

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

# DATASHEET

DAPU P/N: CM55F-E128-19.20MHz

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

DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2017.04.28			

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## 1. Electrical Parameters

1 PPS Reference Input	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Waveform	HCMOS					
High-Level Output Voltage ( $V_{IH}$ )	2.7				V		
Low-Level Output Voltage ( $V_{IL}$ )				0.4	V		
Pulse Width	10				$\mu$ s		
Connector	Pin 10						
State Input	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	High	2.7			V	<5mA Load	
	Low			0.4	V	<5mA Load	
	Connector	Pin 8					
RF Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Nominal Frequency	19.20			MHz		
	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	< 5mA Load	
	Duty Cycle	45	50	55	%	< 5mA Load	
	Accuracy	-1		+1	$\times 10^{-12}$	24 hours average when locked to 1 PPS	
	Short-term Stability			0.02	$\times 10^{-9}$	Temperature stability, no EMI/EMC or other interference, test after power for 1 hour ref. to 25°C; 1s, using PN9000 equipment.	
	Aging Tolerance Per Day	-0.2		+0.2	$\times 10^{-9}$	$V_{cc}, T_A$ constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}, V_{cc}=5.0\text{V}$ , in FREE RUN condition and after 30 days of operation.	
	Aging Tolerance 1 Year	-0.01		+0.01	$\times 10^{-6}$		
	Phase Noise (All conditions)			-85	-75	dBc/Hz	10Hz
				-115	-105		100Hz
				-138	-133		1KHz
			-145	-140	10KHz		
			-150	-145	100KHz		
			-150	-145	1MHz		
Connector	Pin 14						



