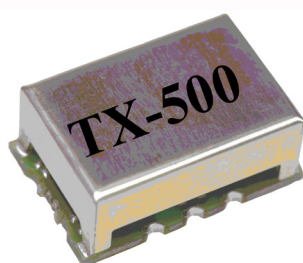


Helping Customers Innovate, Improve & Grow



TX-500

Features

- Low Phase Noise
- Low power consumption
- Output: HCMOS, Clipped Sinewave, PECL, True Sinewave
- Tight Tolerances
- Frequency range ¹ of 6.4 - 160 MHz
- Standard Frequencies : 10, 12.8, 16.384, 19.44, 19.2, 20, 26
50, 77.76, 100, 122.88, 125, 155.52 MHz

Applications

- Base Station
- Test Equipment
- Communication Equipment
- Digital Switching
- Military

Performance Specifications

Frequency Stabilities¹ (Standard TCXO)

Parameter	Min	Typical	Max	Units	Condition	
vs. operating temperature range (referenced to +25°C)	-2.5		+2.5	ppm	-40 to +85°C	Options ³
	-1		+1	ppm	-40 to +85°C	
	-1		+1	ppm	-20 to +70°C	
	-0.5		-0.5	ppm	-20 to +70°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		

Frequency Stabilities¹ (Stratum 3 TCXO)

Parameter	Min	Typical	Max	Units	Condition	
vs. operating temperature range (referenced to +25°C)	-0.8		+0.8	ppm	-40 to +85°C	Options ³
	-0.28		+0.28	ppm	-40 to +85°C	
	-0.8		+0.8	ppm	-20 to +70°C	
	-0.28		-0.28	ppm	-20 to +70°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 / 20 years	-2.5		+2.5	ppm	Note: Stratum 3 per GR-1244-CORE: ≤±4.6ppm for all causes and 20years aging Holdover: ≤±0.37ppm over 24 hours	
Over all tolerance	-4.6		+4.6	ppm		

Performance Specifications

Supply Voltage (Vs)					
Parameter	Min	Typical	Max	Units	Condition
Supply voltage (standard)	3.135	3.3	3.465	VDC	
Supply voltage (Option)	4.75	5	5.25	VDC	
Current consumption			35 100	mA mA	steady state @25°C, HCMOS, Clipped sinewave steady state @25°C, PECL
RF Output					
Signal [standard]	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				with Vs=3.3V and 15pF Load
Duty Cycle	40		60	%	@ (Voh-Vol)/2
Rise and Fall time			5	ns	@ 15 pF 10 to 90 %
Signal [Option]	Clipped Sinewave				Available < 40MHz only
Load R	9	10	11	kOhm	
Load // C	9	10	11	pF	
Output power	0.7			V _{pp}	@ 10kOhm // 10pF
Signal [Option]	PECL				Available > 40MHz only
Load	45	50	55	Ohm	to Vs - 2V
Rise and Fall time			1	ns	20 to 80%
Duty Cycle	45		55	%	
Signal [Option]	True Sinewave				
Load	45	50	55	Ohm	
Output power	0	3	6	dBm	
Frequency Tuning (EFC) 6.4 to 26 MHz					
Tuning Range	Fixed TCXO; No adjust				Option ⁵
Tuning Range	±8 ±5			ppm ppm	
Linearity	<10%				
Tuning Slope	Positive				
Control Input Impedance	10			kOhm	
Control Voltage Range	0.3	1.65	3.0	VDC	with Vs=3.3V
Additional Parameters					
Phase Noise ²		-87 -119 -138 -151 -155 -155		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz
Jitter		0.2		ps RMS	@ 12 kHz to 20 MHz
Phase Noise		-73 -102 -132 -150 -158 -160		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz
Jitter		0.1		ps RMS	@ 12 kHz to 20 MHz
Weight			2.0	g	
Processing & Packing	Handling & Processing Note				

