

Travelling Merchant: _____

DATASHEET

Standard: CM22B-J328-10.00MHz

P/N: _____

| Plot | | | The Label |
|------------------|---------|----------|------------------------|
| Drew | Audited | Approved | Stamp, please! Thanks! |
| | | | |
| Date: 2014.12.17 | | | |

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1. Electrical Parameters

| | Parameters | Min. | Typ. | Max. | Unit. | Test Condition |
|-----------------------------|---|-------|------|------------------|--|---|
| 1 PPS Reference Input | Waveform | HCMOS | | | | |
| | High-Level Output Voltage (V_{IH}) | 2.4 | | 3.4 | V | 50 Ω |
| | Low-Level Output Voltage (V_{IL}) | | | 0.4 | V | |
| | Pulse Width | 10 | | | μ s | |
| | Connector | Pin 4 | | | | |
| State Input | Parameters | Min. | Typ. | Max. | Unit. | Test Condition |
| | Lock | 2.4 | | 3.4 | V | <5mA Load |
| | Holdover | | | 0.4 | V | <5mA Load |
| | Connector | Pin 1 | | | | |
| RF Output | Parameters | Min. | Typ. | Max. | Unit. | Test Condition |
| | Nominal Frequency | 10.00 | | | MHz | Synchronization with input 1PPS |
| | Waveform | HCMOS | | | | |
| | High-level Output Voltage (V_{OH}) | 2.7 | | | V | < 5mA Load |
| | Low-level Output Voltage (V_{OL}) | | | 0.4 | V | < 5mA Load |
| | Rise/Fall Time | | | 8 | ns | Load 15pF |
| | Duty Cycle | 45 | 50 | 55 | % | Load 15pF |
| | Frequency Tolerance vs. Operating Temperature Range | -0.01 | | +0.01 | $\times 10^{-6}$ | T_A varied from -40 $^{\circ}$ C to 85 $^{\circ}$ C, measurement referenced to frequency observed with $f_{ref}=(f_{max}+f_{min})/2$, $V_{cc}=3.3V$, $O_{load}=15pF$, temperature variable speed less than 2 $^{\circ}$ C per minute. |
| | Accuracy | -0.01 | | +0.01 | $\times 10^{-9}$ | 24 hours average when locked to 1PPS after power on 2days. |
| | Short-term Stability | -0.1 | | +0.1 | $\times 10^{-9}$ | Temperature stability, no EMI/EMC or other interference, test after power for 1 hour ref. to 25 $^{\circ}$ C; 1s, using PN9000 equipment. |
| Warm-Up | -1 | | +1 | $\times 10^{-6}$ | $T_A=25^{\circ}$ C, $V_{cc}=3.3V$ constant measurement referenced to 10.00MHz, after power on 3min with GPS lock. | |

