

Customer Code : _____

DATASHEET

DAPU P/N: CM22B-J328-10.00MHz

Customer P/N: _____

DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2019.03.13			

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Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	<i>Amway</i>	2014.12.17
1.1	Modified the 1st page “Full Package Storage” added “Rise/Fall Time”, “Holdover Capability- Test Condition”, “Warm up current” and “Warm-Up- Test Condition” changed	<i>Amway</i>	2015.11.06
1.2	“Mechanical Structure” changed	<i>Amway</i>	2016.03.06
1.3	The “Pulse Width” changed	<i>Amway</i>	2019.03.13



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			10	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	



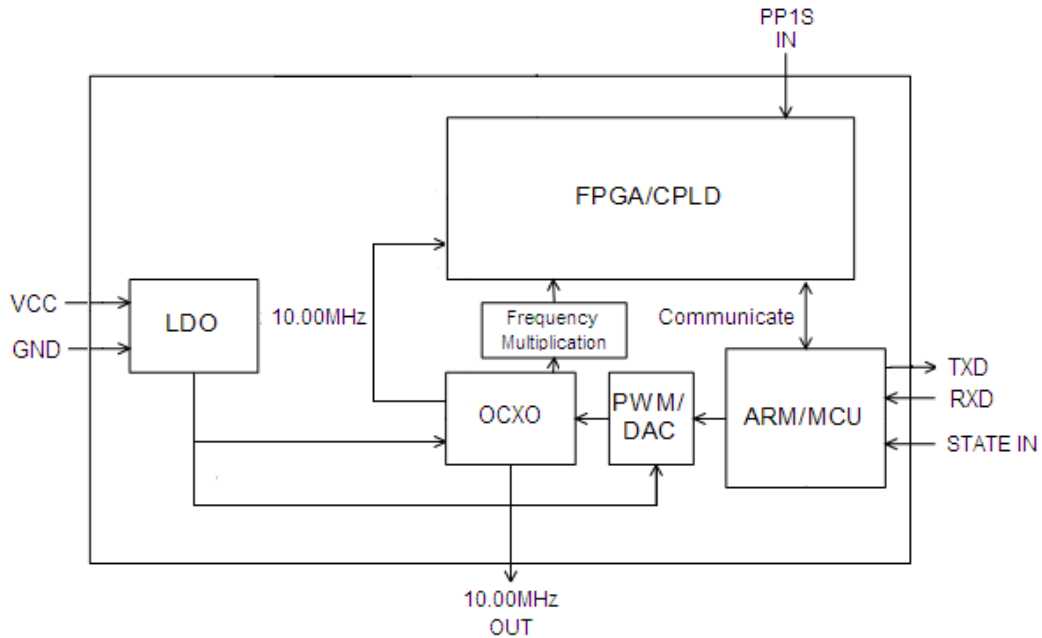
						10.00MHz, after power on 5mins with GPS lock.	
	Aging Tolerance Per Day	-5		+5	$\times 10^{-9}$	Constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_{CC}=3.3\text{V}$, after 30days of operation.	
	Aging Tolerance 1 Year	-0.5		+0.5	$\times 10^{-6}$		
	Phase Noise (All 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 1hour and lock 1 hour. 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			800	mA		
	Steady Consumption			300	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		1.0		ms		
	Accuracy	-200		+200	ns	24 hours average when locked to	



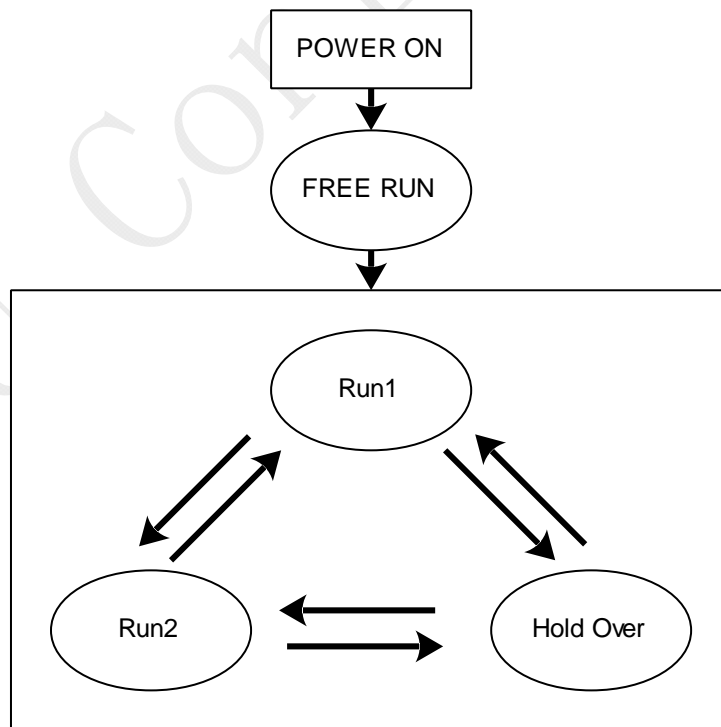
						1PPS after power on 2days.
	Connector	Pin 7				
Serial Interfaces	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Rx high-level Input Voltage (VH)	2.4		3.4	V	
	Rx low-level Input Voltage (VL)			0.4	V	
	Tx high-level Output Voltage (VH)	2.4		3.4	V	
	Tx low-level Output Voltage (VL)			0.4	V	
	Serial Protocol	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.					
Full Package Storage	Relative humidity (%)	20%~70%				
	Temperature (°C)	-10~35°C				



