


Helping Customers Innovate, Improve & Grow



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 
- 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 - 52¹ 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

| Parameter | Frequency Stabilities ¹ | | | | Condition |
|--|------------------------------------|-----|------------|------------|---|
| | Min | Typ | Max | Units | |
| 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 -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, @ V _c =V _s /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 |

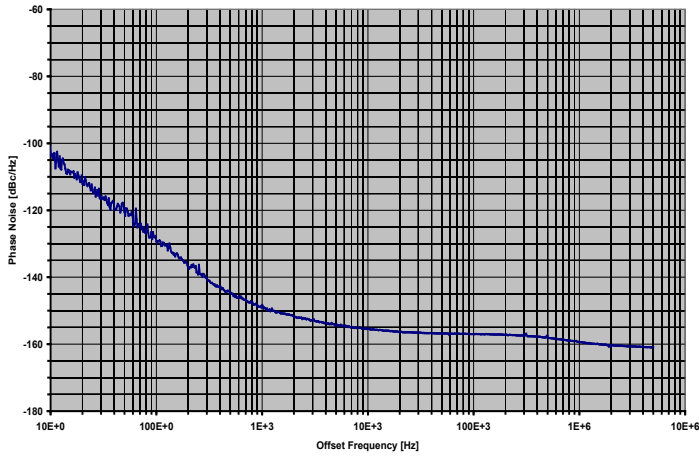
Performance Specifications

| 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 | LVC MOS @ 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 | | dBc/Hz | 10 Hz | @ 10MHz |
| | | -129 | | dBc/Hz | 100 Hz | |
| | | -148 | | dBc/Hz | 1 kHz | |
| | | -155 | | dBc/Hz | 10 kHz | |
| | | -157 | | dBc/Hz | 100 kHz | |
| Phase Noise | | -94 | | dBc/Hz | 10 Hz | @ 20MHz |
| | | -122 | | dBc/Hz | 100 Hz | |
| | | -144 | | dBc/Hz | 1 kHz | |
| | | -155 | | dBc/Hz | 10 kHz | |
| | | -157 | | dBc/Hz | 100 kHz | |
| Additional Information | Bypass capacitor is recommended | | | | | |

