TX-801

Temperature Compensated Crystal Oscillator

Microsemi
Power Matters.™

Description

The TX-801 TCXO provides fully compliant Stratum 3 levels of stability in a 5x3.2mm package. It is ideal for timing over IP applications such as 1588 PTP and Synchronous Ethernet.

Features

- Excellent Temperature Stability, Stratum 3 Compliant
- CMOS and Clipped Sinewave Output
- Extended Temperature Range -40°C to +105°C NEW!
- Low Phase Noise
- Phase Noise Filter Option
- Small Size, Low Profile
- Improved Temperature Cycling through 10 Pin Mounting
- 100% RoHS Compliant
- Frequency Range: 6.4 - 52[1] MHz
- Standard Frequencies: 6.4, 9.6, 10, 12.8, 13, 16.384, 19.2, 20, 20.48, 22.1184, 24.576, 25, 26, 30.72, 32, 38.88MHz

Applications

- 1588 Applications
- Wireline Stratum 3 applications
- Test & Measurement
- Wireless Communications
- Small Cells

Performance Specifications

Frequency Stabilities[1]					
Parameter	Min	Typ	Max	Units	Condition
vs. operating temperature range (referenced to (dfmax+dfmin)/2)	-100		+100	ppb	-10 to +70°C
	-280		+280	ppb	-40 to +85°C
	-2 -500		+2 +500	ppm ppb	-40 to +105°C NEW! -20 to +85°C
Holdover	-40		+40	ppb	In a 24h period at constant temperature
Initial tolerance	-1.0		+1.0	ppm	at time of shipment, @ Vc=Vs/2
vs. supply voltage change	-0.2		+0.2	ppm	V_s ±5% static @ HCMOS
	-0.1		+0.1	ppm	V_s ±5% static @ Clipped Sinewave
vs. load change	-0.2		+0.2	ppm	Load ±10% static @ HCMOS
	-0.1		+0.1	ppm	Load ±10% static @ Clipped Sinewave
vs. aging / 1st year	-1.0		+1.0	ppm	
vs. aging / 20 Years	-3.0		+3.0	ppm	
Overall tolerance	-4.6		+4.6	ppm	Note:*Stratum 3 per GR-1244-CORE: <±4.6ppm for all causes and 20 years aging, holdover: <±0.37ppm over 24 hours

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Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard)	3.135	3.3	3.465	VDC		
Current consumption		3.3	5	mA	LVCMOS @ 26MHz, steady state @ +25°C	
Current consumption		1.8	2.7	mA	Clipped Sine @ 26MHz, steady state @ +25°C	
RF Output (Clipped Sinewave)						
Load R	9	10	11	kΩ		
Load || C	9	10	11	pF		
Output Power	1.0	1.2		V_{pp}	@ 10kΩ || 10pF	
RF Output (HCMOS)						
Load	13.5	15	16.5	pF		
Signal Level (Vol)			0.3	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	3.0				with Vs=3.3V and 15pF Load	
Rise and Fall time			6.5	ns		
Duty Cycle	40	50	60	%	@ (Voh-Vol)/2	
Frequency Tuning (EFC)						
Tuning Range	Fixed TCXO; No adjustment				Options	
Tuning Range	±5.0		±10.0	ppm		
Linearity	10%					
Tuning Slope	Positive					
Control Voltage Range	0.5	1.5	2.5	VDC	@ V_s = 2.8V	
	0.3	1.65	3.0	VDC	@ V_s = 3.3V	
	0.5	2.5	4.5	VDC	@ V_s = 5V	
Freq. Control input impedance	100			kΩ		
Additional Parameters						
Weight			1.0	g		
Processing & Packing	Handling & Processing Note					
Reflow Profile	IPC / JEDEC J-STD-020 (latest version)					
Absolute Maximum Ratings						
Supply voltage (Vs)			6.0	V		
Control voltage	0		Vs	V		
Operable Temperature Range	-40		+105	°C	Max. Temperature depending on Specification	
Storage Temperature Range	-55		+105	°C		
Phase Noise[3]						
Phase Noise		-103 -129 -148 -155 -157		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	@ 10MHz
Phase Noise		-94 -122 -144 -155 -157		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz	@ 20MHz
Additional Information	Bypass capacitor is recommended					