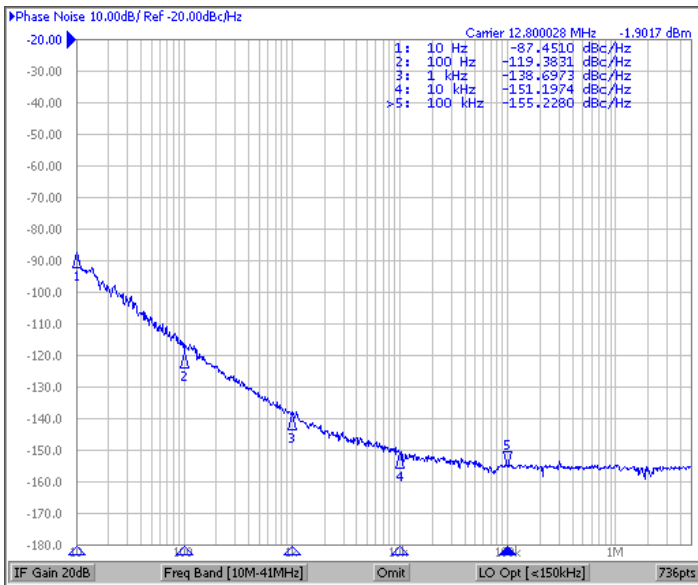
Absolute Maximum Ratings

supply voltage (Vs)			6.0	V	with Vs=3.3 VDC
Output Load			50	pF	
Operable Temperature Range	-40		+85	°C	
Storage Temperature Range	-55		+105	°C	

Typical Performance

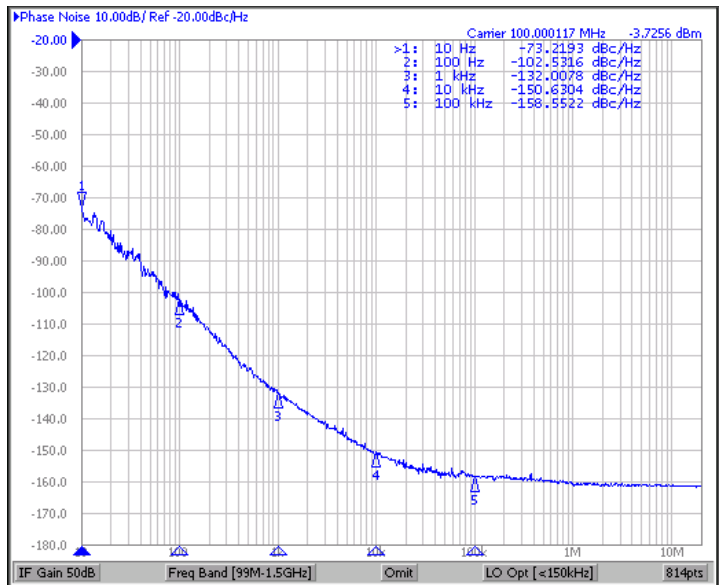
Phase Noise

TX-500 @ 12.8MHz HCMOS



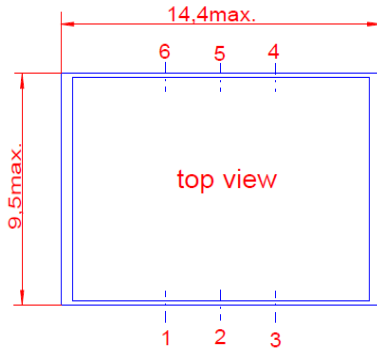
Phase Noise

TX-500 @ 100MHz HCMOS



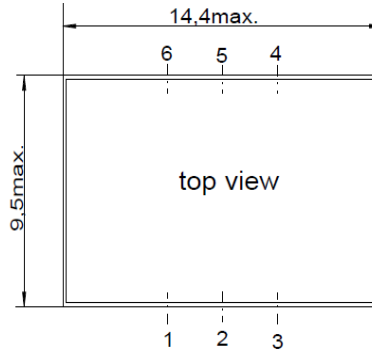
Outline Drawing / Enclosure

TX-500	
Type	Height "H"
G214B [Standard]	5.9
G214C [Option]	2.8
G286C [Option]	6.1



