Customer Code : _____

DATASHEET

DAPU P/N: **CM33P-S128-20.00MHz**

Customer P/N: _____

DAPU			Customer Approval
Drew	Audited	Approved	
Amway.wei	Steven.Sun	James.Liu	
Date: 2015.09.18			Stamp, please! Thanks!

Guangdong Dapu Telecom Technology Co.,Ltd

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

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Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	Amway	2015.05.12
1.1	"Mechanical Structure" changed	Amway	2015.05.19
1.2	"Phase accuracy" added "Current Consumption" changed	Amway	2015.05.27
1.3	"Recommended layout " added "Pin description" changed "Electrical Parameters" changed	Amway	2015.09.18

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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	50Ω
	Low-Level Output Voltage (V_{IL})				0.4	V	
	Pulse Width		10			μs	
	Connector		Pin 4				
SGMII Interface	Parameters		Min.	Typ.	Max.	Unit.	Test Condition
	Vi	Input voltage range	675		1725	mV	
	Vidth	Input differential threshold	50		400	mV	
	Vod	Input differential voltage	150		400	mV	
	Rin	Differential input impedance	80		120	Ω	
	DRT	Serial input data rate tolerance	-300		+300	ppm	
	Voh	Output voltage high state			1525	mV	
	Vol	Output voltage low state	875			mV	
	Vod	Output differential voltage	150		400	mV	
	DR	Serial data rate		1.25		Gbits/sec	
	Connector		Pin26,27,28,29				
RST	Parameters		Min.	Typ.	Max.	Unit.	Test Condition
	Normal state		2.7			V	<5mA Load
	Reset to default				0.4	V	<5mA Load
	Minimum tine		100			ns	
	Connector		Pin 24				
Holdover Capability	Holdover Time		Min.	Typ.	Max.	Unit.	Test Condition
	24 Hours		-44		44	μs	ΔT=±5℃, 24 hours holdover after turn on and lock 3 days. Temperature variable speed less than 1℃per minute

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Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Supply Voltage	4.75	5.0	5.25	V	
	Current Consumption			850	mA	During Warm-up
				600	mA	During steady state operation @25℃
	AC Ripple			50	mV pk-pk	10Hz to 1MHz
	Connector	Pin11				
1 PPS Output Waveform Characteristics	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Waveform	HCMOS				
	High-Level Output Voltage(V_{OH})	2.7			V	50Ω
	Low-level Output voltage (V_{OL})			0.4	V	
	Pulse Width	0.1	100	400	ms	
	Phase accuracy	-50		50	ns	CM is master mode, sync with the GPS 1PPS
	Connector	Pin 16				
LOCK Status Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Lock	2.7			V	<5mA Load
	Free run/Holdover			0.4	V	<5mA Load
	Connector	Pin 32				
TOD	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Rx high-level Input Voltage (VH)	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	4800-N-8-1				
	Connector	Pin 17/18 Pin 19/20				

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FREQ_OUT0/ FREQ_OUT1	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Frequency	Time-aligned: programmable frequency 100Hz to 25MHz Frequency-aligned: programmable frequency 1 kHz to 62.5MHz				
	Waveform	HCMOS				
	High-Level Output Voltage(V_{OH})	2.7			V	15pF
	Low-level Output voltage (V_{OL})			0.4	V	
	Rise/Fall Time			8	ns	
	Connector	Pin 14/34				

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; 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 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.
Full Package Storage	Relative humidity (%)	20%～70%
	Temperature (℃)	-10~35℃

