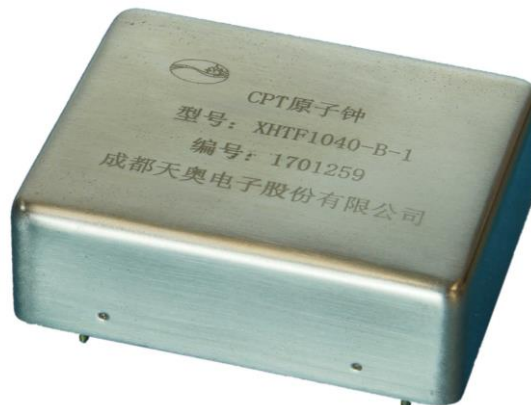


Specification	AXCPT1040	Rev.: 3	Date: 2021-12-14
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Oscillator type: **Smallest Miniature Atomic Clock in 45 x 36 mm Package**

Features:

- Smallest Miniature Atomic Clock
- Coherent Population Trap (CPT) Technology for High Reliability
(No vacuum cavity needed – No long-term leakage issues)
- Low power consumption – typ. 1.5 W Steady-state
- Replacement for Microchip CSAC (Chip-Scale Atomic Clock) SA.45s/SA.65s
- Significantly better phase noise than SA.45s/SA.65s
- External 1PPS synchronisation & disciplining functionality
- RS-232 Communication for Monitoring & Control
- Equivalent to ELECSPN XHTF1040



Ordering Code

Model	Revision	Frequency [MHz]
AXCPT1040	Rev.3	10.000

Example: AXCPT1040_Rev.3 – 10.000 MHz

Parameter	min.	typ.	max.	Unit	Condition
Nominal output frequency	10.000			MHz	
Frequency stability					
Initial tolerance at delivery @ +25°C			±0.05	ppb	
vs. operating temperature range			±1.00	ppb	steady state
Long term (aging) per day		±0.003	±0.03	ppb	
Long term (aging) per month		±0.10	±0.30	ppb	
Retrace @ +25°C			±0.05	ppb	1 h after 24 hrs OFF
Frequency adjustment range					
Digital Frequency Control (DFC)	±10			ppb	RS-232 interface (Note 2)
RF output					
Signal waveform	LVCMOS				
Load R _L	15			pF	
Phase noise		-100		dBc/Hz	@ 10 Hz
		-125		dBc/Hz	@ 100 Hz
		-140		dBc/Hz	@ 1 kHz
		-150		dBc/Hz	@ ≥10 kHz
Short-term stability (ADEV)		1·10 ⁻¹⁰	3·10 ⁻¹⁰		@ τ = 1 sec
		2·10 ⁻¹¹	1·10 ⁻¹⁰		@ τ = 10 sec
		3·10 ⁻¹²	3·10 ⁻¹¹		@ τ = 100 sec
Warm-up time @ +25°C			7	min	Time to lock
1 PPS output					
Signal waveform	LVCMOS				
Load R _L	15			pF	
1 PPS reference input	External synchronisation & disciplining (optional via RS-232)				
Signal waveform	LVCMOS				
Input impedance	>10 kOhm / 4 pF				
Logic Level RS-232 interface	LVCMOS				(Note 2)
Lock Detect		0	0.5	V	Locked
	2.5	3.3		V	Not locked
Supply voltage V_s	3.2	3.3	3.5	V	(Note 3)
Power consumption (steady state)		1.5	1.8	W	@ +25°C
Power consumption (warm-up)		4.5	6.0	W	(Note 3)
Operating temperature range	-40		+70	°C	
Enclosure (see drawing) (WxDxH)	45.0x36.0x15			mm	
Drawing number	AXZ10.01122.02				
Weight		43	50	g	
MTBF	100,000			hrs	

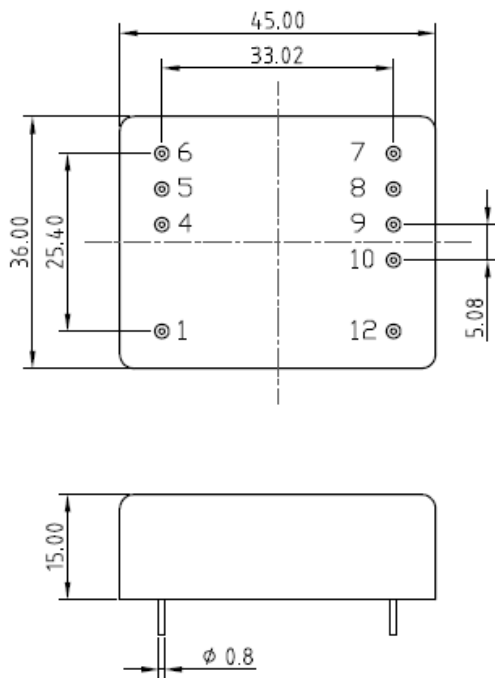
Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Please consult factory for programming manual. RS-232 transceiver required for RS-232 logic levels.
3. Please be aware of the higher current consumption, especially if used in existing designs as replacement for the CSAC SA.45s/SA.65s. The supply voltage at the clock terminals must be within the specified limits to guarantee proper operation.

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	

Enclosure drawing



Pin connections:

Pin #	Symbol	Function
1	N.C.	No Connection
4	LD	Lock Detect
5	TX	Serial Transmit RS-232
6	RX	Serial Receive RS-232
7	V _s	Supply Voltage
8	GND	Ground
9	1PPS IN	External 1PPS Input
10	1PPS OUT	1PPS Output
12	RF OUT	10 MHz Output

Handling and Testing

Parameter	Procedure		Source
Handling and Testing	Application Note AXAN-011		www.axtal.com
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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
RoHS- Compliant	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

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	30.10.2018	First issue	HH	ME
2	D0	27.11.2018	Typical PN und ADEV updated, minor changes	HH	HH
2	D1	07.03.2019	Editorial changes, typical values updated	HH	HH
2	D2	08.05.2019	Warm-up time corrected	JH	HH
3	D0	29.07.2020	Various additional parameters & information added, option 1 removed, editorial changes	HH	HH
3	D1	14.12.2021	Package drawing corrected. Editorial changes	HH	HH