

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

# DATASHEET

Standard: CM55F-T129-10.00MHz-A/B/CP/N: CM-0001

Plot			The Label
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2022.01.15			

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## 1、Electrical Parameters

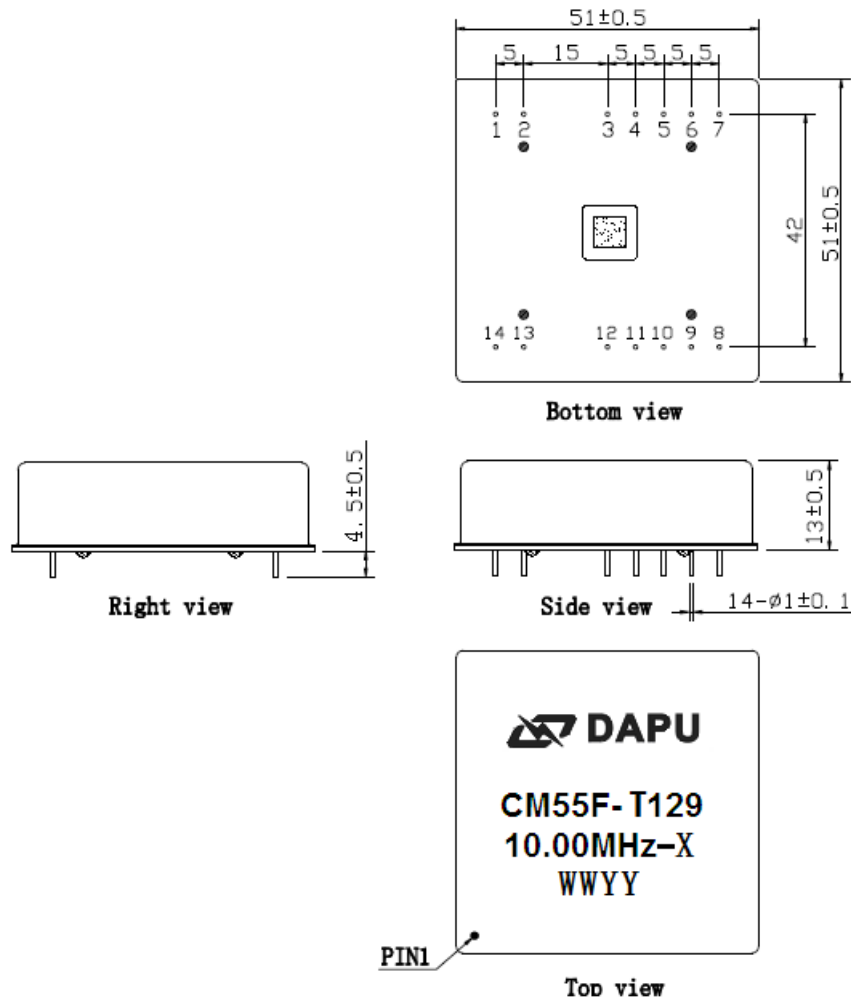
	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
1 PPS Reference Input	Waveform	HCMOS				50 Ohms	
	High-Level Output Voltage (V <sub>IH</sub> )	2.0			Vdc		
	Low-Level Output Voltage (V <sub>IL</sub> )			0.8	Vdc		
	Pulse Width	10			uSec		
	Connector	Pin 10					
	State Input	Parameters	Min.	Typ.	Max.	Unit.	
Lock Enable		2.0			Vdc	<5mA Load	
Lock Disable				0.8	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
Connector	Pin 14						
Holdover Capability	Part Number	Min.	Typ.	Max.	Unit.	ΔT=±5°C, 1 hours holdover after turn on and lock 1 day. Temperature variable speed less than 1°C per minute	
	CM55F-T129-10.00MHz-A	-100		+100	ns		
	CM55F-T129-10.00MHz-B	-200		+200			
	CM55F-T129-10.00MHz-C	-500		+500			
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	
	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; 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				