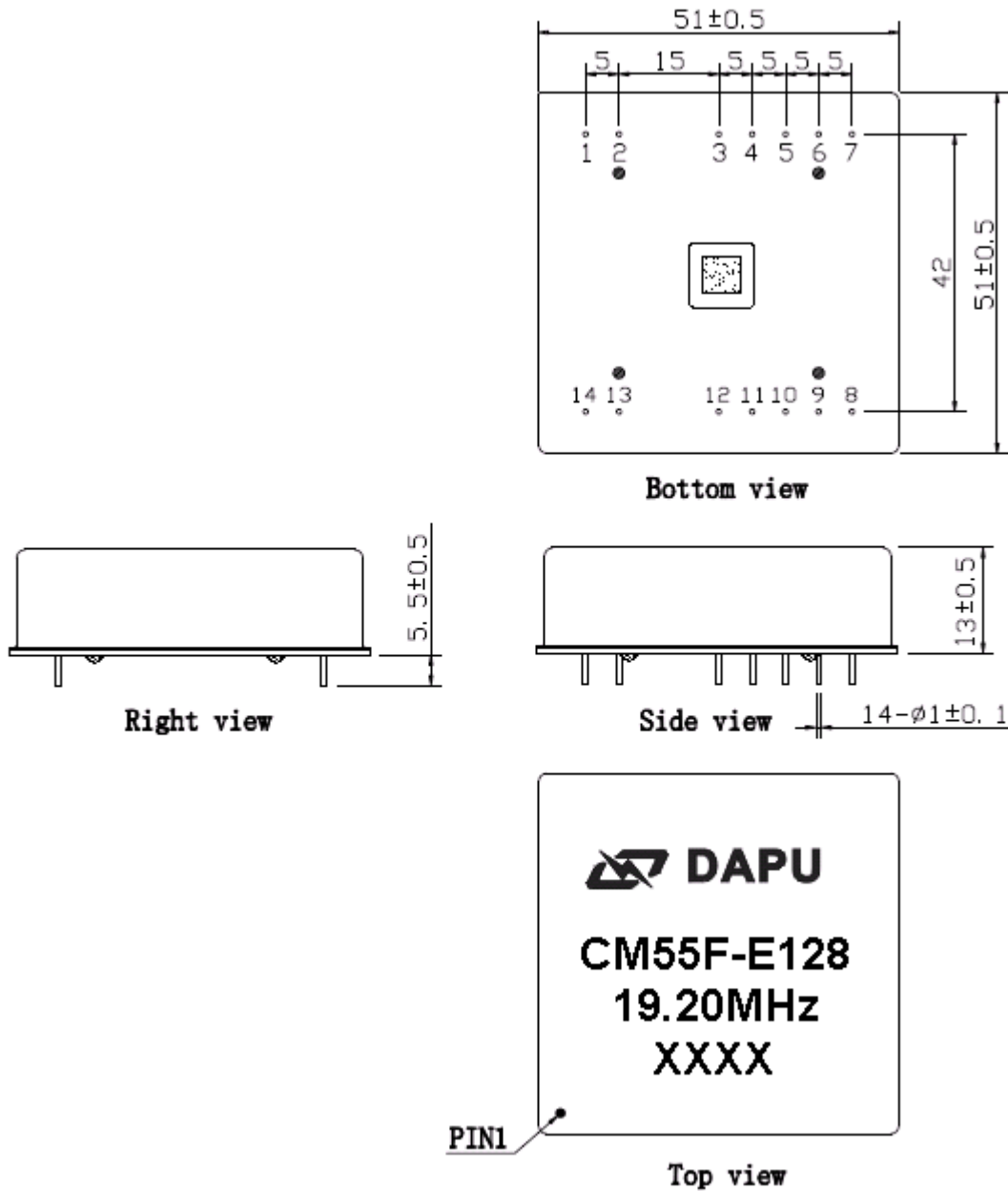
Holdover Capability	Holdover Time	Min.	Typ.	Max.	Unit.	Test Condition	
	24hours	-3.0		+3.0	μs	ΔT=±5°C, 24hours holdover after turn on 2days and lock 2days. Temperature variable speed less than 1°Cper minute	
	24 hours	-24		24	μs	ΔT=±5°C, 24hours holdover after turn on 5 hours and lock 5hours. Temperature variable speed less than 1°Cper minute	
Holdover Capability	Holdover Capability	Min.	Typ.	Max.	Unit.	Test Condition	
	4.7μs	9			hour	ΔT=±5°C, 24hours holdover after turn on 5 hours and lock 5hours.	
	2.0μs	6			hour	Temperature variable speed less than 1°Cper minute	
Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Supply Voltage	4.75	5.0	5.25	V		
	Current Consumption			1700	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.	Test Condition	
	Waveform	HCMOS					
	High-Level Output Voltage(V <sub>OH</sub> )	2.7			V	<5mA Load	
	Low-level Output voltage (V <sub>OL</sub> )			0.4	V		
	Pulse Width	10			μs		
	Connector	Pin 12					
State Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Lock	2.7			V	<5mA Load	
	Free run/holdover			0.4	V	<5mA Load	
	Connector	Pin 5					
Serial Interfaces	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Rx high-level Input Voltage (V <sub>H</sub> )	2.7			V		



	Rx low-level Input Voltage (VL)			0.4	V	
	Tx high-level Output Voltage (VH)	2.7			V	
	Tx low-level Output Voltage (VL)			0.4	V	
	Serial Protocol	9600-N-8-1				
	Connector	Pin6 and Pin7				
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. Mechanical Structure(mm)



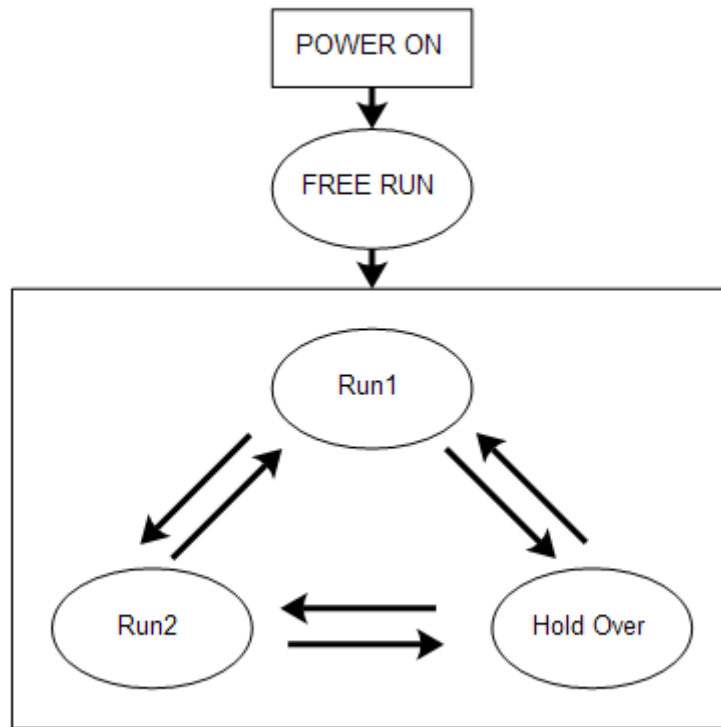
- Note1:** Tolerance  $\pm 0.20$ mm without mark
- Note2:** The first two xx representative: week  
After two xx representative: year
- Note3:** Referential Weight  $52 \pm 5$ g