2. Functional Block Diagram



3. Workflow Diagram



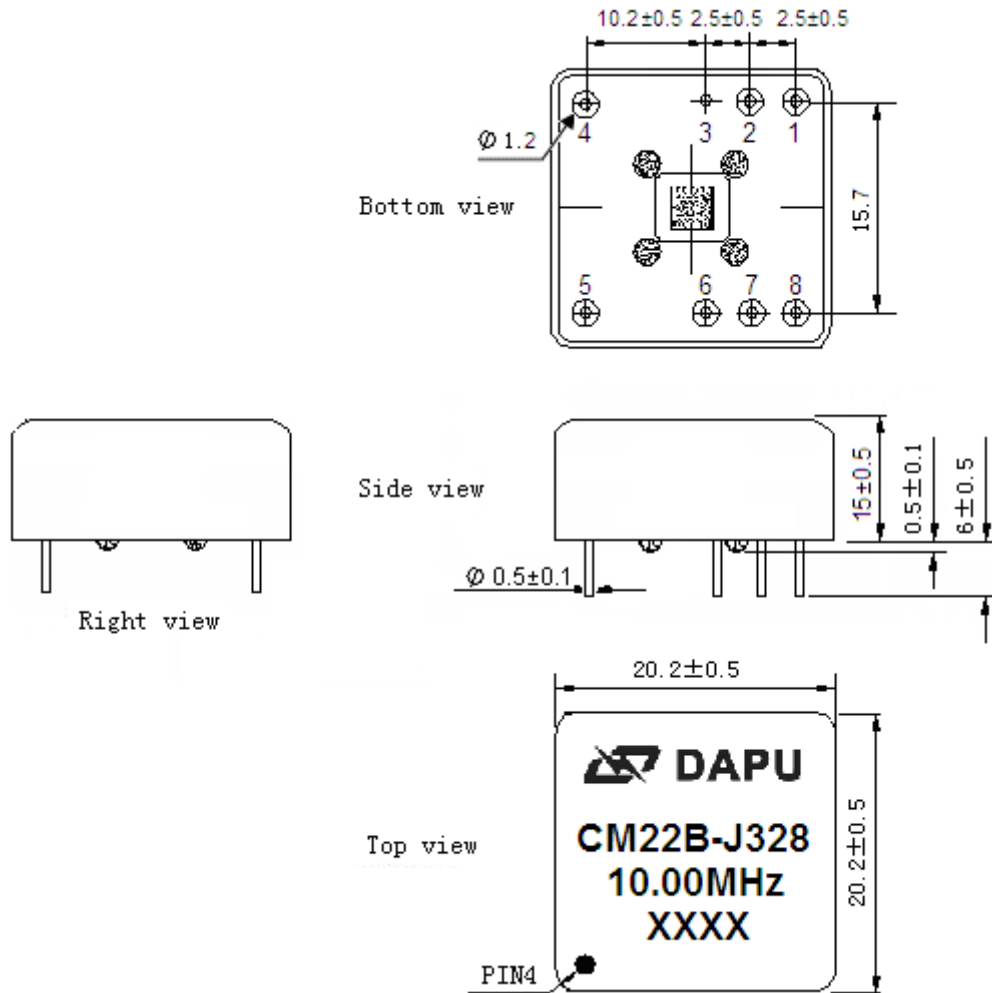
Run1: Fast track. Adjust the OXCO 10MHz output frequency quickly to track the 1PPS of 10MHz with 1PPS reference.
 Run2: Slow track. Adjust the OXCO 10MHz output frequency slowly when the phase error is in the define range.
 Hold Over: GPS 1PPS reference miss, an algorithm has been developed which enables 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)



