

Specification	AXGPS5050	Rev.: 3	Date: 2022-02-11
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**Oscillator type: High Stability Low Noise GPS-Disciplined OCXO
with compact 50x50 mm PCB mountable package**

Features:

- Very High Long-term Frequency Stability $<1 \cdot 10^{-13}$
- Short-term Stability (ADEV) typical $1 \cdot 10^{-11}$ @ $\tau = 1 \sim 100$ sec
- Low Phase Noise 10 MHz Output
- Low jitter 1PPS output
- RS-232 communication interface with NMEA-0183 standard
- Compact Size 50x50x25 mm, PCB mountable



Parameter	min.	typ.	max.	Unit	Condition
Nominal output frequency RF1	10.000			MHz	
Nominal output frequency RF2	1PPS				
Frequency stability					
Tracking accuracy (GPS locked)		$2 \cdot 10^{-13}$	$5 \cdot 10^{-13}$		24 hours average
Holdover stability over 24 hours		$1 \cdot 10^{-11}$			Temperature $\Delta T < \pm 2K$ After 7 days locked
RF output RF1					
Signal waveform	Sine wave				
Load R_L	50			Ω	$\pm 5\%$
Output level		+11		dBm	
Harmonics			-30	dBc	
Spurious			-80	dBc	
Phase Noise		-100	-90	dBc/Hz	@ 1 Hz
		-130	-120	dBc/Hz	@ 10 Hz
		-150	-140	dBc/Hz	@ 100 Hz
		-155	-145	dBc/Hz	@ 1 kHz
		-155	-150	dBc/Hz	@ 10 kHz
		-155	-150	dBc/Hz	@ 100 kHz
Short-term stability (ADEV)		$1 \cdot 10^{-11}$			@ $\tau = 1$ sec
		$1 \cdot 10^{-11}$			@ $\tau = 10$ sec
		$1 \cdot 10^{-11}$			@ $\tau = 100$ sec
		$6 \cdot 10^{-12}$			@ $\tau = 1,000$ sec
		$1 \cdot 10^{-12}$			@ $\tau = 10,000$ sec
		$1 \cdot 10^{-13}$			@ $\tau = 100,000$ sec
RF output RF2					
Signal waveform	LVCMOS				
Load R_L	15			pF	
Rise & decay time			5	ns	
Accuracy (RMS) to UTC		30		ns	GPS locked 24 hours
Holdover time over 24 hours		1		μs	Temperature $\Delta T < \pm 2K$ After 7 days locked
GPS input					
Input frequency (Note 2)	1575.42			MHz	GPS L1 band
Input impedance	50			Ω	
Receiver Sensitivity	-160		-144	dBm	
Antenna	Passive				5 V

Parameter	min.	typ.	max.	Unit	Condition
Interface					
Baud rate		57600		bps	
RX/TX level	LVCMOS				(Note 3)
Communication	Status information / NMEA-0183				(Note 3)
Lock Detect		0	0.4	V	Locked
	0.5	3.3		V	Not locked
Supply voltage V_s	11.4	12.0	12.6	V	
Current consumption (steady state)			300	mA	@ +25°C
Current consumption (warm-up)			600	mA	@ +25°C
Operating temperature range	-40		+75	°C	
Enclosure size (see drawing) (LxWxH)	50x50x25 max.			mm	
Drawing number	AXZ10.01104.01				
RF Connectors (GPS IN & 1PPS IN/OUT)	MMCX female				
Weight			100	g	

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Beidou and Galileo bands available on request
3. Please consult factory for software manual. RS-232 transceiver required for RS-232 logic levels.

Absolute Maximum Ratings

Parameter	min.	max.	Unit	Condition
Supply Voltage V _s	-0.5	V _s + 10%	V	V _s to GND
Storage Temperature	-55	+85	°C	

