Customer Code:

DATASHEET

DAPU P/N: **CM55F-Y129-10.00MHz**

Customer P/N: _____

DAPU			Customer Approval
Drew	Audited	Approved	
Amway.wei	Tony · Wang	Jason Zhao	
Date: 2021.05.11			Stamp, please! Thanks!

Guangdong Dapu Telecom Technology Co., Ltd

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Table of Amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	Amway	2021.04.12
1.1	The “Mechanical Structure”changed	Amway	2021.05.11

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Table of Content

1. GENERAL DESCRIPTION 4
2. PIN DEFINITION 5
3. ELECTRICAL PARAMETERS 5
4. PERFORMANCE 6
5. UART 7
6. CONTROL PINS 7
7. ENVIRONMENTAL CONDITIONS 8
8. TYPICAL APPLICATION 9
9. MECHANICAL STRUCTURE (MM) 10
10. WAVE SOLDERING CURVE (ROHS) 11
11. PACKAGE（MM） 11

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1. General Description

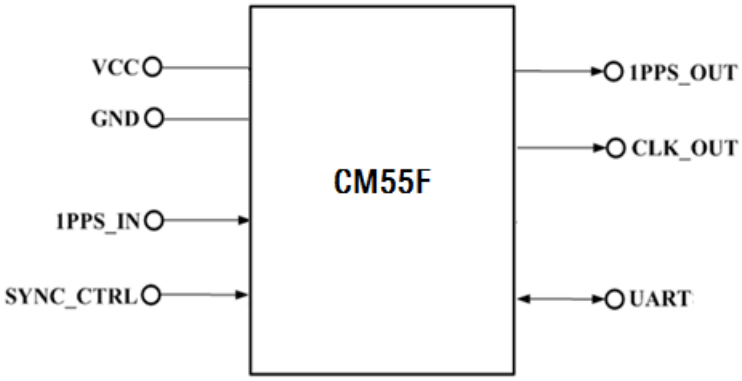

Figure 1 CM55

Figure 1 is the basic diagram of CM55. CM55 is a high-performance clock module designed to provide precise frequency and phase synchronizing with external time reference for telecom and other applications.

Key features:

- **Reference:** 1PPS and TOD from GNSS receiver, IEEE1588 etc.;
- **Temperature Stability:** ±0.1ppb;
- **Holdover:** ±1.5μs/24h @△T=±10℃ after power up 7days;
- **Clocks Input and Output:**1*1PPS input, 1*1PPS output and 1*10MHz output;
- **Serial Interface:**1*UART for management;
- **Mechanical Size:** 51mm*51mm*13.2mm.

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2. Pin Definition

Table 1 Pin Definition

Pin group	Pin#	Pin Name	Type	Description
Supply Voltage	3	VCC	PWR	Power Supplyinput,4.75V to 5.25V.
	4、11、13	GND	GND	Ground
Control Pins	8	SYNC_CTRL	I	Synchronizing Procedure Control
UART	6	RXD	I	Asynchronous Serial Data Output/Input
	7	TXD	O	
Input Clock	10	1PPS_IN	I	1PPS Reference Input.
Output Clocks	12	1PPS_OUT	O	1PPSOutput
	14	CLK_OUT	O	10.00MHz Output
State output Pins	5	LOCK_OUTPUT	O	State output
NC	1、2、9	NC		Not connected

3. Electrical Parameters

Table 2 Electrical Parameters

Parameter	Symbol	Minimum	Typical	Maximum	Units
LVCMOS Input					
High Level Input Voltage	V_{IH}	2.7			V
Low Level Input Voltage	V_{IL}			0.4	V
LVCMOS Output					
High Level Output Voltage	V_{OH}	2.7			V
Low Level Output Voltage	V_{OL}			0.4	V

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4. Performance

Table 3 Performance

Item	Parameter	Minimum	Typical	Maximum	Units	Test Condition
Clock Output	Nominal Frequency		10.00		MHz	Synchronizing with 1PPS reference.
	Duty Cycle	45	50	55	%	Load 15pF
	Frequency vs. Temperature	-0.1		+0.1	$\times10^{-9}$	T_A variesfrom-40℃ to 85℃, temperature slope less than 2℃per minute.
	Accuracy	-1		+1	$\times10^{-12}$	24 hours average value when locked to 1PPS.
	Short-term Stability			2	$\times10^{-11}$	Temperature stability，no EMI\EMC or other interference，test after power for 1 hour ref. to 25℃; 1s.
	Daily Aging	-0.2		+0.2	$\times10^{-9}$	T_A=25℃.
	Phase Noise		-118	-113	dBc/Hz	10Hz
			-138	-133		100Hz
			-148	-143		1KHz
			-150	-145		10KHz
			-150	-145		100KHz
			-150	-150		1MHz
1PPS Input	Waveform		HCMOS			
	High Level	2.7		3.47	V	
	Low Level	-0.3		0.4	V	
	Pulse Width	0.01		500	ms	
1 PPS Output	Pulse Width	10			uSec	
	Accuracy	-30		+30	ns	Synchronizing with 1PPS reference.
	24 hours holdover	-1.5		+1.5	μs	△T=±10℃,24 hours holdover after power up 7 days; temperature slope less than 2℃ per minute.