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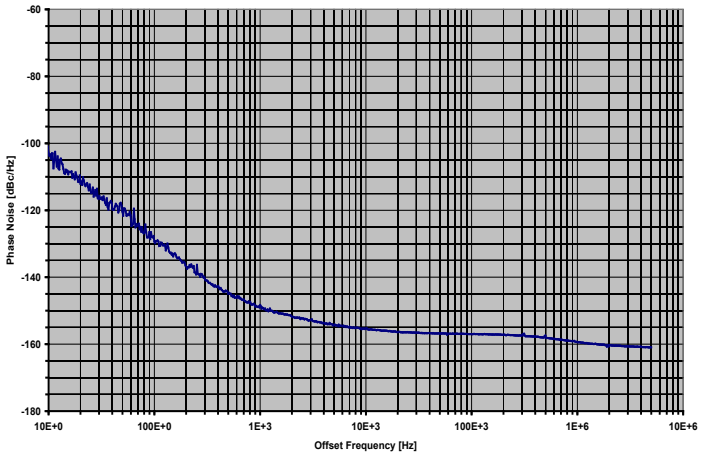
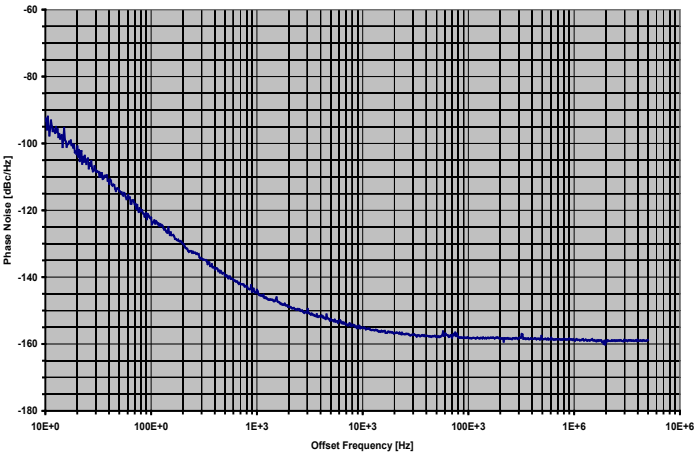
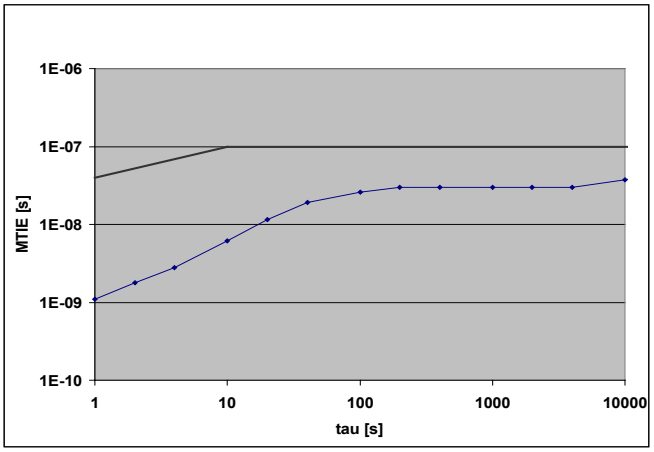
Typical Performance Data

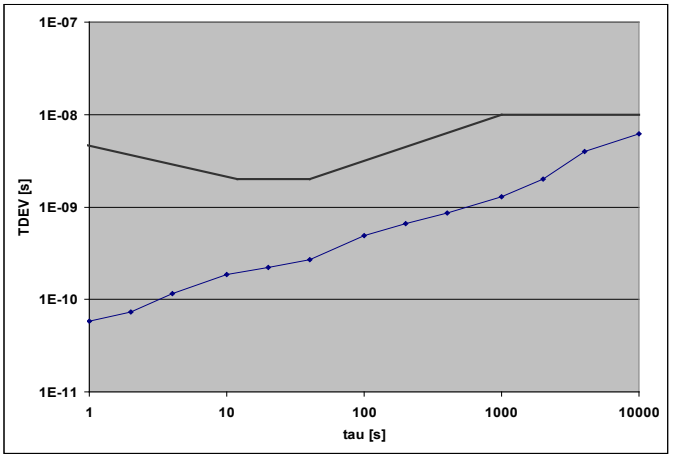
Phase Noise[3]	Phase Noise[3]
TX-801 @ 10MHz	TX-801 @ 20MHz



