

Travelling Merchant: \_\_\_\_\_

# DATASHEET

Standard: CM55F-F129-10.00MHz

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

Plot			The Label
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2014.03.14			

## Guangdong Dapu Telecom Technology Co.,Ltd

Bldg13-16,.N.Ind.Zone,SSL Industry Park, GuangDong City, Guangdong Province, China

TEL: 0086-0769-88010888 FAX: 0086-0769-81800098



### Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	<i>Amway</i>	2014.03.14



## 1、Electrical Parameters

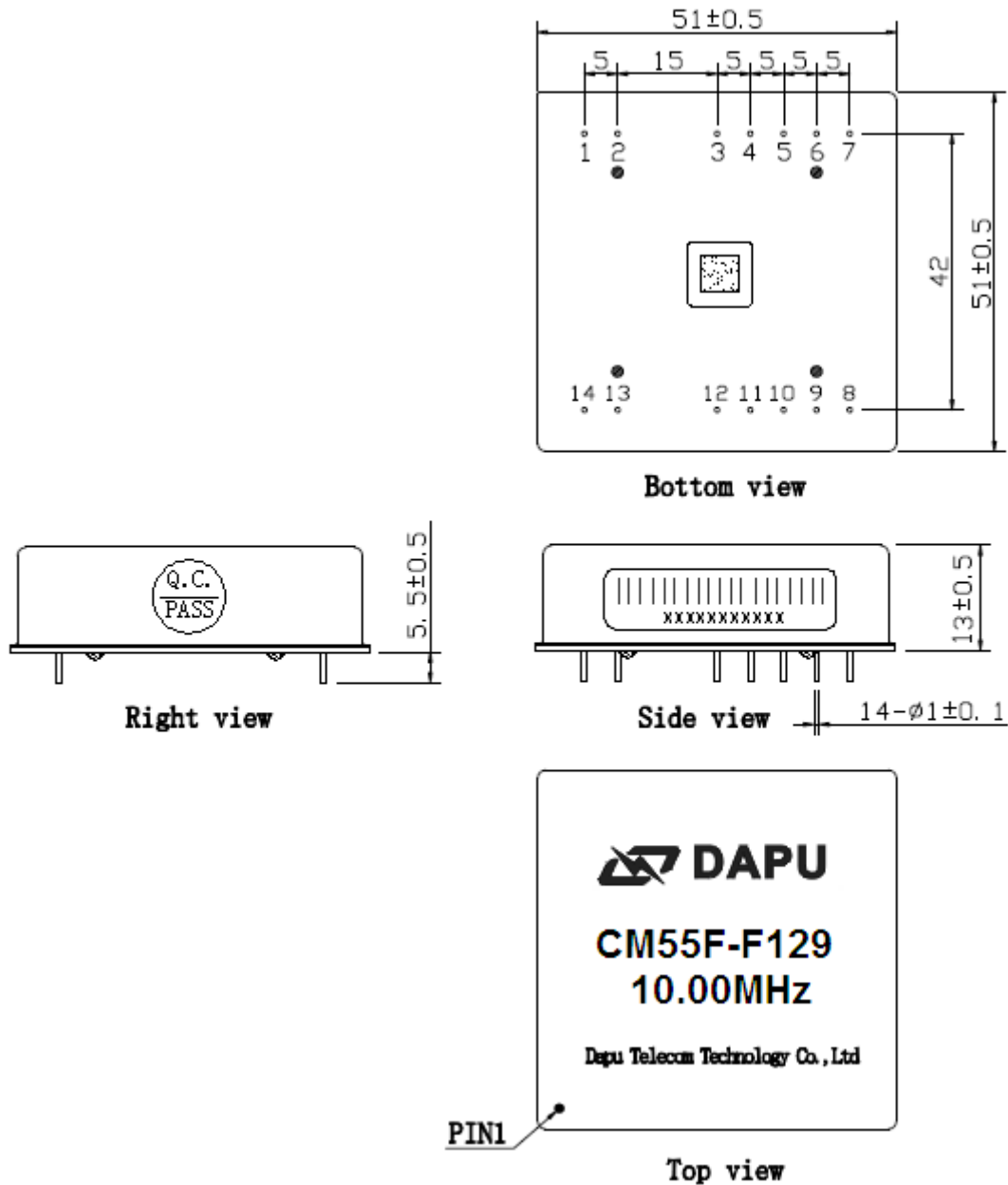
	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
1 PPS Reference Input	Waveform	HCMOS					
	High-Level Output Voltage (V <sub>IH</sub> )	2.7			Vdc	50 Ohms	
	Low-Level Output Voltage (V <sub>IL</sub> )			0.4	Vdc		
	Pulse Width	10			uSec		
	Connector	Pin 10					
	State Input	Parameters	Min.	Typ.	Max.	Unit.	
Lock Enable		2.7			Vdc	<5mA Load	
Lock Disable				0.4	Vdc	<5mA Load	
Connector		Pin 8					
RF Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Nominal Frequency		10		MHz		
	Waveform	HCMOS					
	High-level Output voltage (V <sub>OH</sub> )	2.7			Vdc	<5mA Load	
	Low-level Output voltage (V <sub>OL</sub> )			0.4	Vdc	<5mA Load	
	Rise/Fall Time			8	nSec	<5mA Load	
	Duty Cycle	45	50	55	%	<5mA Load	
	Accuracy	-1		1	E-12	24 hour average when locked to 1 PPS	
	Short-term stability			2	E-11	Temperature stability,no EMI/EMC or other interference,test after power for 1 hour ref. to 25°C; 1s, using PN9000 equipment.	
	Phase noise (All conditions)			-118		dBc/Hz	@ 10Hz offset
				-138		dBc/Hz	@ 100Hz offset
				-148		dBc/Hz	@ 1KHz offset
				-150		dBc/Hz	@ 10KHz offset
				-150		dBc/Hz	@ 100KHz offset
			-150		dBc/Hz	@ 1MHz offset	
Connector	Pin 14						
Holdover Capability	Holdover Time	Min.	Typ.	Max.	Unit.		
	24 hours	-8		+8	uSec	ΔT=±5°C, 24 hours holdover after turn on 7days and lock 3days. Temperature variable speed less than 1°Cper minute	



Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	
	Supply voltage	4.75	5.0	5.25	Vdc	
	Current consumption			1400	mA	During Warm-up
				600	mA	During steady state operation @25°C
	AC ripple			50	mVpk-pk	10Hz to 1MHz
Connector	Pin 3					
1 PPS Output Waveform Characteristics	Parameters	Min.	Typ.	Max.	Unit.	
	Waveform	HCMOS				
	High-Level Output Voltage(V <sub>OH</sub> )	2.7			Vdc	50 Ohms
	Low-level Output voltage (V <sub>OL</sub> )			0.4	Vdc	
	Pulse width	10			uSec	
	Connector	Pin 12				
State Output	Parameters	Min.	Typ.	Max.	Unit.	
	Lock	2.7			Vdc	<5mA Load
	Holdover			0.4	Vdc	<5mA Load
	Connector	Pin 5				
Environmental Conditions	Parameter	Conditions				
	Operating temperature	-20°C to +75°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、Mechanical Structure(mm)



**Note1:** Tolerance  $\pm 0.2$ mm without mark

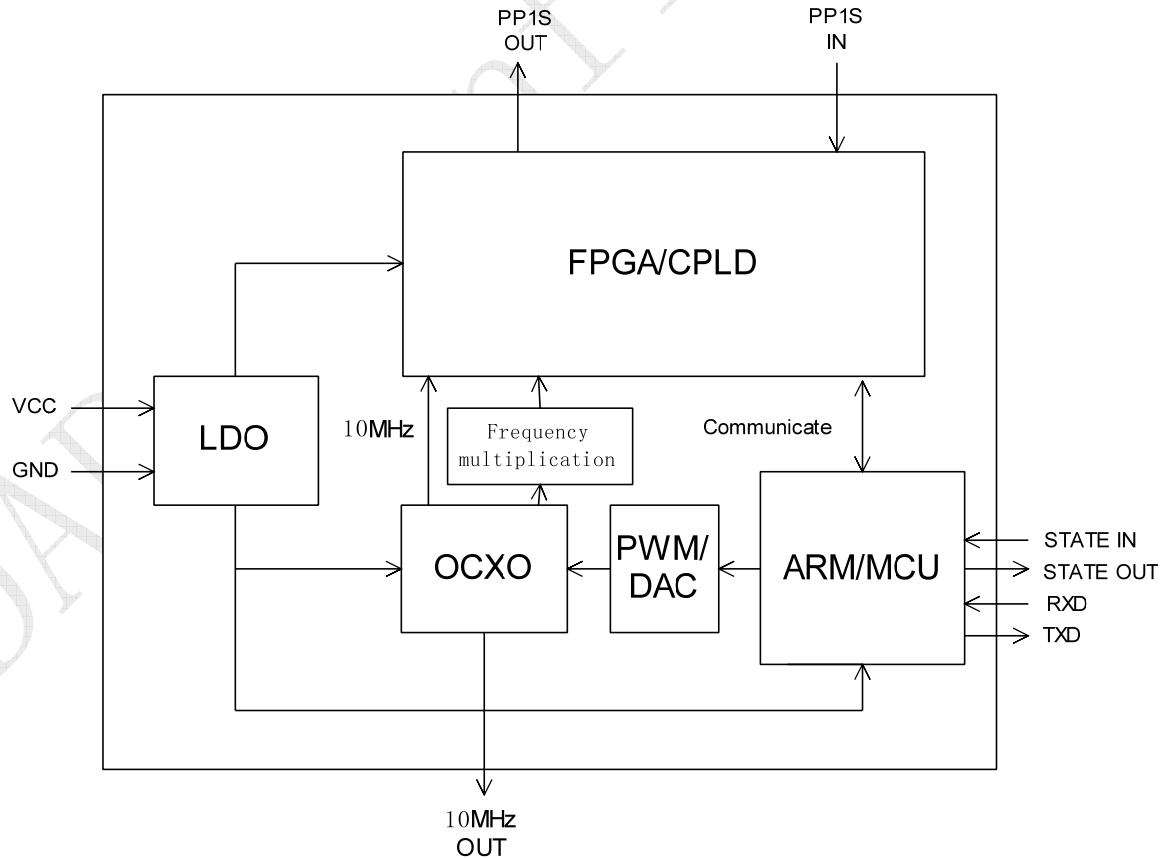
**Note2:** Referential Weight  $52 \pm 5$ g