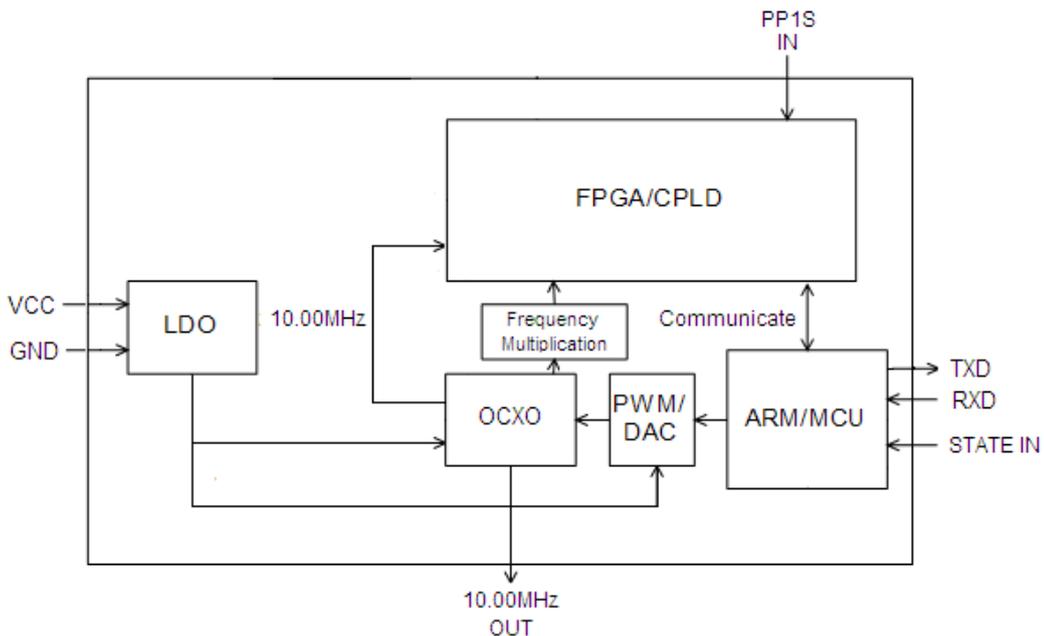


| | | | | | | | |
|---------------------|---------------------------------------|-------|------|------|------------------|--|--------|
| | Aging Tolerance Per Day | -5 | | +5 | $\times 10^{-9}$ | Constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_{CC}=3.3\text{V}$, after 30days of operation. | |
| | Aging Tolerance 1 Year | -0.5 | | +0.5 | $\times 10^{-6}$ | | |
| | Phase Noise (All conditions) | | | -100 | -90 | dBc/Hz | 10Hz |
| | | | | -130 | -120 | | 100Hz |
| | | | | -148 | -143 | | 1KHz |
| | | | | -150 | -145 | | 10KHz |
| | | | | -150 | -145 | | 100KHz |
| | | -150 | -145 | 1MHz | | | |
| Connector | Pin8 | | | | | | |
| Holdover Capability | Holdover Time | Min. | Typ. | Max. | Unit. | Test Condition | |
| | 24 Hours | -80 | | +80 | μs | $\Delta T = \pm 2^\circ\text{C}$, 24 hours holdover after turn on 3 days and lock 2 day. Temperature variable speed less than 1°C per minute. | |
| Supply Voltage | Parameters | Min. | Typ. | Max. | Unit. | Test Condition | |
| | Supply Voltage | 3.13 | 3.3 | 3.47 | V | | |
| | Warm up current | | | 500 | mA | | |
| | Steady Consumption | | | 250 | mA | @ 25°C | |
| | AC Ripple | | | 50 | mVpk-pk | 10Hz to 1MHz | |
| | Connector | Pin 2 | | | | | |
| 1 PPS Output | Parameters | Min. | Typ. | Max. | Unit. | Test Condition | |
| | Waveform | HCMOS | | | | | |
| | High-Level Output Voltage(V_{OH}) | 2.4 | | | V | 50 Ω | |
| | Low-level Output voltage (V_{OL}) | | | 0.4 | V | | |
| | Pulse Width | 10 | | | μs | | |
| | Accuracy | -200 | | +200 | ns | 24 hours average when locked to 1PPS after power on 2days. | |
| | Connector | Pin 7 | | | | | |