## 2、 Mechanical Structure(mm)

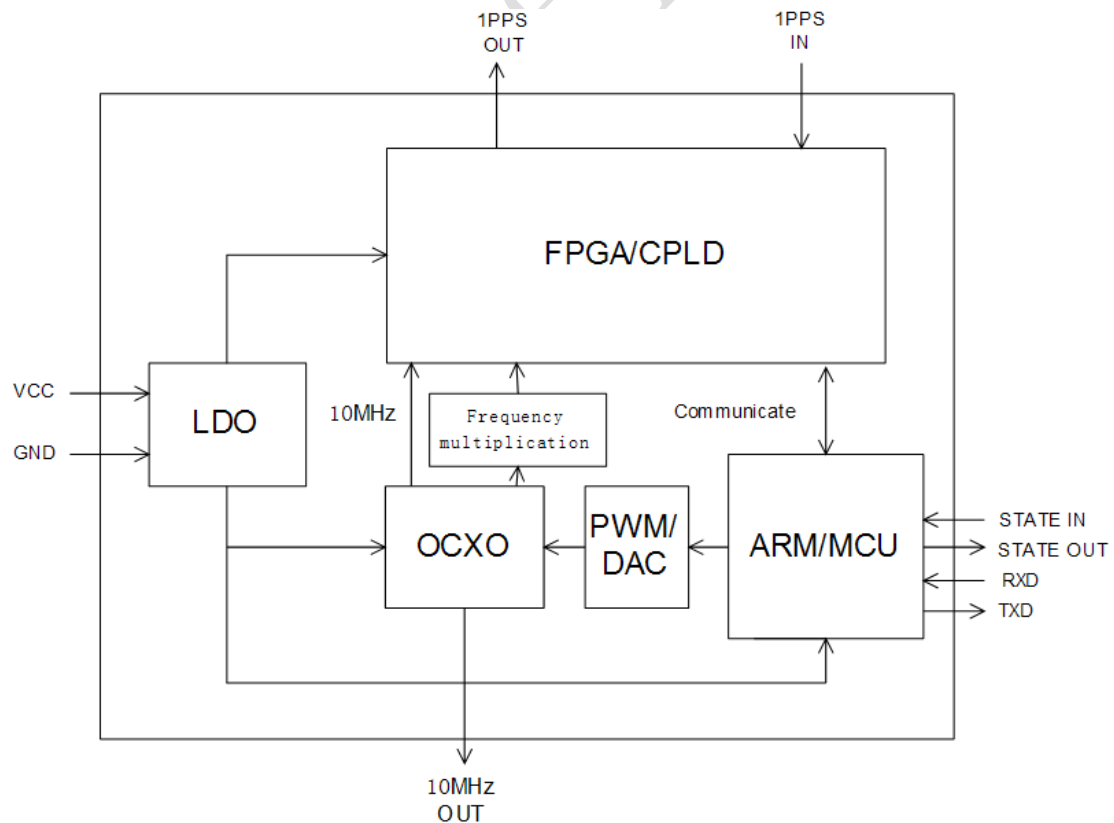


- Note1:** Tolerance  $\pm 0.2$ mm without mark
- Note2:** The first two WW representative: week  
After two YY representative: year
- Note3:** Referential Weight  $52 \pm 5$ g
- Note4:** -X: -A, -B, or -C



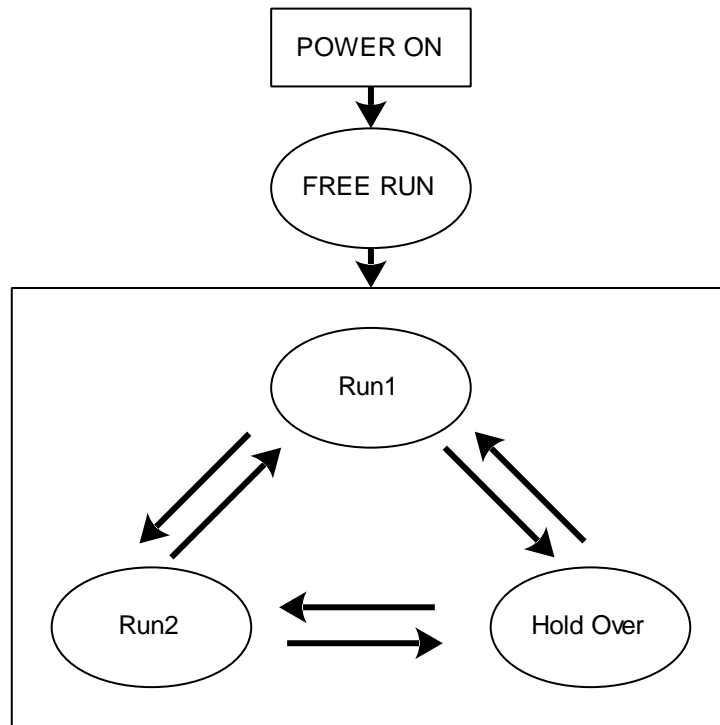
PIN DEFINITION			
PIN	Name	DESCRIPTION	
3	Vcc +5.0Vdc	Power supply input,4.75V to 5.25V.	
5	Lock OUTPUT	State output. Output high level when the work state is Run2(See section 4),others low level.	
6	RX INPUT	Asynchronous serial data input.9600-N-8-1.	
7	TX OUTPUT	Asynchronous serial data output(See 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	1PPS INPUT	1PPS reference input.	
12	1PPS OUTPUT	The clock module 1PPS 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 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.
- Holdover: 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.