PIN DEFINITION		
PIN	NAME	DESCRIPTION
3	VCC	Power supply input, 4.75V to 5.25V.
5	State OUTPUT	State output. Output high level when the CM is locked and stable, others low level.
6	RX INPUT	Asynchronous serial data input. 9600-N-8-1.
7	TX OUTPUT	Asynchronous serial data output.9600-N-8-1.
8	State INPUT	The work state is set to normal operation when the state input is high.
		The work state is set to DAC when the state input is low. The internal OCXO can be control by the external command through RX INPUT.
10	1PPS INPUT	1PPS reference input.
12	1PPS OUTPUT	The clock module 1PPS output .
14	19.20MHz OUTPUT	19.20MHz frequency output .
1、2、9	NC	Not connected.
4、11、13	GND	GND



### 3. Workflow Diagram



Run1: Fast track. Adjust the OCXO 19.20MHz output frequency quickly to track the 1PPS of 19.20MHz with reference.

Run2: Slow track. Adjust the OCXO 19.20MHz output frequency slowly when the phase error is in the define range.

Hold Over: The reference miss, an algorithm has been developed which enables adaptive modeling of the frequency stability of an OCXO with reference to a timing signal.

Free Run: Clock module power on without reference anyway.





## 4. 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

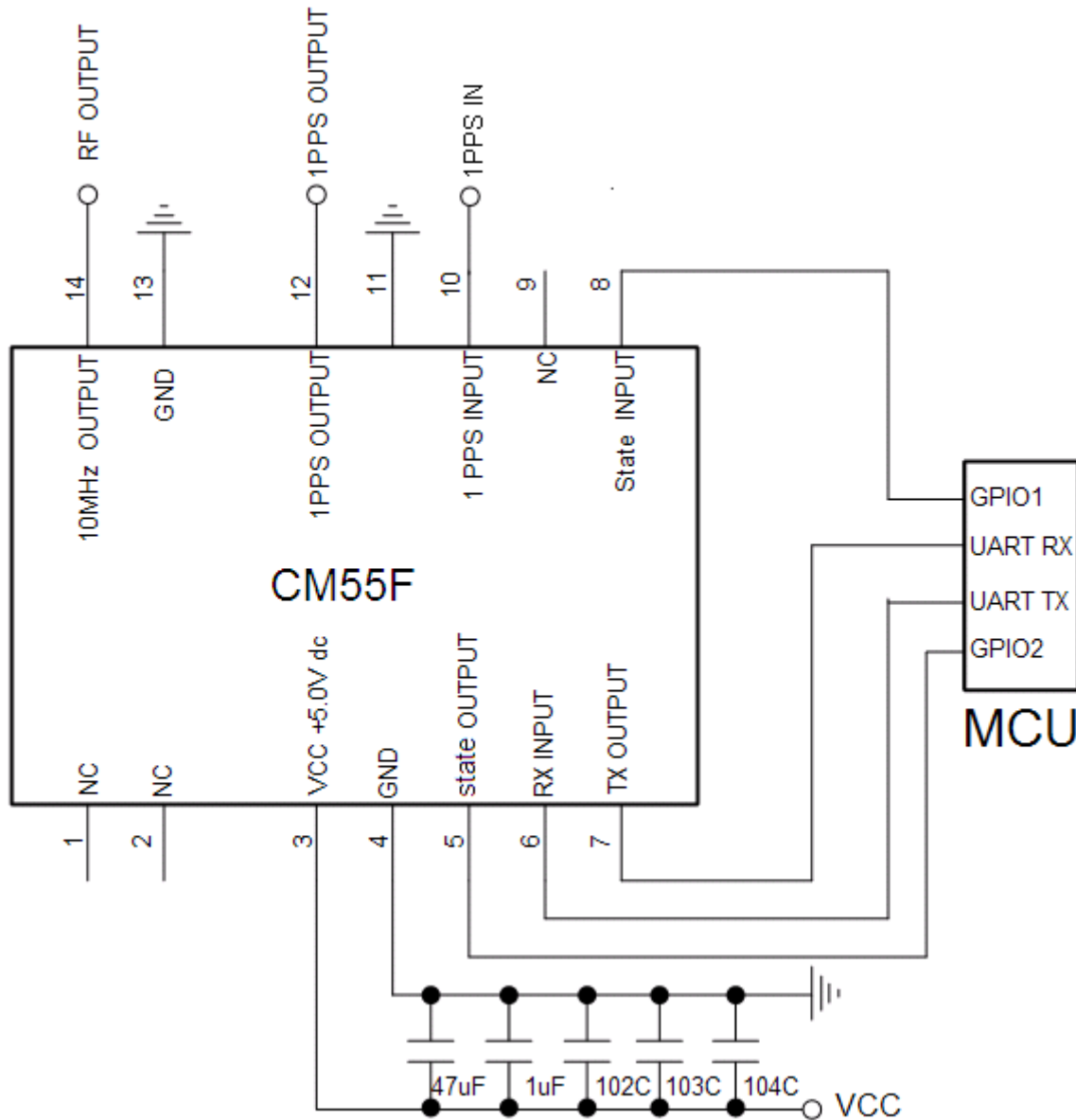
Notes:

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: warm-up; L: Lock; H: Hold over)	1
4	TrackStatus	d	Track status (Q: fast track; S: slow track)	1
5	cPHDiff	sdddd	Current phase difference	5
6	cPWM1	dddd.dddd	Current DAC1 (Voltage-controlled value1)	10
7	cPWM2	dddd.dddd	Current DAC2 (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 DAC in the last 1 hour	10
11	VCH1	dddd.dddd	Voltage-controlled compensation value every 1 hour	10
12	HPMOD	dddd.dddd	The Module DAC 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	sdddd	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



## 5. Application Information



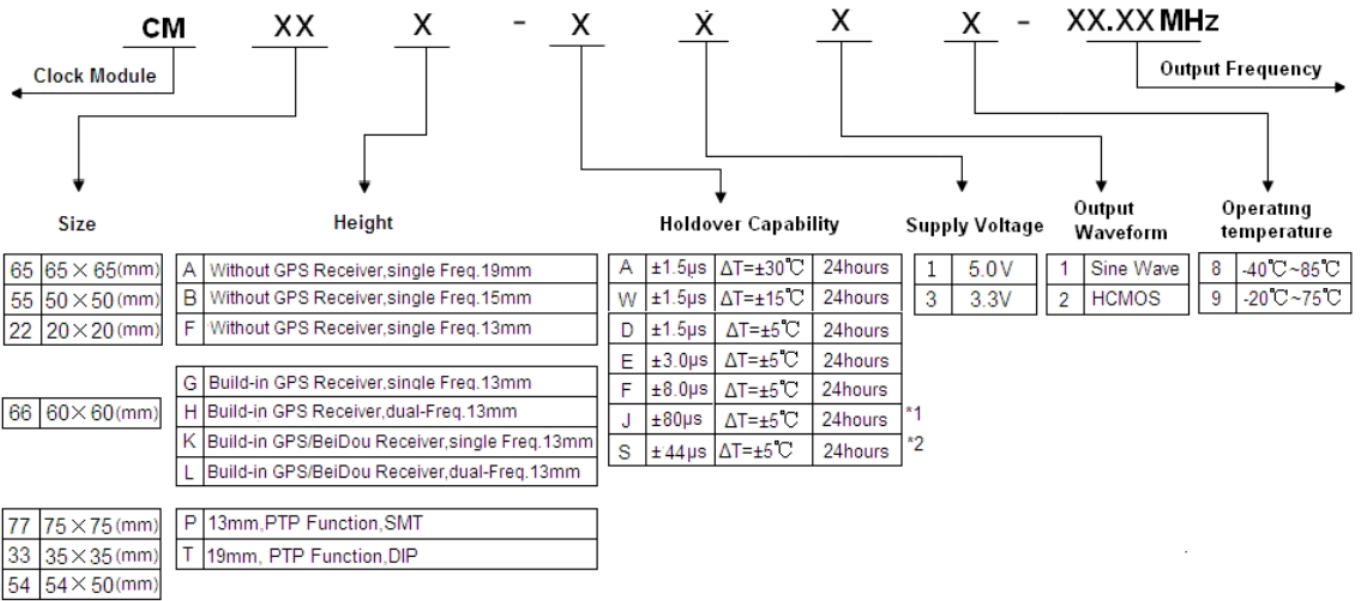
1PPS signal to the clock module CM55F.