PIN DEFINITION

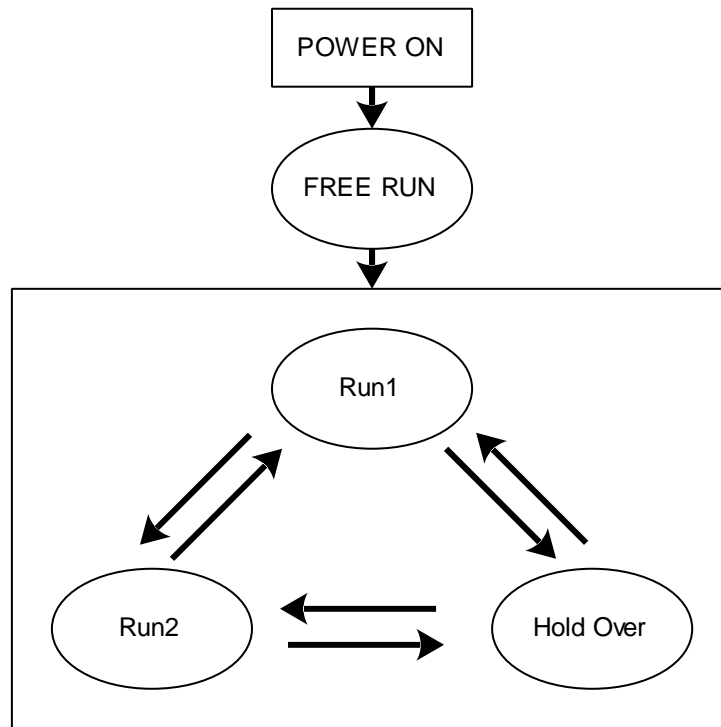
PIN	Name	DESCRIPTION
3	Vcc +5.0Vdc	Power supply input,4.75V to 5.25V.
5	Lock OUTPUT	State output. Output high level when the work state is Run2(See section 4),others low level.
6	RX INPUT	Asynchronous serial data input.9600-N-8-1.
7	TX OUTPUT	Asynchronous serial data output(See section 5).9600-N-8-1.
8	State INPUT	H: Lock Enable The work state is set to normal operation when the state input is high.
		L: Lock Disable The work state is set to hold over when the state input is low.
9	NC	Not connected.
10	PP1S INPUT	PP1S reference input.
12	PP1S OUTPUT	The clock module PP1S output.
14	10MHz OUTPUT	10MHz OCXO frequency output.
1、 2	NC	Not connected.
4、 11、 13	GND	GND

3、 Functional Block Diagram





#### 4、Workflow Diagram



Run1: Fast track. Adjust the OCXO 10MHz output frequency quickly to track the PP1S of 10MHz with PP1S reference.  
Run2: Slow track. Adjust the OCXO 10MHz output frequency slowly when the phase error is in the define range.  
Hold Over: GPS PP1S 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 PP1S reference anyway.



## 5、 The Product Test Output Message

Example:

\$PDP,00,0,F,Q,-3095,32768.0000,32768.0000,000,000,00000.0000,00000.0000,00000.0000,00000.0000,3-23,+000.0000,-000,www.dptel.com,1.1,2011-05-16\*55

Notes:

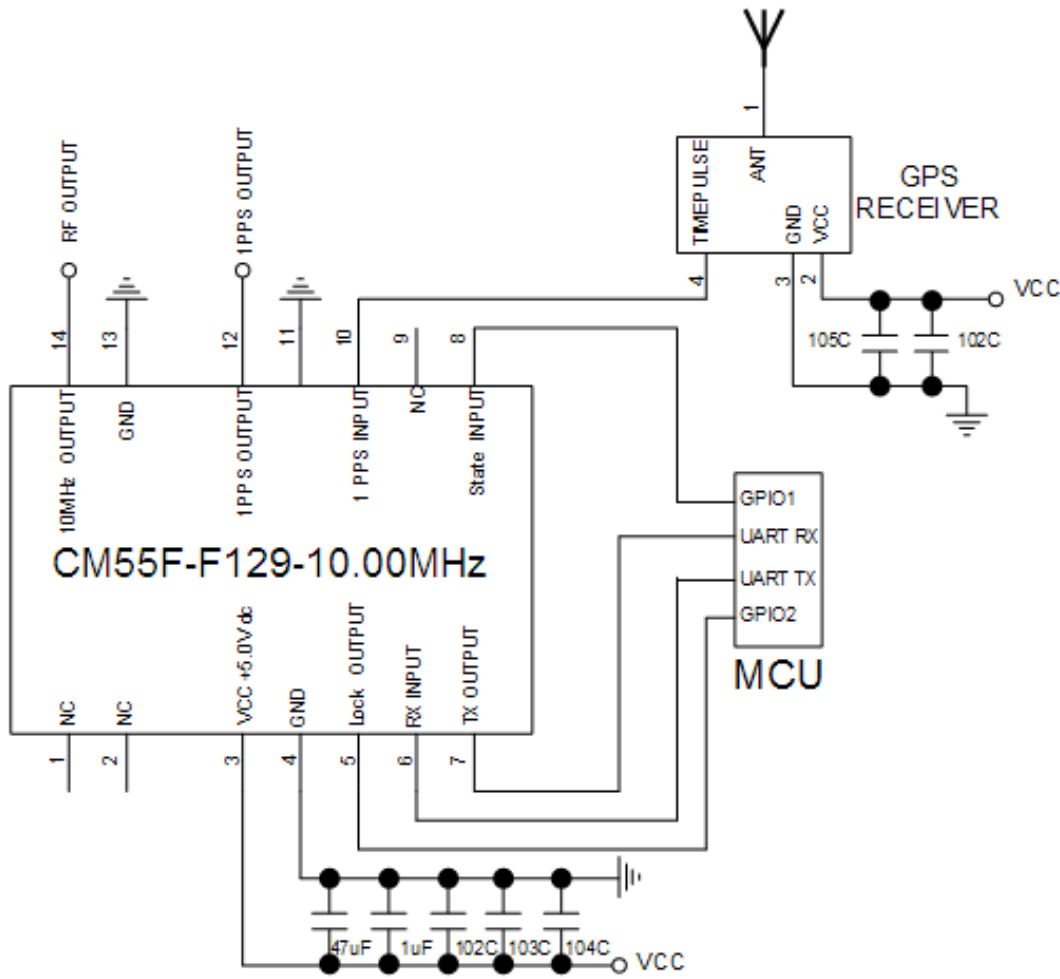
In the Format column, c stand for char ,d stand for digit, s stand for sign.

Field No.	Name	Format	Description	Length (byte)
0	\$PDP	\$ccc	Message ID, DAPU Telecom Technology protocol header	4
1	No	dd	Message No.	2
2	TxRxFlag	d	The transmit and receive flag.(0: upper computer transmit; 1: upper computer receive)	1
3	CStatus	c	Current status.(F: 3 mins warm-up; L: Lock; H: Hold over)	1
4	TrackStatus	d	Track status (Q: fast track;1: slow track;S: slow track over 1 hour;S: track over 48 hours)	1
5	cPHDiff	sddd	Current phase difference	5
6	cPWM1	dddd.dddd	Current PWM1 (Voltage-controlled value1)	10
7	cPWM2	dddd.dddd	Current PWM2 (Voltage-controlled value2)	10
8	SYNCNT	ddd	The synchronous times	3
9	HCNT	ddd	Hours after enter slow track	3
10	HPAVG	dddd.dddd	The average of the PWM in the last 1 hour	10
11	VCH1	dddd.dddd	Voltage-controlled compensation value every 1 hour	10
12	HPMOD	dddd.dddd	The Module PWM Value	
13	VCM10	dddd.dddd	Voltage-controlled compensation value every 10 minutes	10
14	POS	d-dd	The position of the product.(Layer-No), just for the inner test.	4
15	inT	sddd.dddd	NA	9
16	TcPHDiff	sddd	The product current phase difference	5
17	Website		www.dptel.com	13
18	Version	d.d	version	3
19	Date	ddd-dd-dd	Date	10
20		dd	55	2
21	END		<CR><LF>	2





## 6、Aplication Information



GPS RECEIVER supplies 1PPS signal to the clock module CM55F.

The MCU Monitors the work state of CM55F.

The CM55F is operated with a supply of 5V.