## 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,-0000,www.dptel.com,1.1,2011-05-16\*55

Notes:

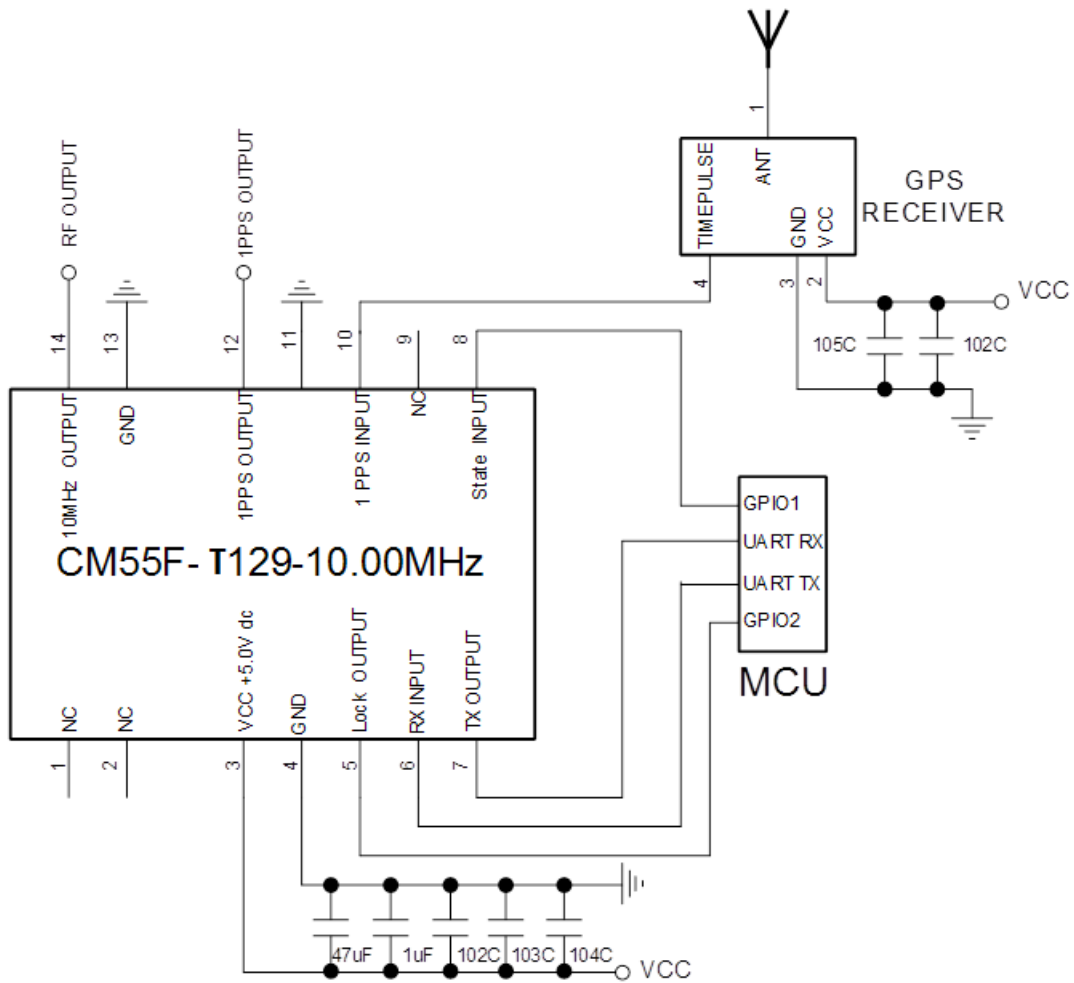
In the Format column, c stand for char ,d stand for digit, s stand for sign.

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: Holdover)	1
4	TrackStatus	d	Track status (Q: fast track; S: slow track)	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	dddd-dd-dd	Date	10
20		dd	55	2
21	END		<CR><LF>	2





## 6、Application 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.

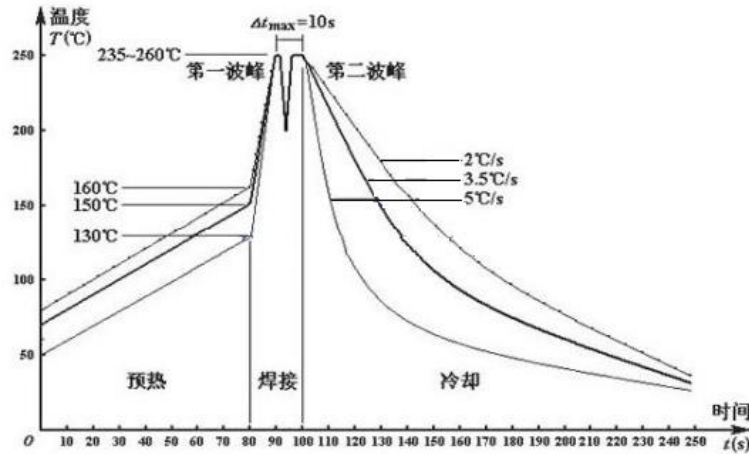
**Note1:** Power on more than seven days is necessary for the OCXO drift fast in the first four days.

**Note2:** The adaptive 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 1PPS effective or not.



### 8、 Wave Soldering Curve (RoHS)



### 9、 Package (mm)