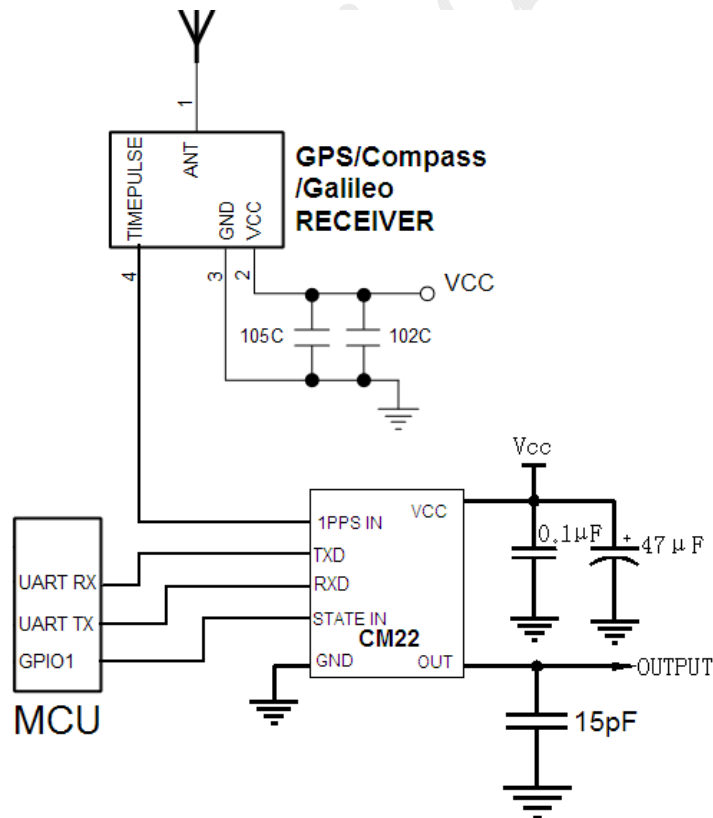
Note1: Tolerance ± 0.2 mm without mark

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.	

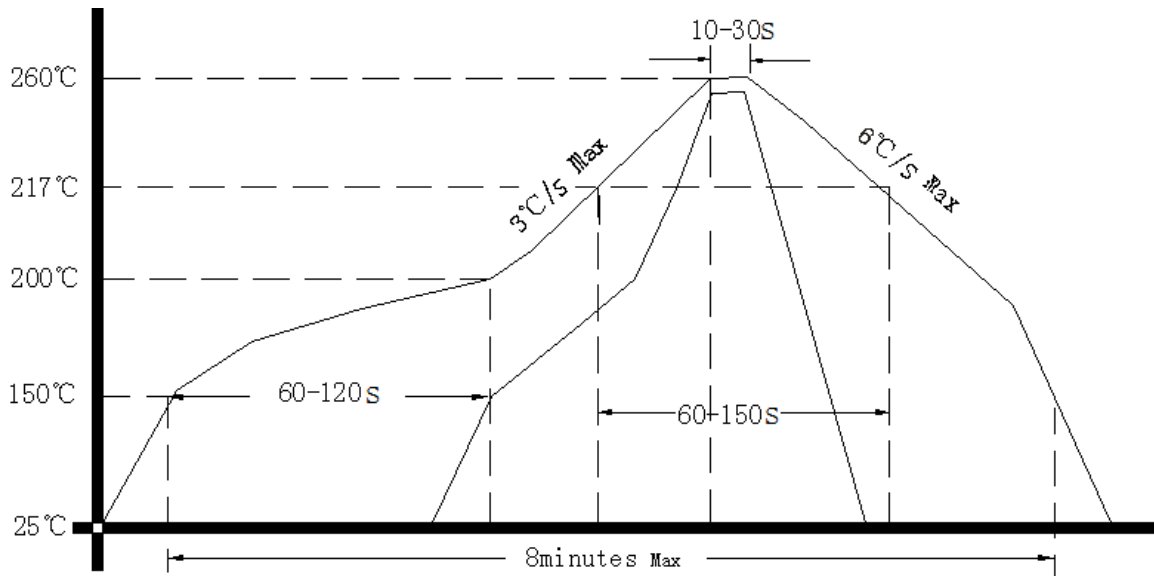
5. Typical Application



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)