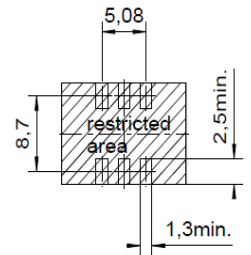
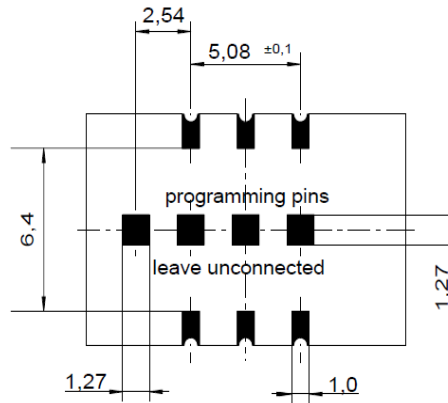
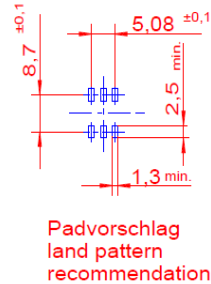
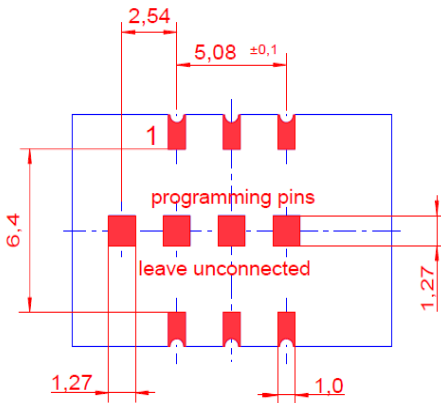
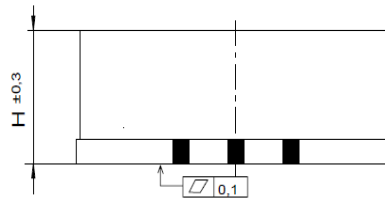
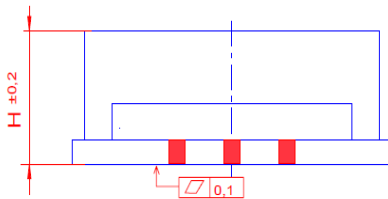
G 214

