

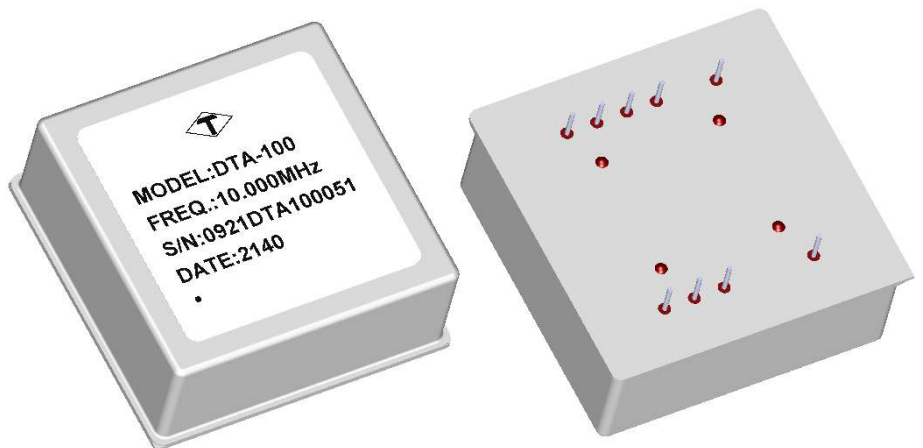
Low Power Atomic Oscillator DTA-100 Series

Feature:

- **Low power consumption 150mW typical**
- 1pps input and 1pps output for timing synchronization
- Discipline to 1ns RMS in phase and $<10^{-12}$ in frequency
- 1 Second continuous phase measurement and report system, resolution ≤ 1 ns
- ToD(Time of Day)
- RS232 digital interface
- 10MHz HCMOS output
- Low phase noise, optional

Applications:

- GNSS Receivers
- Portable Radios
- IED Jamming System
- UAV
- Autonomous Sensor Networks



ELECTRICAL SPECIFICATIONS

1. RF OUTPUT

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
1.1.	Frequency Output	10			MHz	
1.2.	Output Waveform	3.3V CMOS				
1.3.	Load	10M Ω //10pF				
1.4.	Rise/Fall Time			10	nS	
1.5.	Output Level	V_{OL}		0.4	V	
		V_{OH}	2.7			
1.6.	Duty Cycle	40		60	%	
1.7.	Frequency Stability over Temperature			$\pm 5 \times 10^{-10}$		-10°C ~ 70°C Temperature Slope < 0.5°C/min.
1.8.	Frequency Stability over Supply Voltage Range			$\pm 4 \times 10^{-10}$		

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
1.9.	Frequency Accuracy			$\pm 5 \times 10^{-11}$		At shipment
1.10.	Daily Aging		$\pm 1 \times 10^{-11}$	$\pm 3 \times 10^{-11}$		After 30 days of continuous operation.
1.11.	Retrace			$\pm 5 \times 10^{-10}$		48 hours off
1.12.	Short Term(ADEV)			3×10^{-10}		Tau=1sec
				9.5×10^{-11}		Tau=10sec
				3×10^{-11}		Tau=100sec
				8×10^{-12}		Tau=1000sec
1.13.	Frequency Control (Analog Tuning)		$\pm 2.2 \times 10^{-8}$			Resolution : 1×10^{-11} Input : 0V ~ 2.5V into 100K Ω
1.14.	Frequency Control (Digital Tuning)		$\pm 1 \times 10^{-8}$			Resolution : 1×10^{-12}

2. 1pps Time Output

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
2.1.	1pps		1		Hz	
2.2.	Output Amplitude		3.3V CMOS			
2.3.	Pulse Width		97.656	100	us	
2.4.	Rise/Fall Time			10	ns	
2.5.	Load		10M Ω //10pF			

3. 1pps Time Input

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
3.1.	1pps		1Hz			
3.2.	Timing Edge		Rising edge			
3.3.	Low Level			0.5	V	
	High Level	2.5		3.3	V	
3.4.	Input Impedance		10M Ω //10pF			

4. Built-In Test Equipment (BITE) Output

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
4.1.	Format		3.3V CMOS			
4.2.	Load Impedance		1M Ω			
4.3.	Logic		0 = Normal Operation 1 = Alarm			