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Supply Voltage	Supply Voltage	4.75	5.0	5.25	V	
	Warm Up Current			1400	mA	
	Steady Current			600	mA	@25℃
	AC Ripple			50	mVpk-pk	10Hz to 1MHz

5. UART

UART interface is used for management and TOD, which has a fixed baud rate (9600-8-1-N) using 1 stop bit and no parity. It is a LVTTL-compatible port and needs an external translator to work with other signal types (such as RS-232C or RS-485).

6. Control Pins

CM55 is a clock module which synchronizes the local clock to reference such as 1 PPS retrieving from GPS. CM55 will work normally performing synchronizing algorithm when the SYNC_CTRL pin is driven high. It also could be forced to work in free-run or holdover status when the SYNC_CTRL pin is driven low.

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7. Environmental Conditions

Table 5 Environmental Conditions

Parameter	Conditions	
Operating Temperature	-40℃ to 85℃	
Storage Temperature	-55℃ to 105℃	
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 hour. (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.	
Relative Humidity	20%～70%	Full Package Storage
Temperature	-10℃~35℃	

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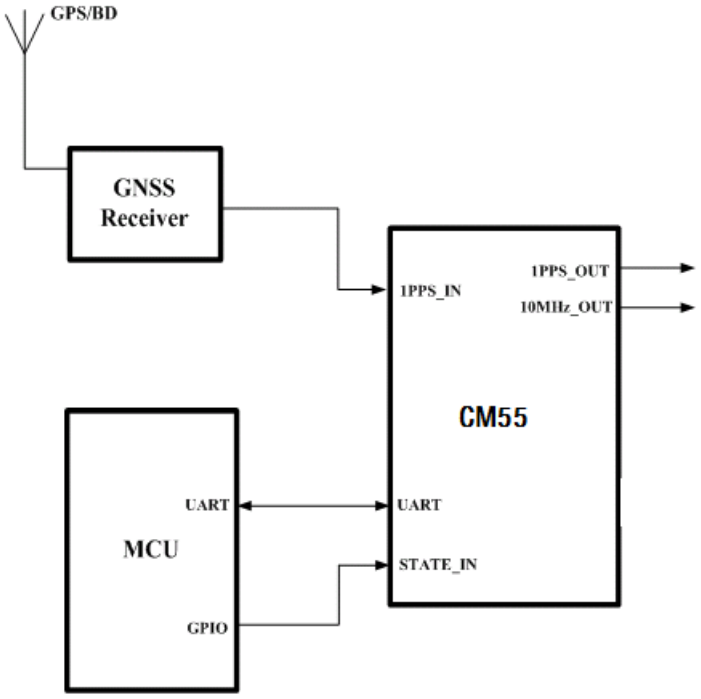
8. Typical Application



GNSS Receive offers 1PPS signal to CM55.
The MCU monitors the work state of CM55.

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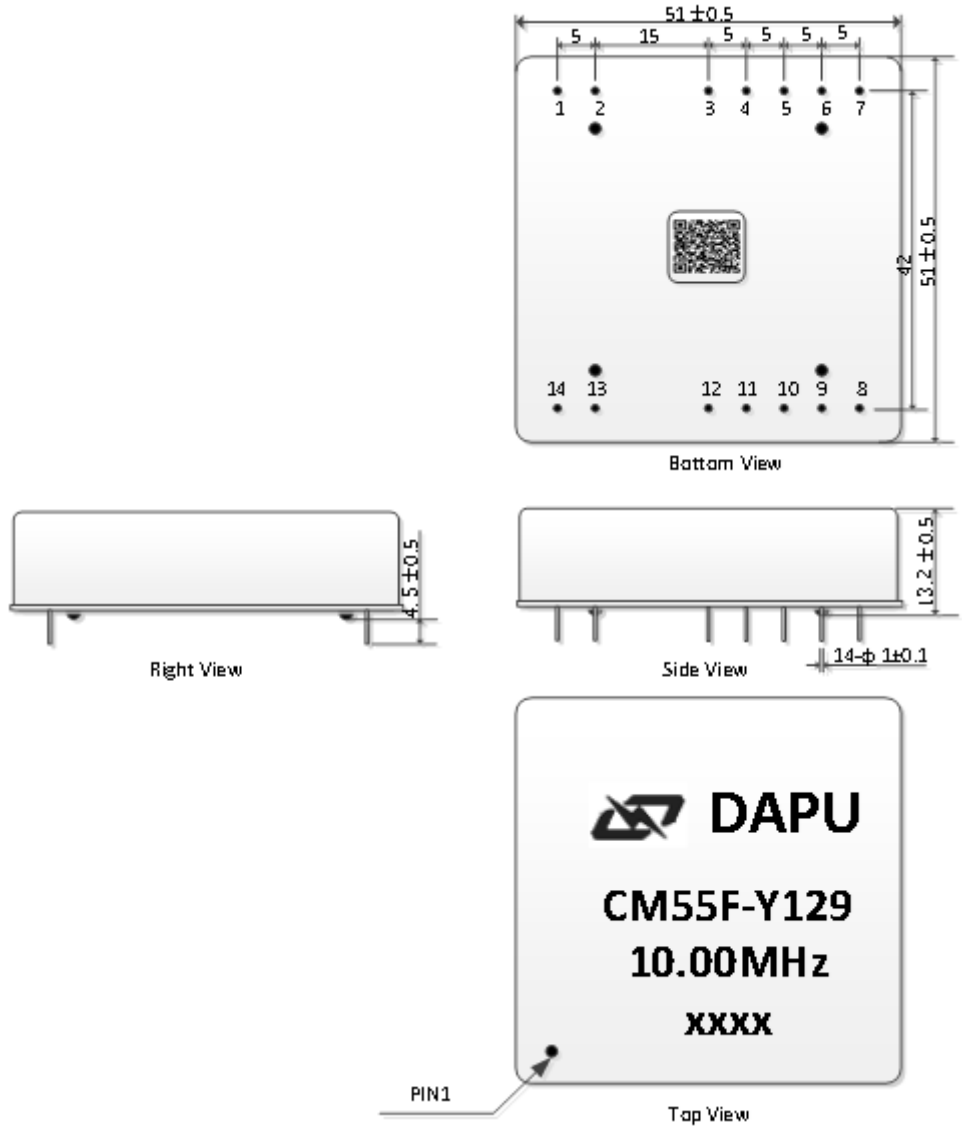
9. Mechanical Structure (mm)



