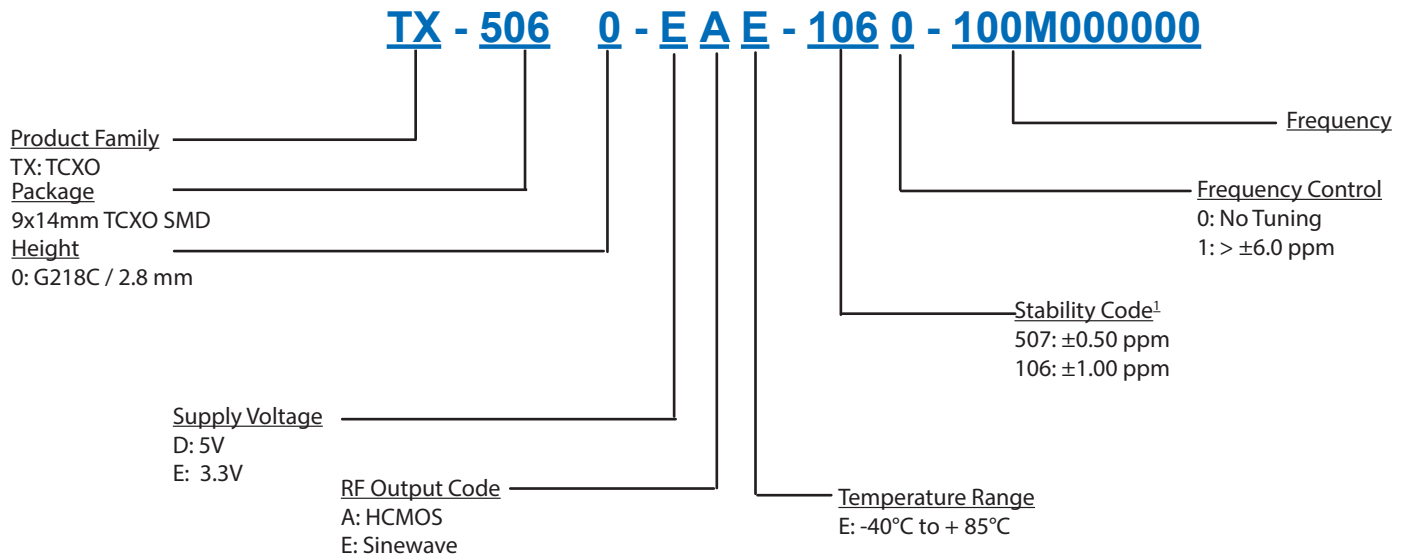
Additional Information:

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

Unless other stated all values are valid at typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).

Subject to technical modification.

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Rev. March 2024