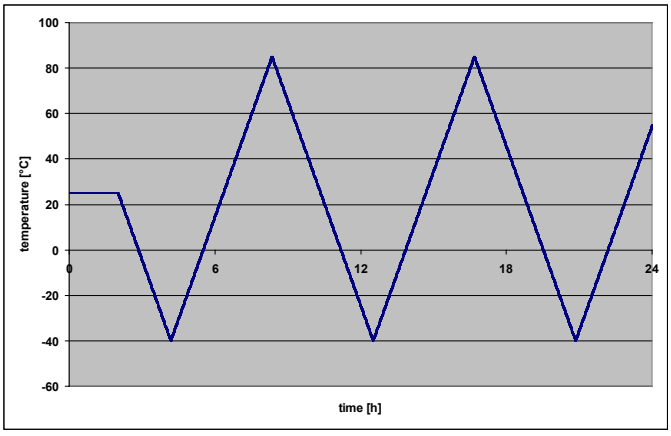


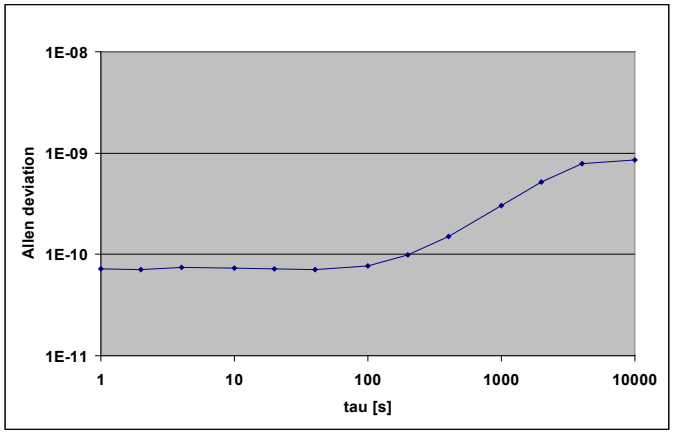
MTIE per GR1244 Wander	TDEV per GR1244 Wander
TX-801@ 20MHz; Temperature Ramp; 100mHz High Pass Filter	TX-801@ 20MHz; Temperature Ramp; 100mHz High Pass Filter



