

TMO-M50H

Holdover up to 1.5 μ s / 24 hours

**Time Module
Preliminary**

QuartzCom
the communications company



Features

- Applications: Base station, Clock Reference, 5G
- High frequency stability vs. temperature ($\leq \pm 5 \times 10^{-11}$)

Parameter	Specification			
	TMO-M50H5		TMO-M50H12	
Frequency Range	5 MHz up to 100 MHz			
Standard Frequency	10.0000 MHz			
Frequency Accuracy	1 x 10 ⁻¹²			
Supply Voltage [Vdc]	Code		Vdc	
	5		5.0 V \pm 5%	
	12		12.0 V \pm 5%	
Current Consumption [Idc]	5 Vdc		12 Vdc	
Warm up current	< 1500 mA		< 600 mA	
Steady state current @25°C	< 700 mA		< 300 mA	
Frequency Stability	Code	OTR	°C	Freq. Stab.
vs Operating Temperature Range [OTR]	EK		0 to +70	50p
	JK		-20 to +70	n10
				n20
				$\leq \pm 5 \times 10^{-11}$
				$\leq \pm 10 \times 10^{-11}$
				$\leq \pm 20 \times 10^{-11}$
Holdover Capability	Code		Holdover	
$\Delta T = \pm 2^\circ\text{C}$, after 7days turn ON	R		1.0 μ s / 8 hours	
	S		2.0 μ s / 8 hours	
	T		1.5 μ s / 24 hours	
GNSS Receiver	Code		GNSS receiver	
GPS, Beidou, GLONASS, Galileo	U		Included	
	V		Without	
G-sensitivity	Code		G-sens per axis	
Standard	Blank		< 3ppb/g	
Low-Gsens	G		< 1.5ppb/g	

Ordering Guide: TMO-M50H5-EKn10-T-U-G-L 10MHz

RF Output Signal	LVCMOS	
Output Level	$V_{OH} > 2.4 \text{ V}$ $V_{OL} < 0.5 \text{ V}$	
Load	15 pF	
Phase Noise @ 25°C	Typical value [static conditions]	
10 MHz carrier frequency	10 Hz	$\leq -115 \text{ dBc/Hz}$
	100 Hz	$\leq -135 \text{ dBc/Hz}$
	1 kHz	$\leq -145 \text{ dBc/Hz}$
	10 kHz	$\leq -147 \text{ dBc/Hz}$
	100 kHz	$\leq -150 \text{ dBc/Hz}$
Short Term Stability [Allan Variance]	$\leq 1 \times 10^{-11}$ @ 1s	
1pps Output Signal	LVCMOS	
Output Level	$V_{OH} > 2.4 \text{ V}$ $V_{OL} < 0.5 \text{ V}$	
Pulse width	10 ms	
1pps Input Reference	LVCMOS	
Output Level	$V_{OH} > 2.4 \text{ V}$ $V_{OL} < 0.5 \text{ V}$	
State Input Lock	>2.4 V @ < 5 mA Load	
State Holdover	< 0.5 V @ < 5 mA Load	
Lock Status Indicator		
Module Locked	> 2.4 V @ < 5 mA Load	
Module Holdover	< 0.5 V @ < 5 mA Load	