H = 5,9 ; G 214 B
H = 2,8 ; G 214 C
H = 4,0 ; G 214 D



G 286

H = 5,9 ; G 286 B
H = 6,1 ; G 286 C

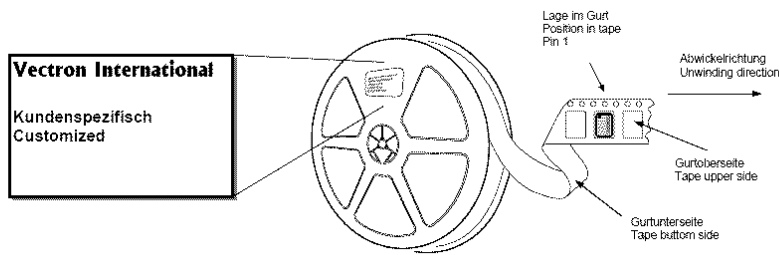
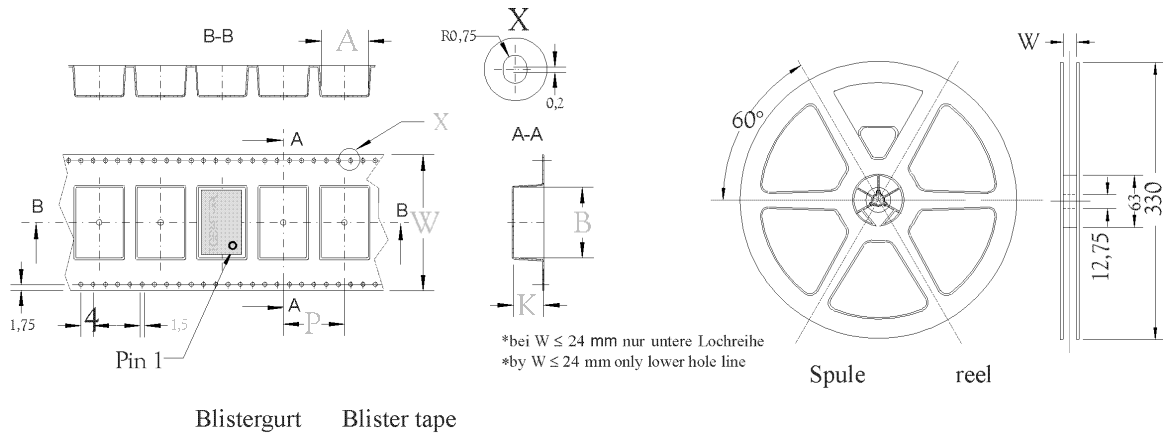


Padvorschlag
land pattern
recommendation

Pin Connections (CMOS, Clipped Sinewave, True Sinewave)	
1	Control Voltage Input (Vc) / N.C.
2	N.C.
3	Ground (Case)
4	RF-Output
5	N.C.
6	Supply Voltage Input (Vs)

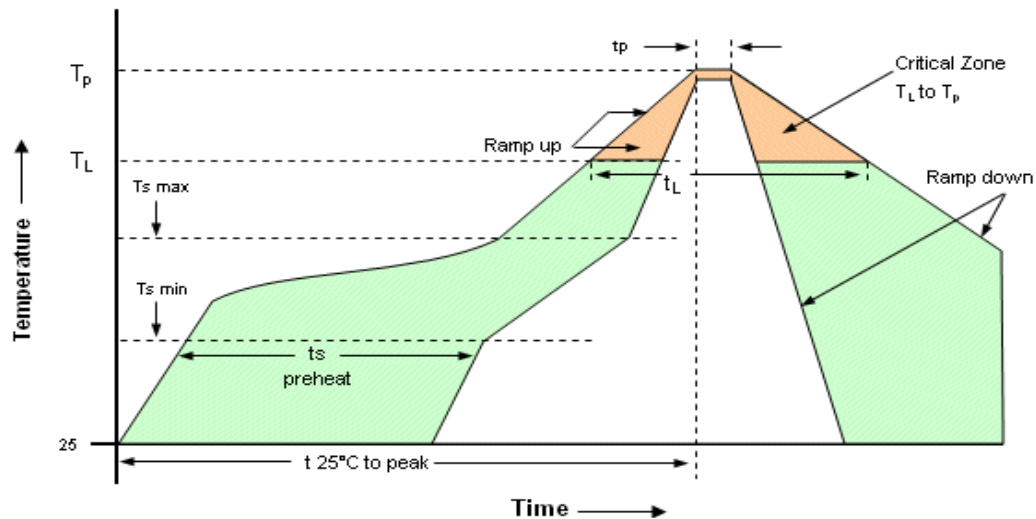
Pin Connections (PECL)	
1	Control Voltage Input (Vc) / N.C.
2	N.C.
3	Ground (Case)
4	RF-Output
5	RF-Output_complementary
6	Supply Voltage Input (Vs)

Standard Shipping Method (TX-500)



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G214B / G286C	24	83.3	850	12
G214C	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

TX - 500 0 - E A J - 107 0 - 10M0000000

E: -40°C to +85°C

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.

For Additional Information, Please Contact

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