The MCU Monitors the work state of CM55F.

The CM55F is operated with a supply of 5V.

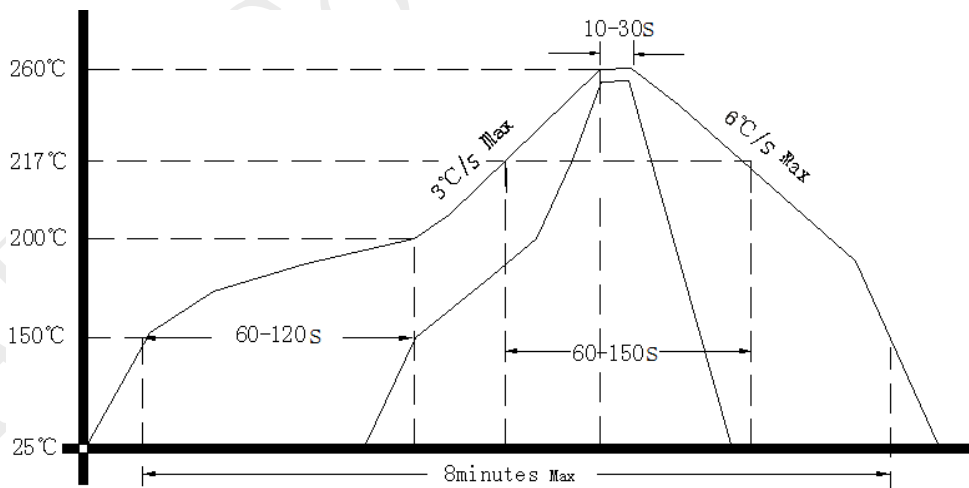


### 7. Coding Rules



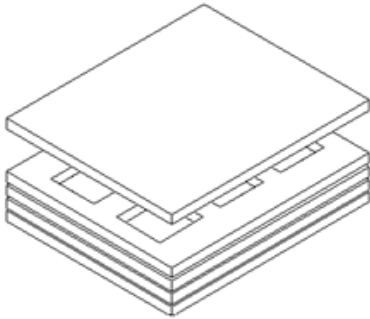
NOTE:\*1 Power on and lock to the GPS 1PPS 2 hours  
 \*2 Power on and lock to the PTP 48 hours  
 Default power on 7 days and lock to the reference source 3 days

### 8. Reflow Soldering Curve (RoHS)

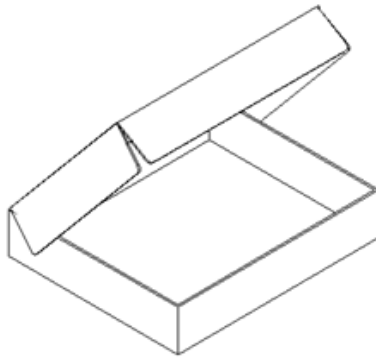




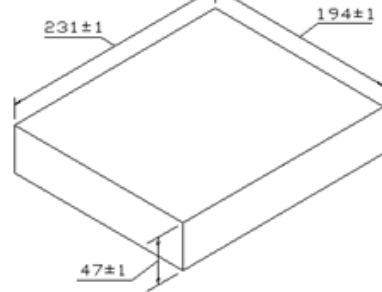
## 9. Package (mm)



Buffer material



Cardboard  
Max 6pcs. circulator



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