

Customer Code : \_\_\_\_\_

# DATASHEET

DAPU P/N: CM22B-J328-10.00MHz

Customer P/N: \_\_\_\_\_

DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2020.05.15			

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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	“Pulse Width” changed	<i>Amway</i>	2019.03.13
1.4	“Mechanical Structure” changed, Hight 15mm to 12.4mm; “Day aging”, 5ppb to 3ppb; “Temperature stability”, 10ppb to 5ppb; “Holdover Capability” changed, from 80us to 50us	<i>Amway</i>	2020.02.20
1.5	Change description error for Pin4 on Page 3: “1PPS Reference Output” to “1PPS Reference Input”; “High-Level Output Voltage” to “High-Level Input Voltage”; “Low-Level Output Voltage” to “Low-Level Input Voltage”; Change PP1S description on Page6: “PP1S” to “1PPS”,The “ESD Level” “Wave Soldering Curve” changed	<i>Amway</i>	2020.05.15



## 1. Electrical Parameters

	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
1 PPS Reference Input	Waveform	HCMOS				
	High-Level Input Voltage ( $V_{IH}$ )	2.4		3.4	V	
	Low-Level Input Voltage ( $V_{IL}$ )			0.4	V	
	Pulse Width	10			$\mu$ 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	-5		5	$\times 10^{-9}$	$T_A$ varied from -40°C to 85°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°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°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.	



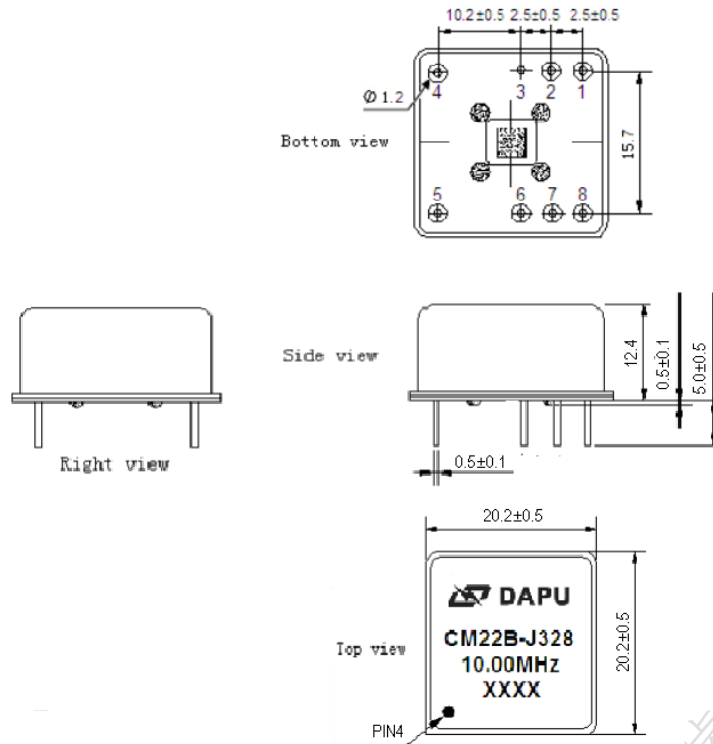
	Aging Tolerance Per Day	-3		+3	$\times 10^{-9}$	Constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}$ , $V_{CC}=3.3\text{V}$ , after 30days of operation.	
	Aging Tolerance 1 Year	-0.5		+0.5	$\times 10^{-6}$		
	Phase Noise (All conditions)			-100	-90	dBc/Hz	10Hz
				-130	-120		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	-50		+50	$\mu\text{s}$	$\Delta T = \pm 2^\circ\text{C}$ , 24 hours holdover after turn on 1hour and lock 1 hour. Temperature variable speed less than $1^\circ\text{C}$ 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	@ $25^\circ\text{C}$	
	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 $\Omega$	
	Low-level Output voltage ( $V_{OL}$ )			0.4	V		
	Pulse Width		1		ms		
	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 (V <sub>IH</sub> )	2.4		3.4	V	
	Rx low-level Input Voltage (V <sub>IL</sub> )			0.4	V	
	Tx high-level Output Voltage (V <sub>IH</sub> )	2.4		3.4	V	
	Tx low-level Output Voltage (V <sub>L</sub> )			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; JEDEC JESD22-A115C.				
	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				