Note1: Tolerance ± 0.2mm without mark.

Note2: The first two xx representative: week
The last two xx representative: year

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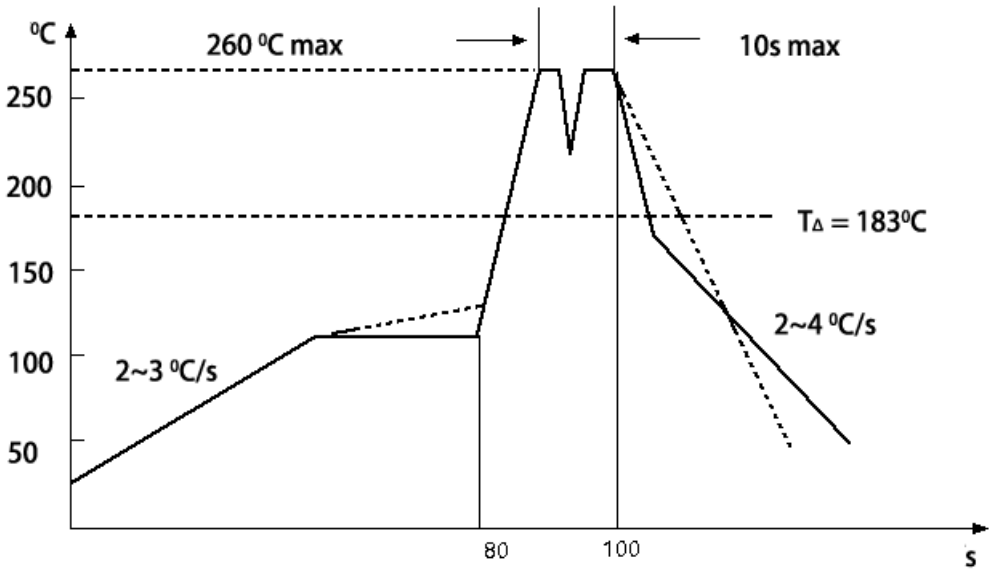
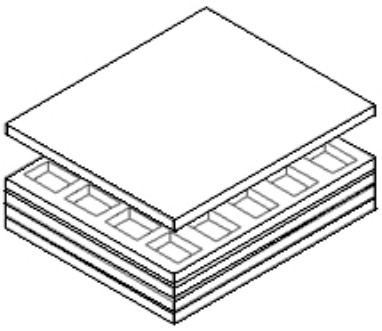
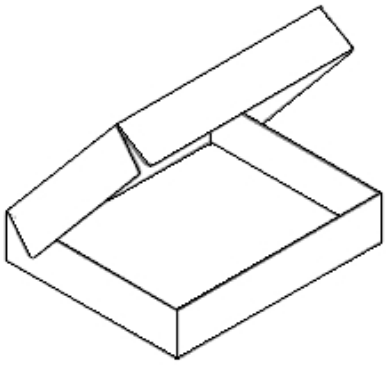
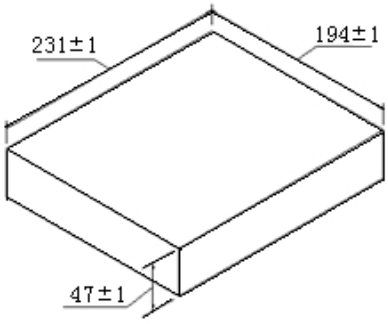
10. Wave Soldering Curve (RoHS)



11. Package（mm）


Buffer material


Cardboard
Max 6 pcs, circulator



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