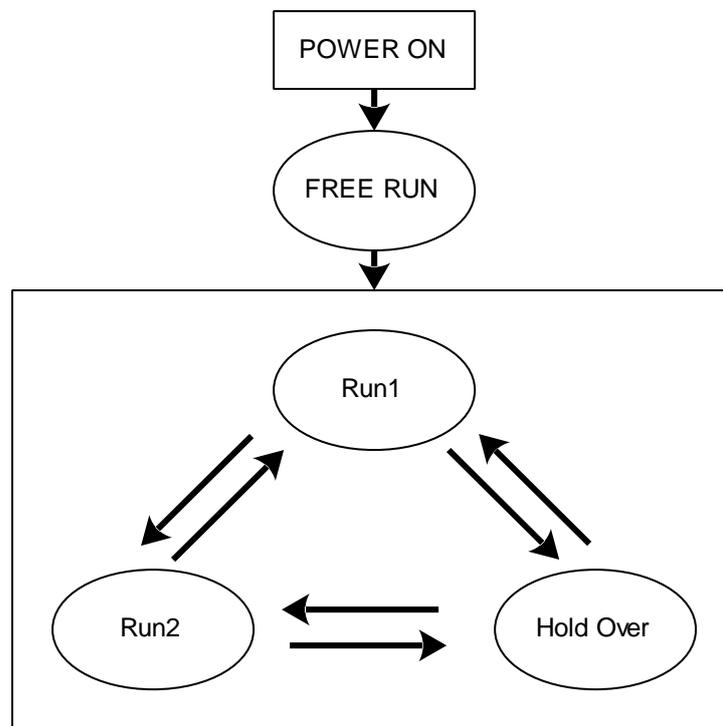
| | Parameters | Min. | Typ. | Max. | Unit. | Test Condition |
|--------------------------|--|--|------|------|-------|----------------|
| Serial Interfaces | Rx high-level Input Voltage (VH) | 2.4 | | 3.4 | V | |
| | Rx low-level Input Voltage (VL) | | | 0.4 | V | |
| | Tx high-level Output Voltage (VH) | 2.4 | | 3.4 | V | |
| | Tx low-level Output Voltage (VL) | | | 0.4 | V | |
| | Serial Protocol | 9600-N-8-1 | | | | |
| | Connector | Pin5 / Pin6 | | | | |
| | | | | | | |
| Environmental Conditions | Parameter | Conditions | | | | |
| | Operating Temperature | -40°C to 85°C | | | | |
| | Storage Temperature | -55°C to 105°C | | | | |
| | Storage Humidity | 30%~80% | | | | |
| | ESD Level | Human Body Model,class2: 2000V to 4000V; ANSI/ESDA/JEDEC JS-001-2010. | | | | |
| | | Machine Model, class B: 200V to 400V; ANSI/ESDA/JEDEC JS-001-2010. | | | | |
| | Moisture Sensitivity Level | Not humidity sensitive. | | | | |
| | Vibration | Test Condition: 0.75mm ;acceleration:10g;10Hz~500Hz, one cycle per 30 min, test 2 hours. (3 times for each 3 directions X , Y , Z), IEC 68-2-06 Test Fc. | | | | |
| Shock | 50g; 11ms; half sine wave (3 times for each 3 directions X , Y , Z),IEC 68-2-27 Test Ea/Severity 50A. | | | | | |