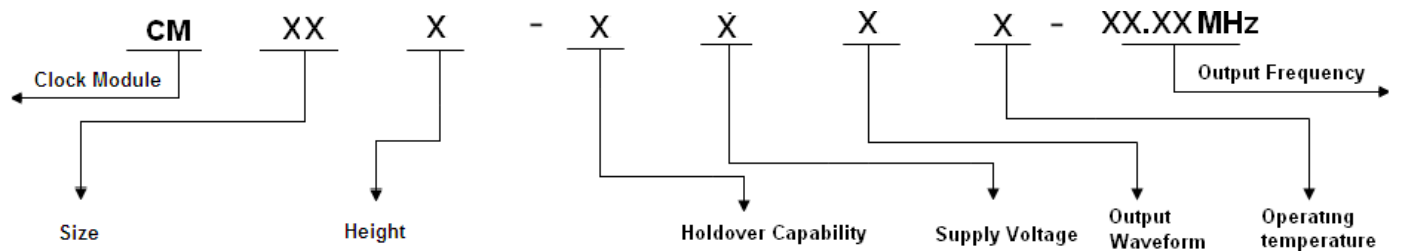
**Note1:**Power on more than seven days is necessary for the OCXO drift fast in the first four days.

**Note2:**The adptive model can be built with at least two days good GPS signal. Every time power off will lose the model.