5. Phase Noise (@10MHz)

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
5.1.	1 Hz			-52	dBc/Hz	
5.2.	10 Hz			-90	dBc/Hz	
5.3.	100 Hz			-122	dBc/Hz	
5.4.	1 KHz			-140	dBc/Hz	
5.5.	10 KHz			-150	dBc/Hz	
5.6.	100 KHz			-152	dBc/Hz	
5.7.	1MHz			-152	dBc/Hz	

6. Supply Voltage

	Parameter	Min.	Typ.	Max.	Unit	Test Condition
6.1.	Supply Voltage	3.2	3.3	3.4	Vdc	
6.2.	Steady Power		150	170	mW	-10°C ~ 70°C
6.3.	Warm up Power			170	mW	
6.4.	Warm up Time			150	Second	

7. Digital Communication

	Parameter	Reference Std.	Test Condition
7.1.	Protocol	RS232	
7.2.	Logic Level	3.3V CMOS	
7.3.	Baud Rate	57600	
7.4.	Number of Data Bits	8	
7.5.	Number of Stop Bits	1	
7.6.	Parity	none	

8. Environmental

	Parameter	Test Condition	Reference Std.
8.1.	Storage Temperature	-40°C ~ 85°C	Non-operating
8.2.	Mechanical Shock	>30G, 11ms Half Sine	MIL-STD-202
8.3.	Vibration	7G rms, maintain lock	MIL-STD-810
8.4.	Humidity	0-95%, RH	
8.5.	Magnetic Sensitivity	<±1x10 ⁻¹⁰ /1 Gauss	Up to 2 Gauss

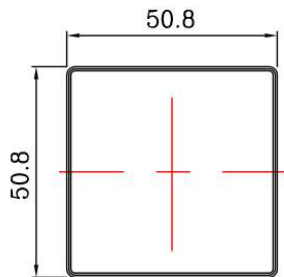
Table 1 : ORDERING INFORMATION

DTA-100 Series Ordering Information	FootPrint	
	Standard (A)	Optional (B)
	DTA-100-A-R	DTA-100-B-R

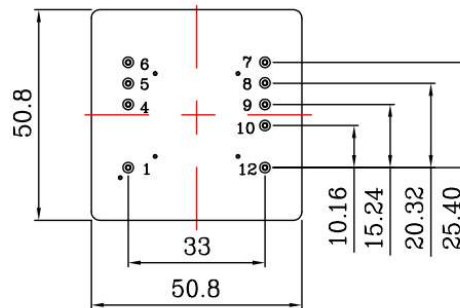
OUTLINE DRAWING

Standard Footprint :

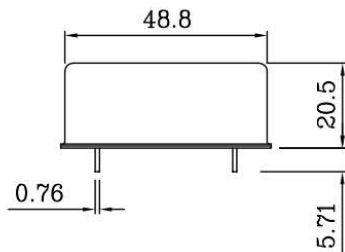
[TOP VIEW]



[BOTTOM VIEW]



[SIDE VIEW]

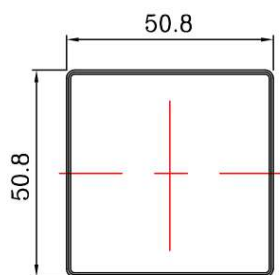


Unit: mm

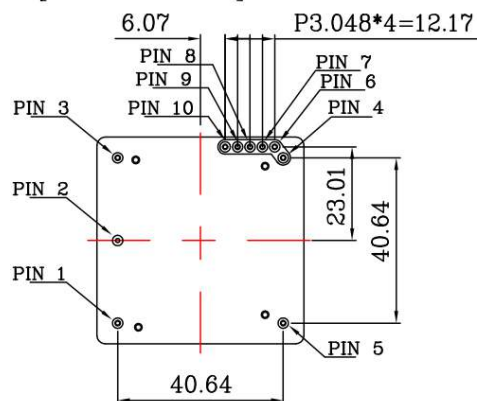
PIN#	FUNCTION
1	Tune
4	BITE
5	TX
6	RX
7	VCC
8	GND
9	1pps In
10	1pps Out
12	10MHz Out

Optional Footprint :

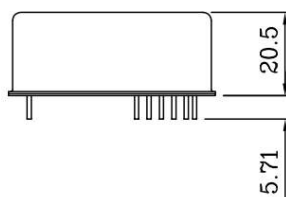
[TOP VIEW]



[BOTTOM VIEW]



[SIDE VIEW]



Unit: mm

PIN#	FUNCTION
1	NC
2	GND
3	RF Output
4	GND
5	+3.3V
6	Lock 0:Lock 1:Unlock
7	TX
8	RX
9	1pps In
10	1pps Out