2. Functional Block Diagram





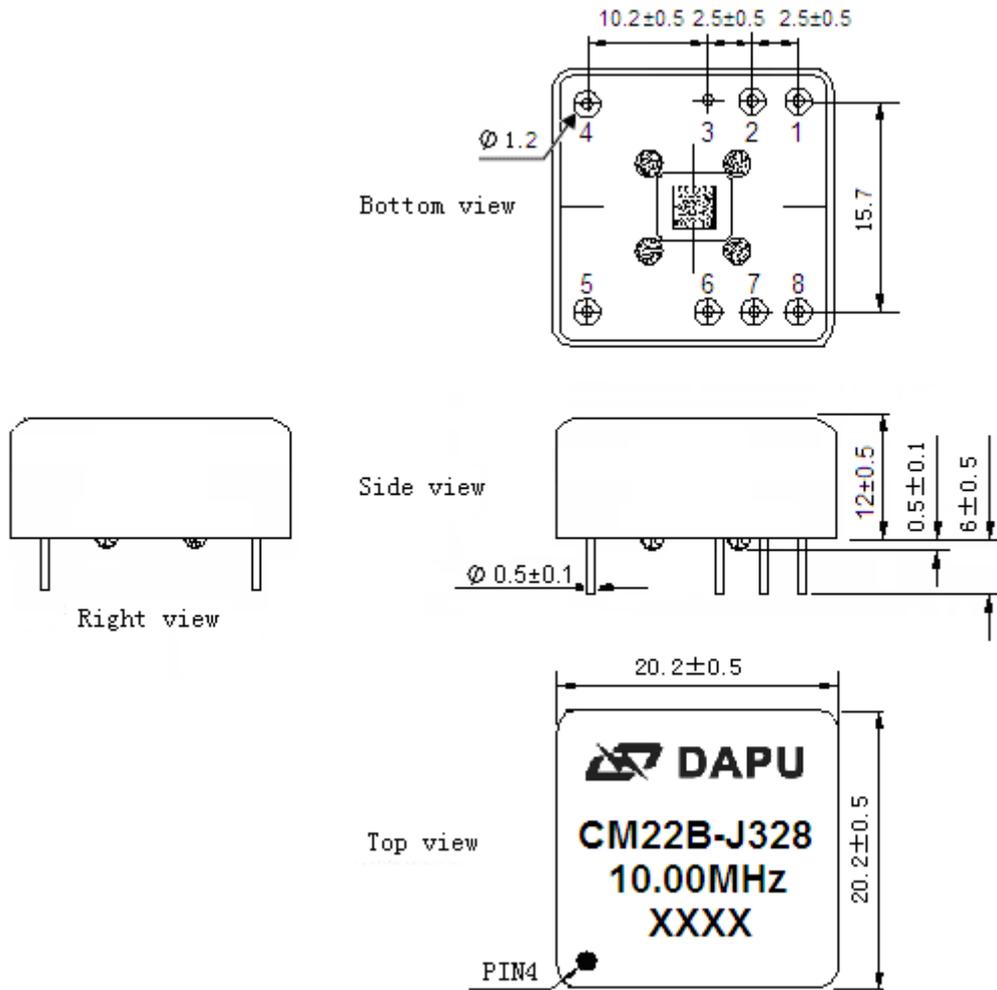
3. Workflow Diagram



Run1: Fast track. Adjust the OCXO 10MHz output frequency quickly to track the 1PPS of 10MHz with 1PPS reference.
Run2: Slow track. Adjust the OCXO 10MHz output frequency slowly when the phase error is in the define range.
Hold Over: GPS 1PPS reference miss, an algorithm has been developed which enables adaptive modeling of the frequency stability of an OCXO with reference to a GPS timing signal.
Free Run: Clock module power on without 1PPS reference anyway.



