Q69 Ultra-Low Power 1PPS Disciplined Oscillator [6]



Key Features

- Ultra-low power consumption <250 mW, typical, -40C to +85C
- 1PPS input and 1PPS output for timing synchronization
- Discipline to 1 ns RMS in phase and $<1x10^{-12}$ in frequency
- 1 Second continuous phase measurement and report system, resolution ≤ 1 ns
- ToD (Time of Day)
- RS232 digital interface
- User accessible data memory, optional
- 10 MHz, 25 MHz, 100MHz HCMOS output
- Low phase noise

Applications

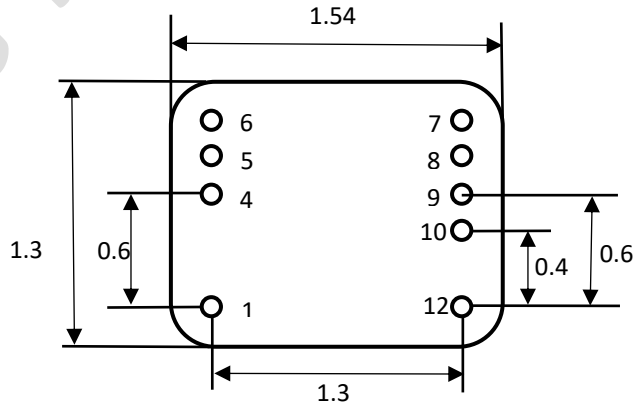
- Low-cost satellite
- Test Equipment

Mechanical Specifications

- **Pin Assignment (*Consulting factory for other pin compatible footprint*)**

Pin #	Assignment
1	NC
4	Oven Ready
5	Tx
6	Rx
7	+3.3 V
8	GND
9	1PPS input
10	1PPS output
12	RF output

Bottom view



- **Mechanical Dimension** 1.54” x 1.34” x 0.54”, height tolerance ±0.01”

  Pin diameter 0.03”

**A smaller size is possible if it is desirable*

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Electrical & Environmental Specifications (25 °C, +3.3 VDC input unless otherwise specified)

PARAMETERS	Unit	Min	Typ.	Max	Note	Comments
RF Output						
• Frequency	MHz		10		1	
• Amplitude	V		2.8		2	CMOS
• Load	MΩ//10 pf		10			
• R/F Time	ns			10		
1PPS Time Output						
• Pulse Width	µs		~20			
• Amplitude	V		3.3			CMOS
• R/F Time	ns			10		
• Load	MΩ//10 pf		10			
1PPS Time Input						
• Format			Rising edge			
• Amplitude	V		3.3			CMOS
• Impedance	MΩ		10			
Digital Communication						
• Protocol			RS232			
• Logic Level	V		3.3			CMOS
• Baud Rate			57600			
Power Input						
• DC Input	V		3.3±0.1			
• Power Consumption	mW		250	400	3	Full temperature range
• Warm up Power	mW			400		*Factory configurable*
• Warm up Time	second			120		
Environmental						
• Operating Temperature & Stability	Ppb	±0.1		±5.0	4	-40 °C to +85 °C
• Mechanical Shock						Mil-STD-202, 30G, 11ms or 1000 G, 1 ms, half sine or better
• Vibration						Mil-STD-202, 5 G up to 2 kHz
Stability						
• Acceleration Sensitivity	/g	0.05	2	$\pm10^{-10}$		Worst direction Better G sensitivity optional
• Aging (after 30days)	/day		$\pm2\times10^{-10}$	$\pm4\times10^{-10}$	5	$\pm5\times10^{-8}$/first year
• Frequency Control	ppm	±2				digital
Phase Noise						
			-100dBc/Hz	10Hz		100MHz
			-130dBc/Hz	100Hz		
			-155dBc/Hz	1kHz		
			-167dBc/Hz	10kHz		
			-173dBc/Hz	100kHz		
			-175dBc/Hz	1MHz		

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Holdover

• 24 hour	us	±5 Option A	*Constant temperature +/-3C typical,
• 12 hour	us	±1.5 Option B	
• User accessible data memory, optional	byte	64	

[1]Consult factory for other frequencies; [2]Consult factory for other waveform; [3]tested at 25 °C ambient; [4]upper operation temperature can go to +95C; [5]Consulting factory for other/optional specifications. Optional specifications are customer specific, not by default. [6] Datasheet subject to change without special notice

Discipline to external 1pps only when internal clock is ready. When external 1pps is lost, the internal clock holds its last known good value. When external 1pps is back, internal clock gradually steers to external 1pps without major frequency jumps.

Order Information

Temperature Range

A -40C/+85C

Holdover

Code Spec.
A(5), B(1.5)

User Data Space

Code Spec.
0 Enable
1 Disable

Q69 10 A B 1

Frequency (MHz)

Code	Spec.
5	5
8	8.192
10	10
16	16.384

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