**Note3:**The work state is set to hold over when the state input is low, no matter the GPS PPIS effective or not.

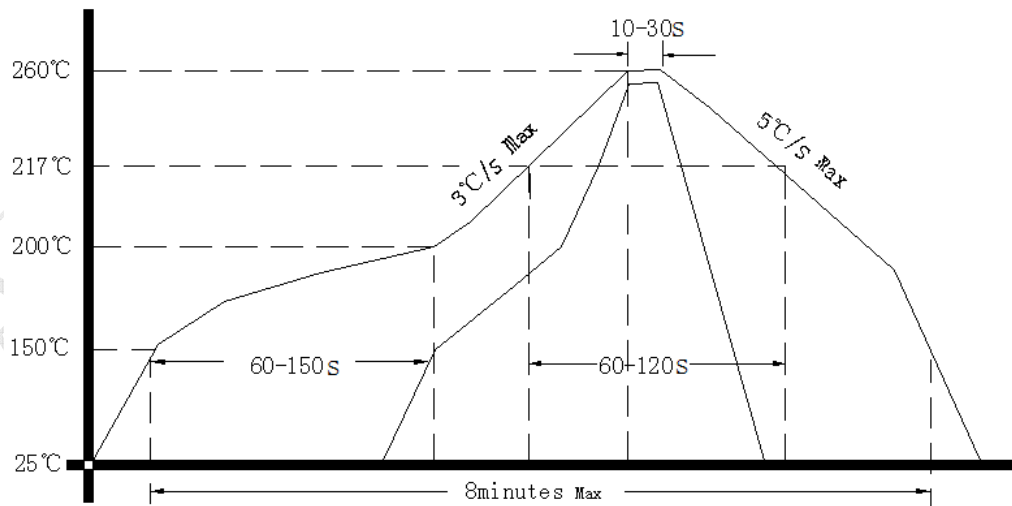


## 7、 Coding Rules



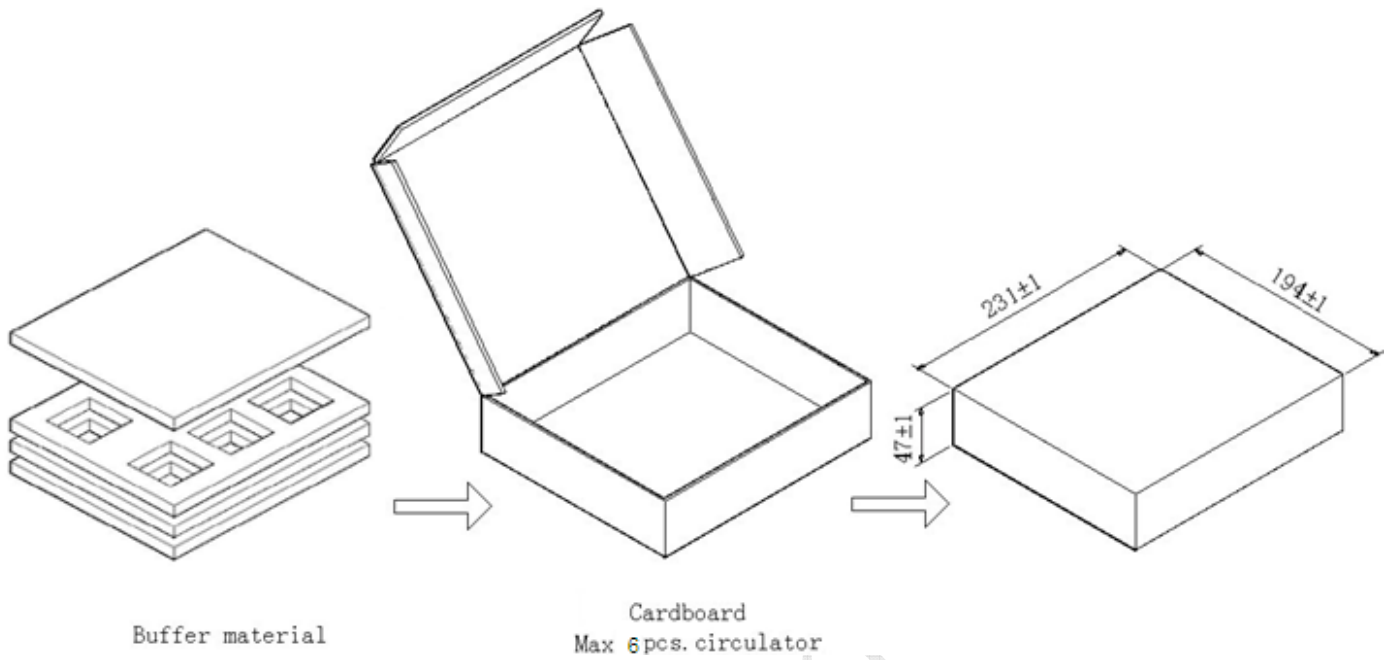
Size	Height	Holdover Capability	Supply Voltage	Output Waveform	Operating temperature
55 50×50 (mm)	A 19mm, single Freq, external GPS receiver	A ±1.5μs 0°C~60°C 24hours	1 5.0V	1 Sine Wave	1 0°C~80°C
66 60×60 (mm)	B 19mm, single Freq, internal GPS receiver	B ±3.0μs 0°C~60°C 24hours		2 HCMOS	2 -10°C~70°C
65 65×65 (mm)	C 19mm, single Freq, internal dual-mode receiver	C ±8.0μs 0°C~60°C 24hours			9 -20°C~75°C
	F 13mm, single Freq, external GPS receiver	D ±1.5μs ΔT=±5°C 24hours			
	G 13mm, single Freq, internal GPS receiver	E ±3.0μs ΔT=±5°C 24hours			
	H 13mm, dual-Freqs, internal GPS receiver	F ±8.0μs ΔT=±5°C 24hours			
	K 13mm, single Freq, internal dual-mode receiver	G ±1.5μs ΔT=±5°C 8hours			
	L 13mm, dual-Freqs, internal dual-mode receiver	H ±3.0μs ΔT=±5°C 8hours			
		I ±8.0μs ΔT=±5°C 8hours			
		K ±1.5μs ΔT=±2°C 24hours			
		M ±3.0μs ΔT=±2°C 24hours			
		N ±8.0μs ΔT=±2°C 24hours			
		O ±1.5μs ΔT=±2°C 8hours			
		P ±3.0μs ΔT=±2°C 8hours			
		Q ±8.0μs ΔT=±2°C 8hours			

## 8、 Reflow Soldering Curve (RoHS)





## 9、Package (mm)



DAPU Config