4. Mechanical Structure(mm)



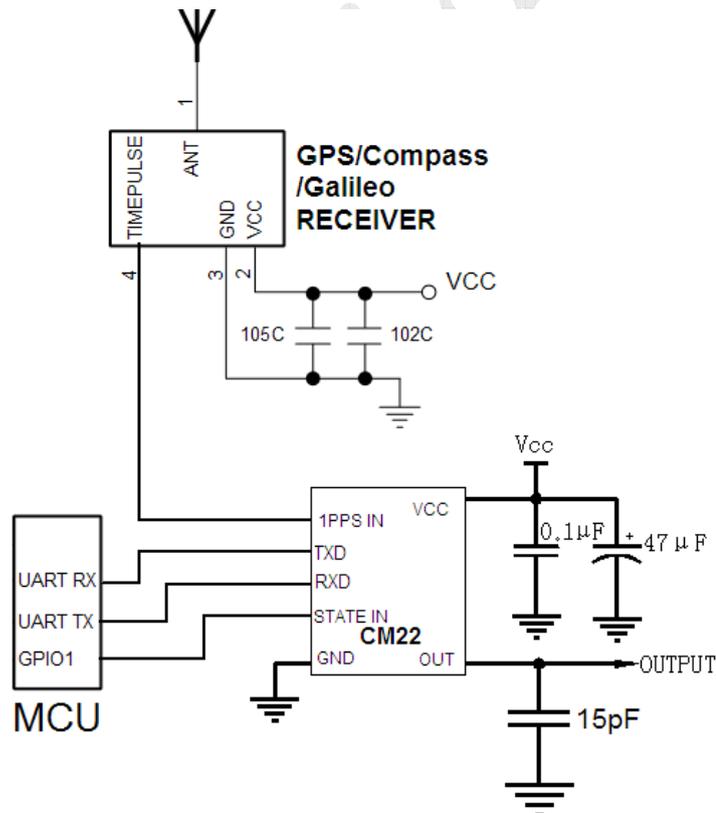
Note1: Tolerance ± 0.2 mm without mark

Note2: The first two xx representative: week
After two xx representative: year



| PIN DEFINITION | | | |
|----------------|-----------------|--|---|
| PIN | NAME | DESCRIPTION | |
| 1 | State INPUT | H: Lock | The work state is set to normal operation when the state input is high. |
| | | L: Holdover | The work state is set to hold over when the state input is low. |
| 2 | VCC | Power supply: 3.13V to 3.47V | |
| 3 | GND | GND | |
| 4 | PP1S Input | PP1S reference input | |
| 5 | RXD | Asynchronous serial data input. 9600-N-8-1. | |
| 6 | TXD | Asynchronous serial data output.9600-N-8-1. | |
| 7 | 1PPS OUTPUT | The clock module 1PPS output . | |
| 8 | 10.00MHz OUTPUT | 10.00MHz OCXO frequency output, synchronization with PP1S reference. | |

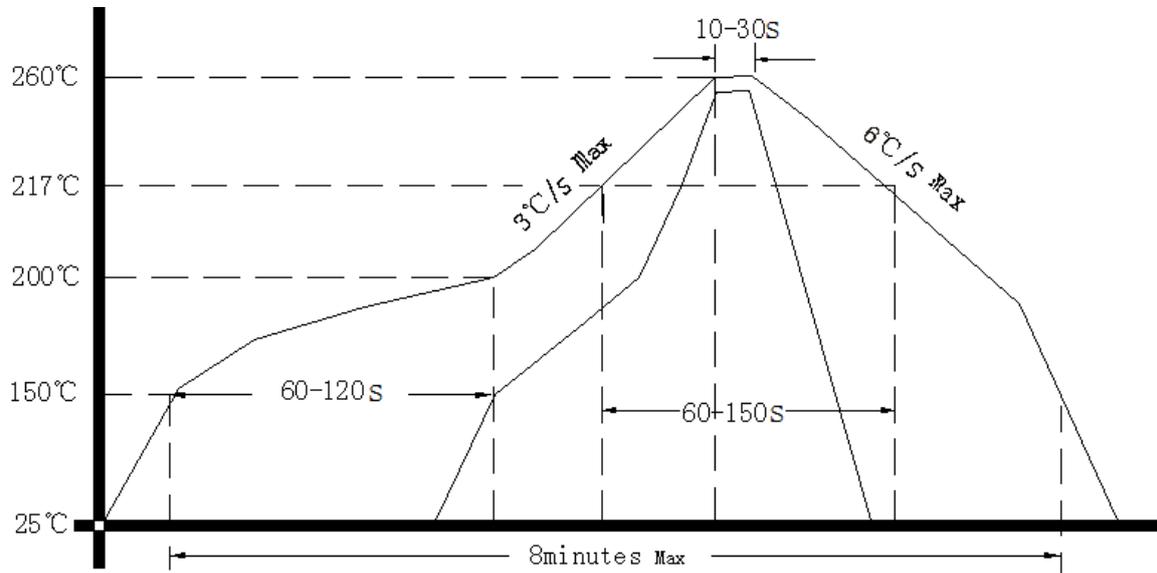
5. Typical Application



Satellite receiver offer 1PPS signal to the clock module CM22B.
 The MCU monitor the work state of CM22B.
 The CM22B power of 3.3V.



6. Reflow Soldering Curve (RoHS)



7. Package (mm)