Note 1: unless otherwise specified conditions are @ 25°C still air

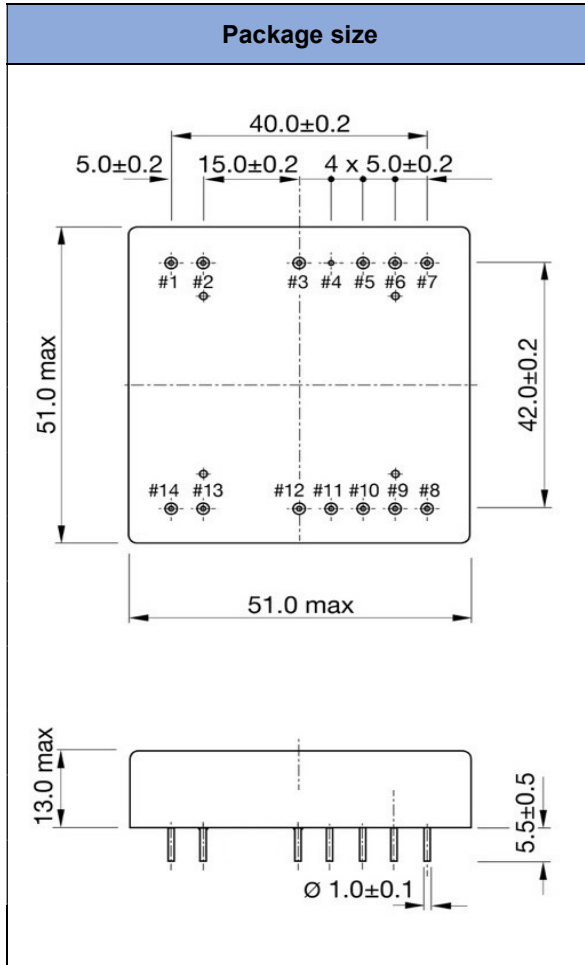
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Environmental test	
vibration	acceleration: 5 g; 10 Hz up to 200 Hz and down to 10 Hz; all 3 axes
shock	75 g, half-sine, 3 ms



Pin#	Pin Function
1	NC
2	NC
3	Vdc
4	GND
5	LOCK OUTPUT
6	NC
7	TX OUTPUT
8	STATE INPUT
9	NC
10	1pps INPUT
11	GND
12	1pps OUTPUT
13	GND
14	10 MHz OUTPUT

MARKING



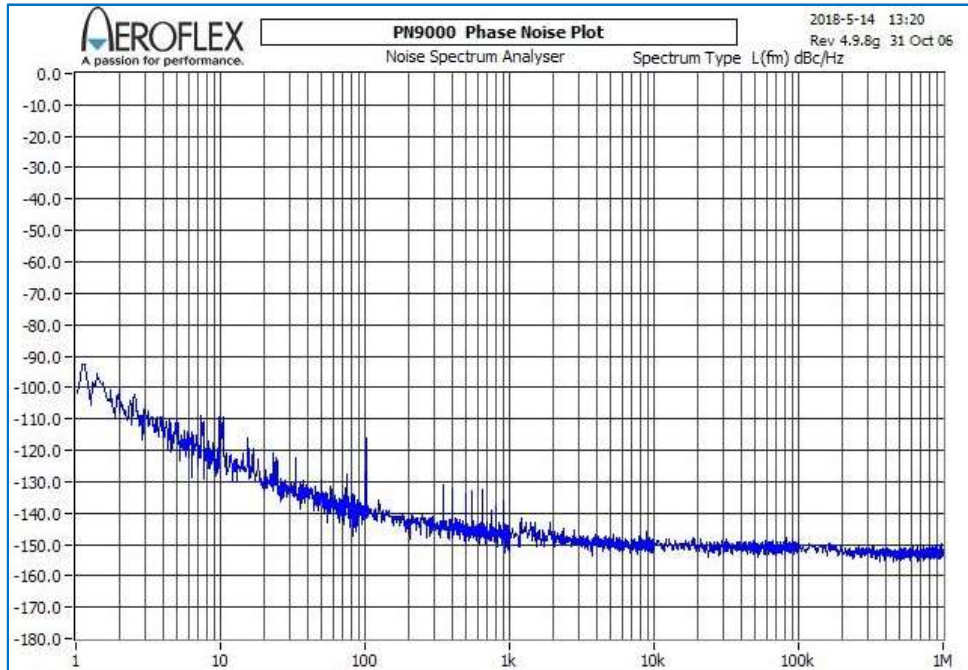
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Phase Noise



Holdover 24 hours