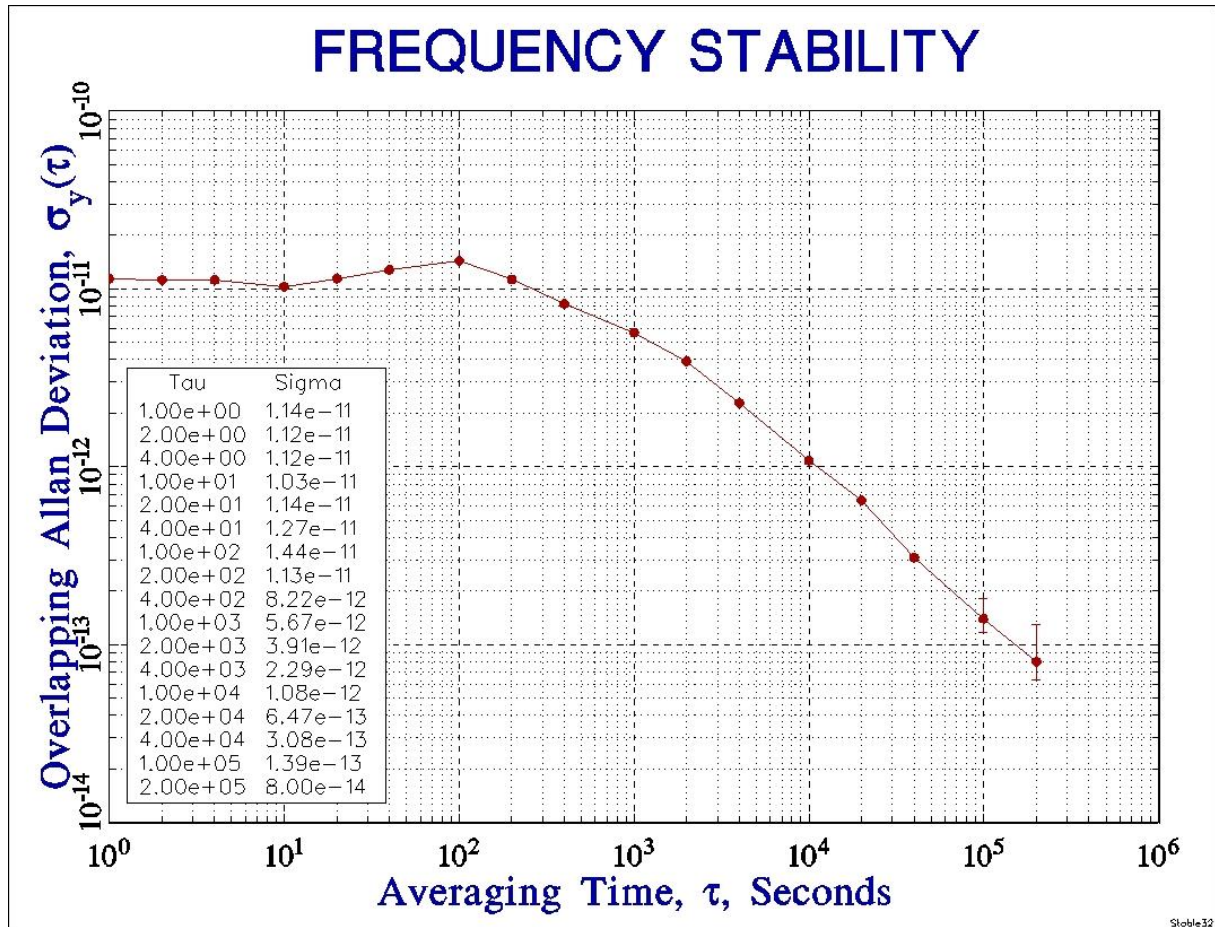
Ordering Code

Model	Revision	Frequency [MHz]
AXGPS5050	Rev.3	10.000

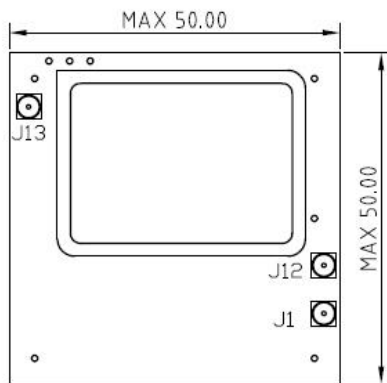
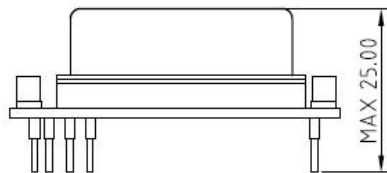
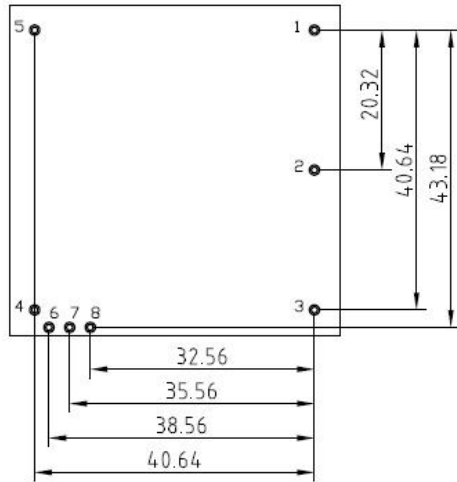
Environmental Conditions, Handling and Testing

Parameter	Procedure	Source
Processing	Application Note AXAN-012	www.axtal.com
Handling and Testing	Careful handling. Avoid excessive air flow, vibration and shock during operation.	
Parameter	Procedure	Condition
Electrostatic discharge (ESD)		
THD devices	IEC60749-26	HBM 2000 V
SMD devices	IEC60749-27	MM 200 V
Washable	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
RoHS- Compliant	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Typical Frequency Stability (ADEV)



Enclosure drawing



Pin connections

Pin #	Symbol	Function
1	N.C.	No Connection
2	CASE	Ground Case
3	RF OUT	10 MHz Output
4	GND	Ground
5	V _s	Supply Voltage
6	LD	Lock Detect
7	TX	Serial Transmit
8	RX	Serial Receive
J1	GPS ANT	GPS Signal Input (5V)
J12	N.C.	No Connection
J13	1PPS OUT	1PPS Output

Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	04.09.2017	First issue AXGPS5050	BN	HH
2	D0	12.07.2018	Major revision	HH	ME
3	D0	11.02.2022	1PPS input removed, multiple parameters updated and performance information added	HH	HH