



Features and Benefits

Frequency: 16.384MHz
Supply voltage: 3.3V
Steady current: 35mA Typ.
Output waveform: HCMOS
Hold over stability: ±10 to ± 60us over 24h
Aging: ±0.2ppb per day
Operating temperature: -10°C to +45°C
Size: 39x34x14.4mm

Typical Applications

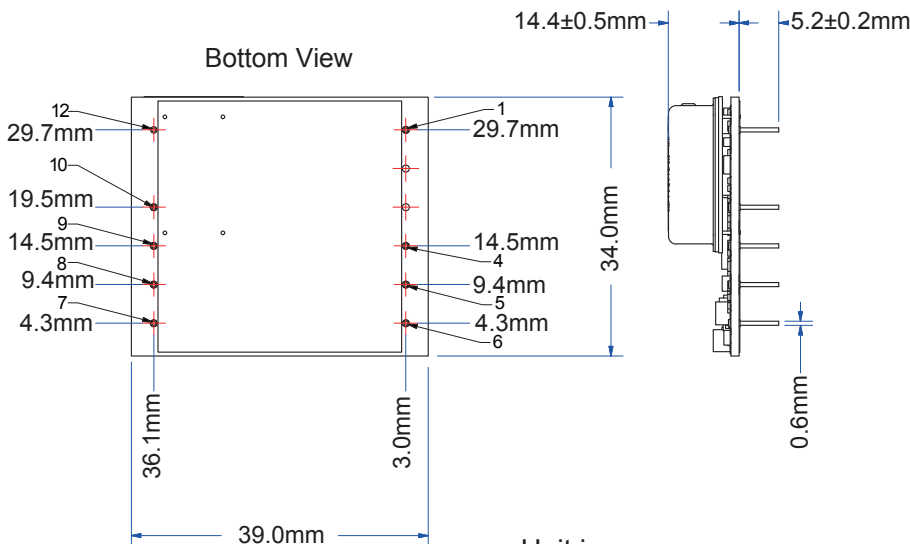
Underwater

Description

TM3934CJ-HPUW-16.384MHz-A is the best trade-off between low aging drift and low power consumption within DEI portfolio. The TM3934CJ-HPUW-16.384MHz-A can be used as a PPS time keeper in all highly battery-constraint underwater systems. The module will automatically adjust the OCXO frequency and phase to the external PPS reference (under GNSS) with a record high precision at 10-11 level (0,05 ppb). Once locked, it can be deployed in GNSS-denied environment (underwater) and will keep a precise synchronization in free-running mode for the embedded electronics (typical aging ±0.2 ppb/day). it is ideal to reduce battery size and extend underwater mission time. Its thermal sensitivity is about ±15 ppb but can be improved down to ±1ppb thanks to a specific firmware on demand.

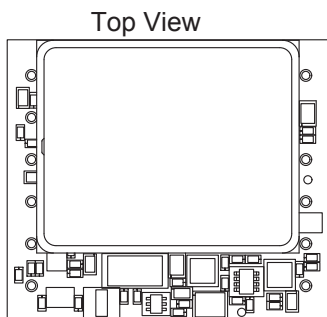
Mechanical Drawing & Pin Connections

Drawing No: MD21000) -&



PIN	FUNCTION
1	Vtune
4	Tune Enable
5	TX
6	RX
7	Vcc
8	GND
9	1PPS IN
10	1PPS OUT
12	RF OUT

Unit in mm
1mm = 0.0394 inches





Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency	F _{nom}			16.384		MHz	Standard frequency : 10,16.384, 20, 32.768
RF Output							
Output wave form				HCMOS			
H-level voltage			2.4			V	
L-level voltage					0.4	V	
Duty cycle			45		55	%	
Rise/Fall time		10% - 80%			8	ns	
Load				15pF			1 MΩ
1 PPS Output Parameters							
H-level voltage			2.4			V	
L-level voltage					0.4	V	
Level			0		V _{cc}	V	
Rise/Fall time		10% - 80%			8	ns	
Load				10pF			1 MΩ
1 PPS Input Parameters							
H-level voltage			2.4		V _{cc}	V	
L-level voltage					0.4	V	
Format				Rising edge			
Load				1 MΩ			
Serial Communications							
Protocol				RS-232			
Format			0		V _{cc}		CMOS
Baud Rate				57600			
Power Supply							
Supply Voltage	V _s	±5%	3.15	3.3	3.45	V	+5V on request
Warm-up		During 10s max @ 25°C / 40s max @ 5°C			230	mA	
Steady state / -10°C				69	74	mA	
Steady state / +5°C				44	49	mA	
Steady state / +25°C				35	40	mA	
Steady state / +45°C				9	14	mA	
Warm-up Time	T _{up}	to ± 1 ppm of final frequency (1 hour) at 25°C			30	s	
		to ± 100 ppb of final frequency (1 hour) at 25°C			3	min	
Frequency Stability							
Versus Operating Temperature Range				±15	±30	ppb	Forced airflow environment
Initial frequency accuracy		+25°C referred to nominal frequency		±0.05	±0.1	ppm	
Versus supply voltage		±5%			±2	ppb	
Versus load		10kΩ // 15 pF load ±10%			±2	ppb	
1 PPS accuracy 1σ				±32		ns	
Hold over stability		over 24h (at +25°C)	±10		±60	us	
Short-term		τ = 0.1s		0.5	1	10 ⁻¹¹	
		τ = 1s		1	5	10 ⁻¹¹	
Versus acceleration		Worst direction			±1.0	ppb/G	
Retrace		24h work after 24 off			±10	ppb	
Aging Per Day				±0.2	±0.5	ppb	
Aging 1 st Year		After 30 days of operation			±50	ppb	
Aging After 10 years					±300	ppb	
Environmental, Mechanical Conditions							
Operating temperature range		-10°C to +45°C (Stay functional at +50°C but stability may not be met)					
Storage temperature range		-55°C to +95°C					
Soldering instructions		Hand soldering only, with recommended pins soldering temperature : 235°C ±5°C, t=10s ±0.5s (260°C max for 5s max); Reflow soldering and other soldering methods are prohibited					
PCB cleaning/washing		Not washable					

Notes: Parameter guaranteed by design and characterization