### Mechanical Structure(mm)



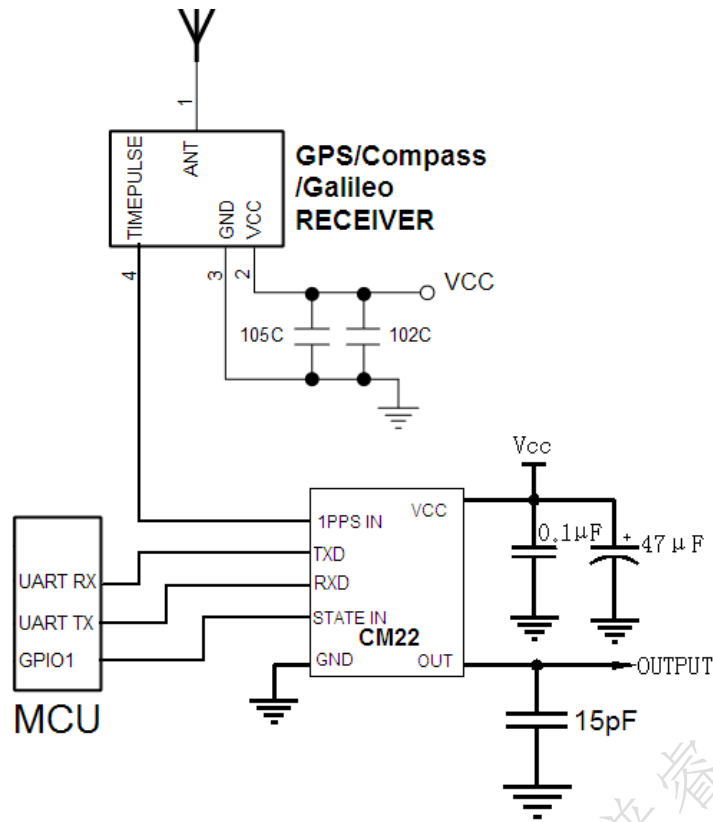
**Note1:** Tolerance  $\pm 0.3$ mm without mark

**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	1PPS Input	1PPS 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 1PPS reference.



## 2. Typical Application

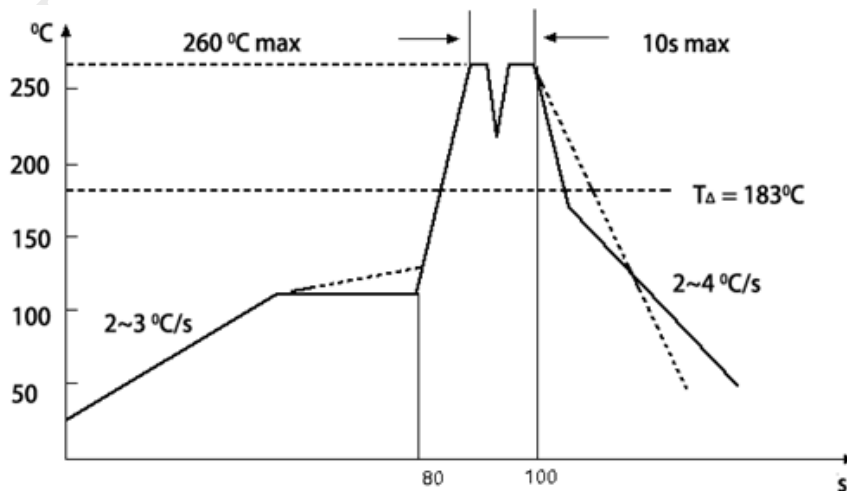


Satellite receiver offer 1PPS signal to the clock module CM22B.

The MCU monitor the work state of CM22B.

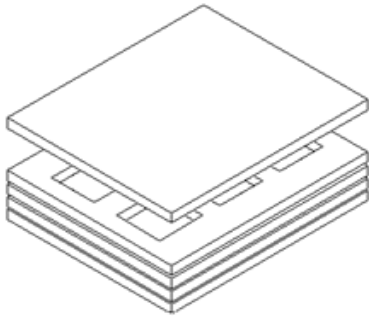
The CM22B power of 3.3V.

## 3. Wave Soldering Curve (RoHS)

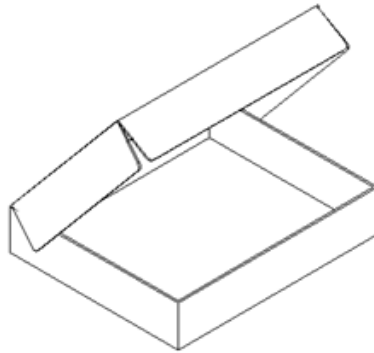




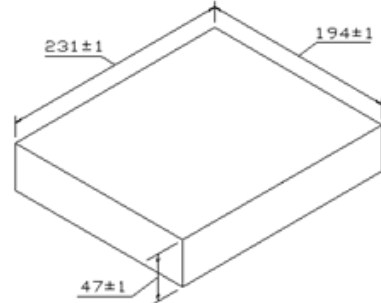
#### 4. Package (mm)



Buffer material



Cardboard  
Max18pcs. circulator



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