AXTAL ADVANCED XTAL PRODUCTS

Designed and Manufactured in Germany

Specification	AXGPS5050	Rev.: 2	Date: 2018-07-12

Oscillator type: Compact GPS-Disciplined OCXO 10.000 MHz

Features:

- **Compact Size 50x50x25 mm, PCB mountable**
- **Low Phase Noise 10.000 MHz Output**
- **1 PPS LVCMOS Output**
- **External 1 PPS LVCMOS Reference Input**
- **Communication Interface with NMEA-0183 standard**

Parameter	min.	typ.	max.	Unit	Condition
Nominal output frequency		10.000		MHz	(Note 2)
Frequency stability					
Tracking accuracy (GPS locked)			$1 \cdot 10^{-12}$		24 hours average
Holdover stability (GPS 24 hours unlocked after 7 days locked)		$5 \cdot 10^{-10}$			Temperature ΔT <± 2K
RF output					
Signal waveform		Sine wave			
Load R_L		50		Ω	±5%
Output level		+11		dBm	
Harmonics		-60	-40	dBc	
Spurious			-80	dBc	
Phase Noise		-100 -130 -150 -155 -155 -155	-90 -120 -140 -145 -150 -150	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	@ 1 Hz @ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ 100 kHz
Short-term stability (ADEV)			$1 \cdot 10^{-11}$		@ τ = 1 sec
1 PPS output					
Signal waveform		LVCMOS			
Load R_L		15		pF	
Rise & decay time			5	ns	
Accuracy (RMS) to UTC		30		ns	GPS locked 24 hours
Holdover stability (GPS 24 hours unlocked after 7 days locked)			±4	µs	Temperature ΔT <± 2K
1 PPS reference input					
Signal waveform		LVCMOS			
Input impedance		>10 kOhm / 4 pF			
GPS input					
Input frequency		1575.42		MHz	
Input impedance		50		Ω	
Receiver Sensitivity	-160		-144	dBm	
Antenna		Passive			5 V
Interface					
Baud rate		57600		bps	
RX/TX level		LVCMOS			
Communication		Status information / NMEA-0183			(Note 2)

Parameter	min.	typ.	max.	Unit	Condition
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. See software manual for AXGPS5050

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.2	10.000

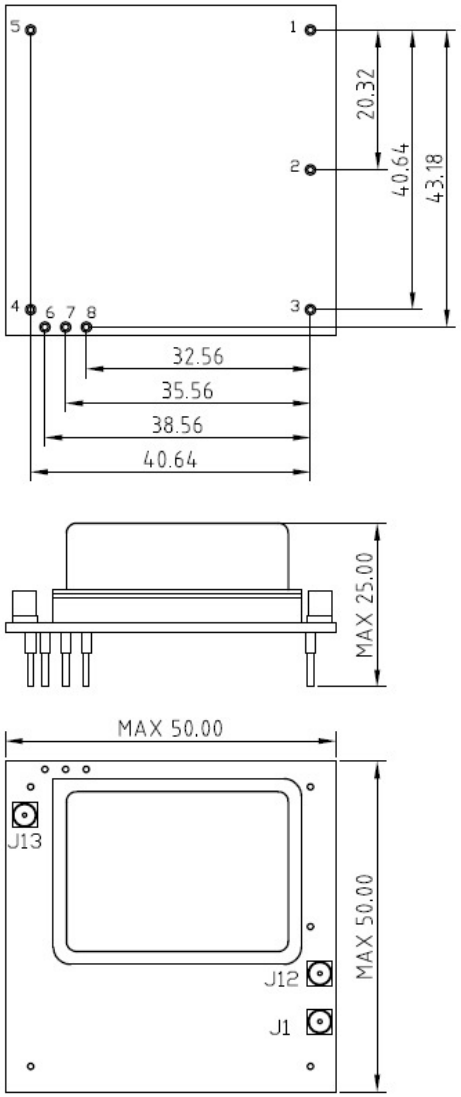
Example: AXGPS5050_Rev.2 – 10.000 MHz

Environmental Conditions, Handling and Testing

Parameter	Procedure	Source
Processing	Application Note AXAN-012	www.axtal.com

Parameter	Procedure		Condition
Electrostatic discharge (ESD)			
THD devices	IEC60749-26	HBM	2000 V
SMD devices	IEC60749-27	MM	200 V
Washable	☐ Yes ✖ No		
RoHS- Compliant	✖ Yes ☐ No		

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	1PPS IN	External 1PPS Input
J13	1PPS OUT	1PPS Output

Environmental conditions

Test	IEC 60068 Part …	IEC 60679-1 Clause	MIL-STD-202G Method	MIL-STD-810F Method	MIL-PRF-55310D Clause	Test conditions (IEC)
Sealing tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross leak: Test Qc, Fine leak: Test Qk
Solderability Resistance to soldering heat	2-20 2-58	5.6.3	208H 210F		3.6.52 3.6.48	Test Ta Method 1 Test Td_1 Method 2 Test Td_2 Method 2
Shock*	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axes 50g, 6 ms half-sine pulse
Vibration, sinusoidal*	2-6	5.6.7.1	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axes, 10 Hz - 55 Hz 0,75mm; 55 Hz - 2 kHz, 5g

Other environmental conditions on request

Data sheet is for information purposes only and may be subject to modifications or may be discontinued without notice.

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