Typical Performance Data

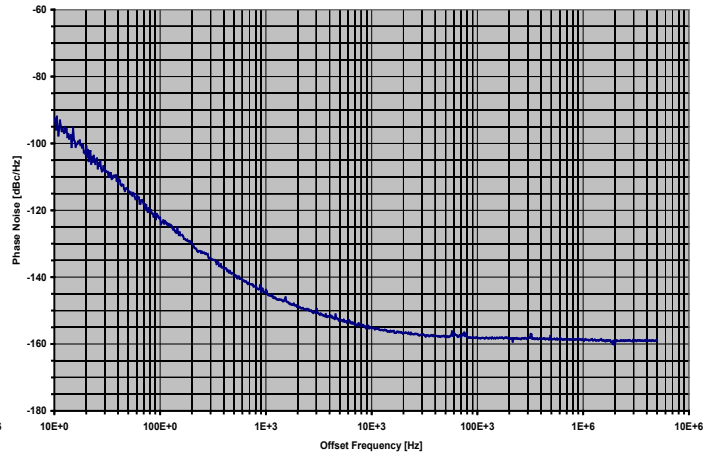
Phase Noise³

TX-801 @ 10MHz



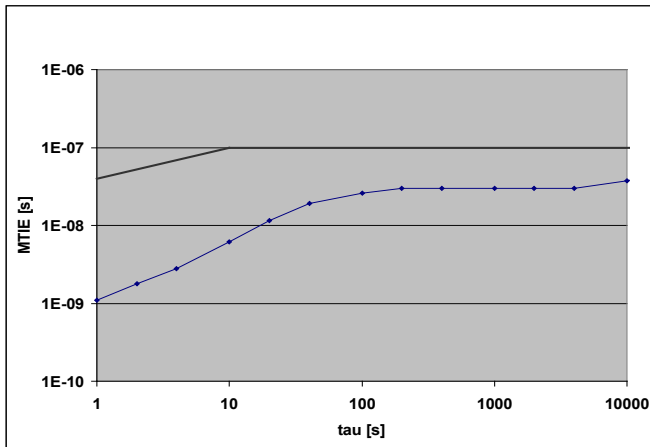
Phase Noise³

TX-801 @ 20MHz



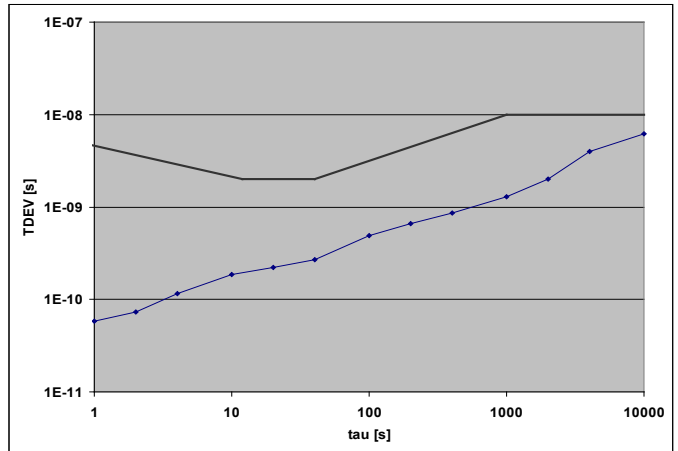
MTIE per GR1244 Wander

TX-801@ 20MHz; Temperature Ramp; 100mHz High Pass Filter



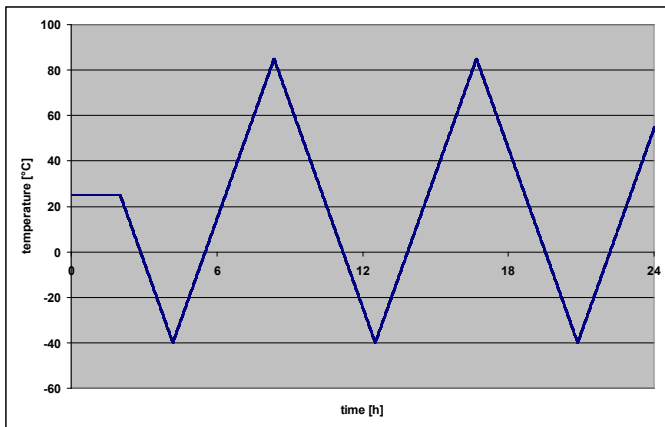
TDEV per GR1244 Wander

TX-801@ 20MHz; Temperature Ramp; 100mHz High Pass Filter



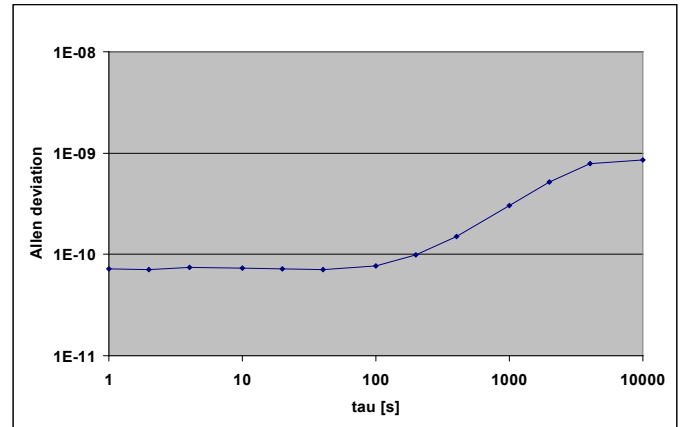
Temperature Ramp

0.5K/min Slope

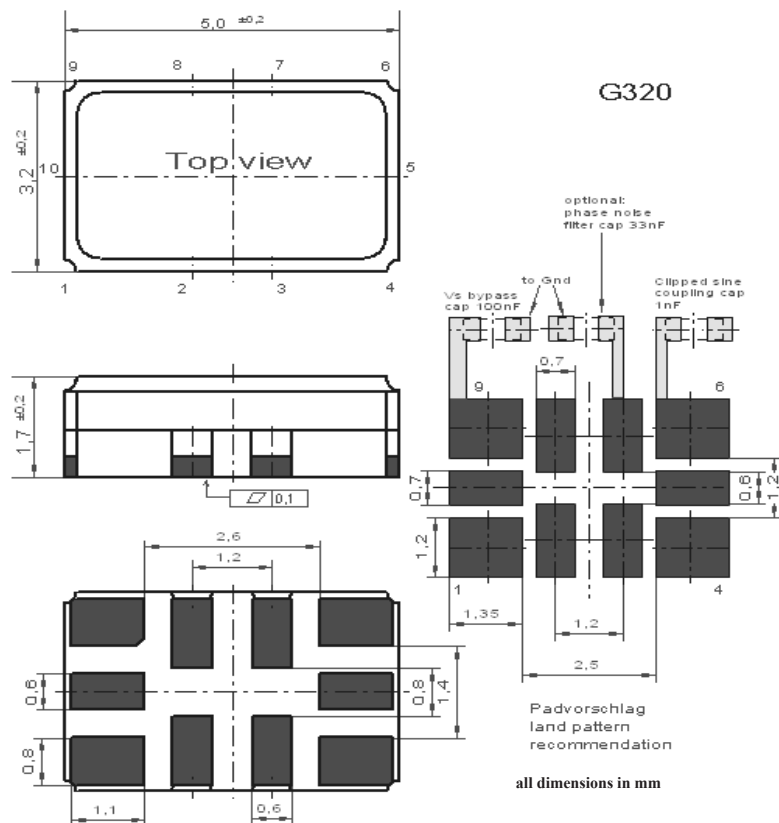


ADEV

TX-801@ 20MHz; @40°C



Outline Drawing / Enclosure



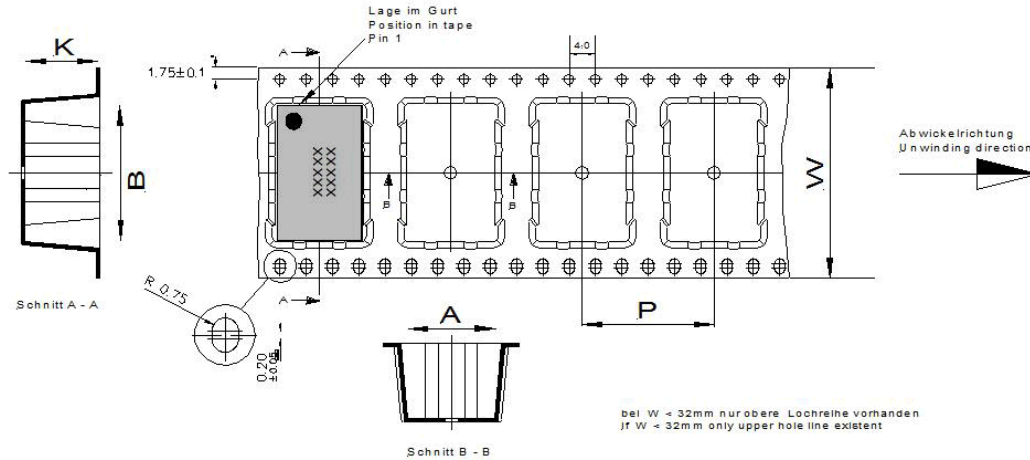
| Enable pin function: TX-801 | |
|-----------------------------|---------------|
| Pin 8 state: | Pin 6 output: |
| High | Data |
| Open | Data |
| Low | High Tristate |
| Package Codes: 801 | |
| Type | Height |
| G320 | 1.7mm |
| Marking: TX-801 | |
| Specification | |
| Frequency | |
| ·VI AYYWW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

| 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 - 10M000000

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

Frequency

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

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

Notes:

- Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
- 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).
- Phase noise with optional Phase noise Filter Capacitor. Phase noise degrades with increasing output frequency.
- Subject to technical modification.
- Contact factory for availability.

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