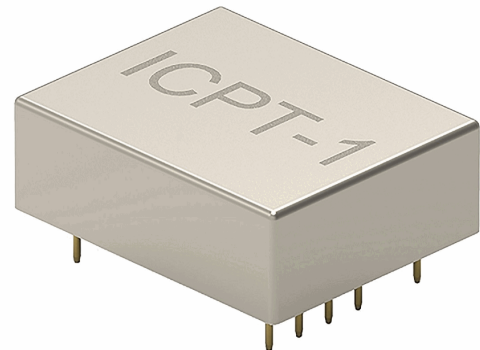


ISSUE 1; January 2021

Description

- The ICPT-1 is a Rubidium clock designed using the Coherent Population Trap method housed in a 9 Pin through-hole metal case. ICPT-1 offers good short term stability, tight tolerance and low power consumption.
- Features:
 - Precise Timing Synchronisation
 - +3.3V DC Input
 - Low Power Consumption
 - 1PPS Output
- Benefits:
 - Lower Size, Weight and Power Than Traditional Microwave Based Rb Oscillators
 - Excellent Short Term Stability
 - External 1PPS Synchronisation
- Applications:
 - Ideal for synchronisation of or as reference for satellite & secure communications,
 - navigation systems and in financial, utility, security and communications timing applications.



Frequency Parameters

- Frequency: 10.0MHz
- Frequency Tolerance: ± 0.05 ppb
- Tolerance Condition: @ 25°C
- Ageing: ± 0.03 ppb max per day @ 25°C
- Frequency Stability (Temperature varied across the operating temperature range, measurement referenced to frequency observed with $f_{ref} = (\Delta f_{max} + f_{min})/2$): ± 0.5 ppb typical
- Retrace: ± 0.5 ppb max

Electrical Parameters

- Supply Voltage: 3.3V ± 0.15 V
- 1PPS Input (Pin 7):
 - Synchronisation: ± 50 ns max
- Power Consumption (@ 25°C):
 - Warm-Up: 8.25W typ, 9W max
 - Steady State: 1.65W typ, 2W max
- Warm-Up Time: 5 mins typ to ± 0.5 ppb @ 25 °C
- Lock Indicator: Pin 2 is high (3.3V) when out of lock and low (0V) when locked

Frequency Adjustment

- Digital Frequency Adjustment:
 - ± 100 ppb max scale
 - 1ppt resolution

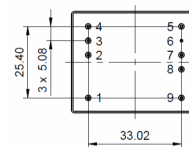
Operating Temperature Ranges

- -45 to 70°C

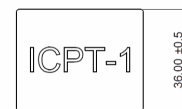
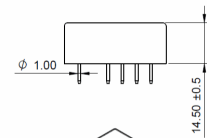
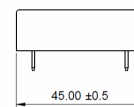
Output Details

- Output Compatibility: HCMOS
- Drive Capability: 15pF
- The above applies to 10MHz output (Pin 9) and 1PPS output (Pin 8)

Outline (mm)



Pin Connections	
1. Do Not Connect	6. GND
2. Lock Indication	7. 1PPS Input
3. TXD	8. 1PPS Output
4. RXD	9. 10MHz Output
5. +Vs	



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Output Control

- 1PPS signal and frequency adjustment can be controlled via RS-232 data communication interface:
57600 Baud 8N1

For details please refer to ICPT-1 programming manual.

Noise Parameters

- Short Term Stability (ADEV) typ:
1s 0.9E-10
10s 5.0E-11
100s 2.0E-11
- Phase Noise 10MHz Output (typ)
-70dBc/Hz @ 1Hz
-95dBc/Hz @ 10Hz
-120dBc/Hz @ 100Hz
-140dBc/Hz @ 1kHz
-145dBc/Hz @ 10kHz
-150dBc/Hz @ 100kHz
-155dBc/Hz @ 1MHz

Environmental Parameters

- Storage Temperature Range: -55 to 85°C
- Humidity: 75% (Non Condensing)

Manufacturing Details

- Please ensure that a sufficient air gap is maintained between the ICPT- 1 and the PCB at all times
- No copper should be place directly under the ICPT-1
- 1PPS input line cannot be left floating, please add a pull down resistor to GND e.g.100kΩ

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Non-Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Bulk Bulk pack
Pack Size: 1

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