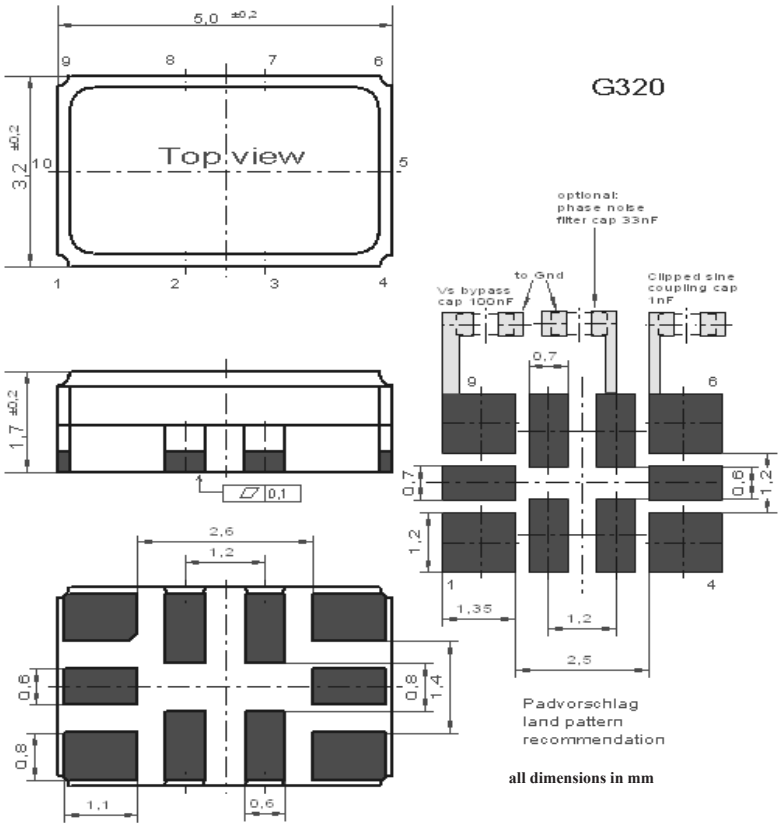


Temperature Ramp	ADEV
0.5K/min Slope	TX-801@ 20MHz; @40°C





Outline Drawing / Enclosure



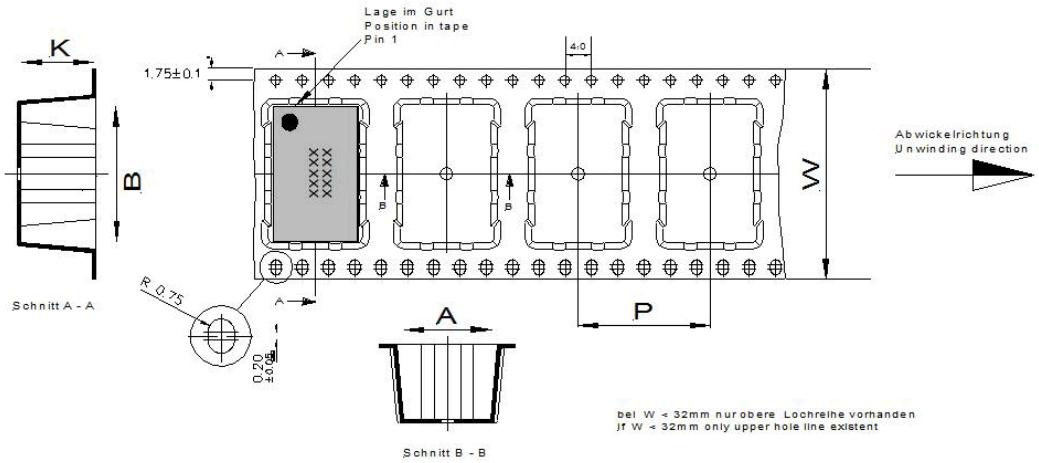
Enable pin function: TX-801	
Pin 8 state:	Pin 6 output:
High	Data
Open	Data
Low	High Tristate
Package Codes: 801	
Type	Height
G320	1.7mm
Marking: TX-801	
Specification	
Frequency	
·VI AYYWW	

Pin Connections	
1	Voltage Control (V_C) or No Connect (option)
2	Do not connect
3	Do not connect
4	Ground (GND)
5	Ground (GND)
6	RF Output
7	Phase Noise Filter Capacitor (optional)
8	Enable Control
9	Supply Voltage Input (V_S)
10	Ground (GND)

Environmental Conditions

Rapid Temperature Changes	MIL-883-1010 Cond B 1000 cycles -55/125C
Vibration	MIL-STD-883 Meth 2007 Cond A 20G 20-2000Hz 4x in each 3axis 4 min
Shock	MIL-STD-202 Meth 213B Cond. F; 1500g 0,5ms 6 shocks in each direction
Solderability	J_STD_002C Cond A, Through hole device/ Cond. B, SMD 255C (diving time 50,5sec.) Dip+Look with 8h damp pre-treatment: solder wetting >95%
Solvent Resistance	MIL-STD-883 Meth 2015 Solv. 1,3,4
ESD	JESD22-A114F Class 1B; 10* 1000V
Moisture Sensitivity	Level 1 JESD22-A113-B
RoHS Compliance	100% ROHS compliant

Standard Shipping Method



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G320	12	150	750	8

Ordering Information

TX - 801 0 - E A J - 107 0 - 10M0000000

Product Family
TX: TCXO

Package
SMD G320

Height
0: 1.7mm

Supply Voltage
D: 5V
E: 3.3V
G: 2.8V

RF Output Code
A: HCMOS
F: Clipped Sinewave

Temperature Range
P: 0°C to +50°C
W: -10°C to +70°C
J: -20°C to +70°C
H: -30°C to +85°C
E: -40°C to +85°C
F: -40°C to +105°C

Stability Code
107: ±100ppb
207: ±200ppb
287: ±280ppb
507: ±500ppb
807: ±800ppb
106: ±1.0ppm
156: ±1.5ppm
206: ±2.0ppm

Frequency Control
0: No Tuning
1: EFC: ±5.0 to 10ppm

Frequency

Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless otherwise 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 with optional Phase noise Filter Capacitor. 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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