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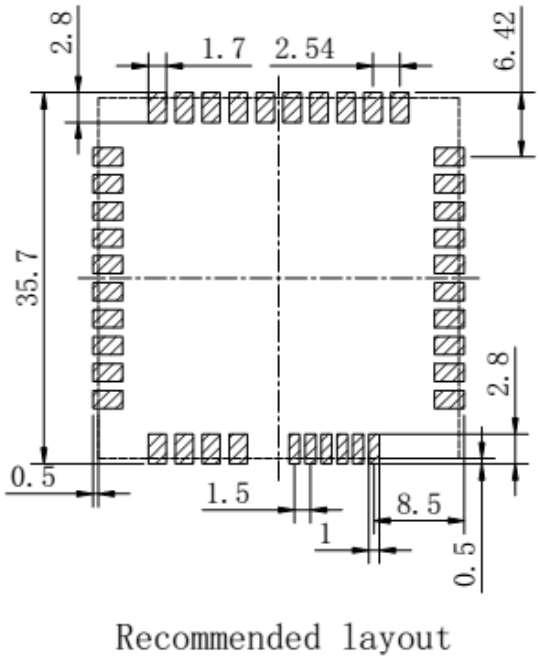
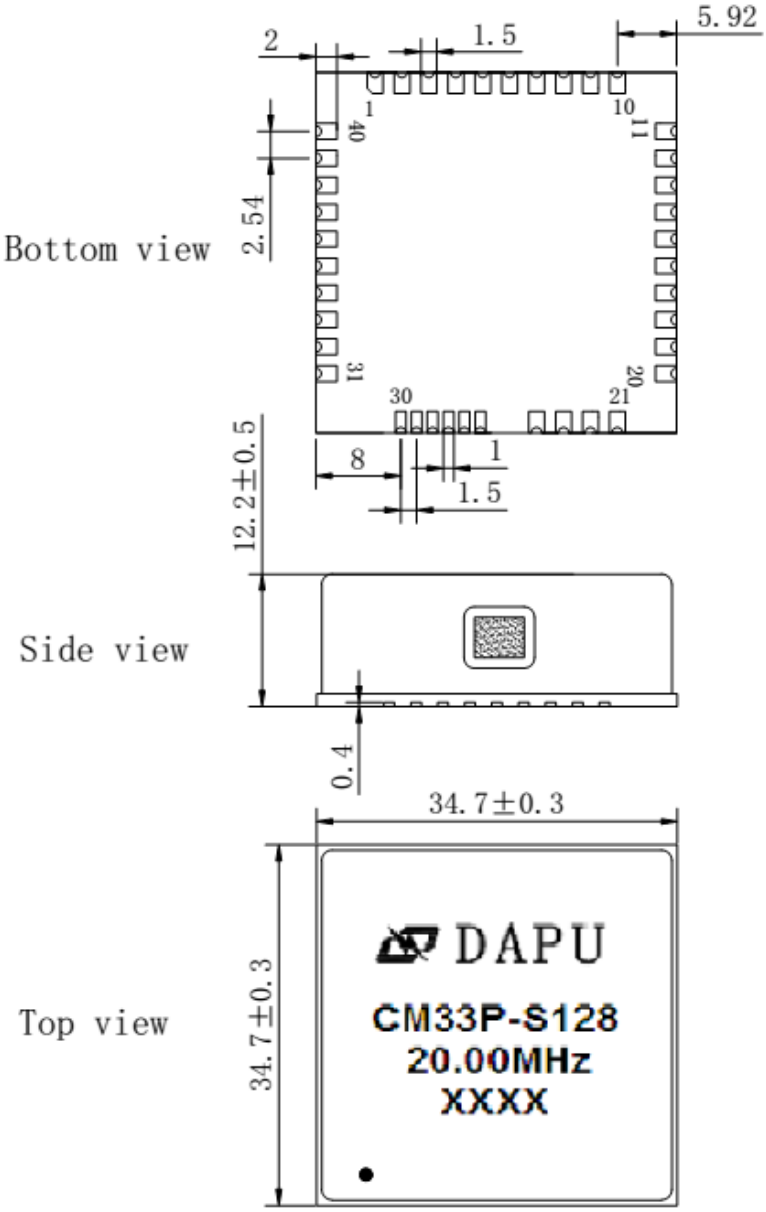
2. Mechanical Structure(mm)



Recommended layout



Note1: Tolerance ±0.2mm without mark

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

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Pin Description

PIN	NAME	I/O	DESCRIPTION
1	OSC_CLK_OUTPUT	O	Suspended, reserved
2	CLK_SEL	I	System clock select: 1: the system clock use the local oscillator 0: the system clock the external reference
3	FORCE_HOLD	I	Reserved, update by software
4	1PPS_IN	I	1PPS input clock, it can come from GPS receiver or other 1PPS reference
5,15,25,30 35,37,39	GND		GND
6	SLVINT	O	SPI interface, The serial peripheral interface (SPI) is a slave port for communication with a serial microprocessor bus, allowing the module to be controlled by an external processor
7	SLVCSB	I	
8	SLVSCLK	I	
9	SLVMISO	O	
10	SLVMOSI	I	
11	VCC		VCC
12	NC		Suspended, reserved
13	PROGRAM		Suspended, reserved
14	FREQ_OUT0	O	Time-aligned output pair: 125 MHz divided by n (n = 4 to 125000) maximum of 25MHz MHz (divide by 4) minimum of 100 Hz (divide by 1249999) Frequency-aligned outputs: programmable frequency 1 kHz to 62.5MHz
34	FREQ_OUT1	O	
16	1PPS_OUT	O	The clock module 1PPS output
17	TOD1_TX	O	Time of day output interface, NMEA 0183, The UART has an integrated baud rate generator using 1 stop bit and no parity
18	TOD1_RX	I	
19	TOD0_RX	I	
20	TOD0_TX	O	
21	MDC	O	MII CLK
22	MDIO	I/O	MII data input/output
23	OSCFSEL0	I	Oscillator frequency select pins, which set the expected local oscillator frequency OSCFSEL1/0=00 local oscillator frequency 20MHz OSCFSEL1/0=01 local oscillator frequency 10MHz OSCFSEL1/0=10 local oscillator frequency 12.8MHz
33	OSCFSEL1	I	
24	RST	I	Reset the clock module
26	SGMIITXP0	O	PTP port ,SGMII interface
27	SGMIITXN0	O	
28	SGMIIRXP0	I	
29	SGMIIRXN0	I	

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31	FAULT	O	Fault alarm
32	LOCKED	O	State output. Output high level when the CM is locked and stable, others low level
36	NC		Suspended, reserved
38	FREQ_IN	I	Clock reference input. Acceptable frequencies into the PTP module from: 1 PPS/1 Hz to 161MHz (input reference for PTP Master) The input frequencies must obey the following rule: Input Freq = k * 2^n, where 0 <= n <= 5 and 1 <= k <= 2^32 (upper limit of 170 MHz)
40	EXT_CLK	I	External clock , back up for the local oscillator (support frequency 10MHz,12.8MHz,20MHz）

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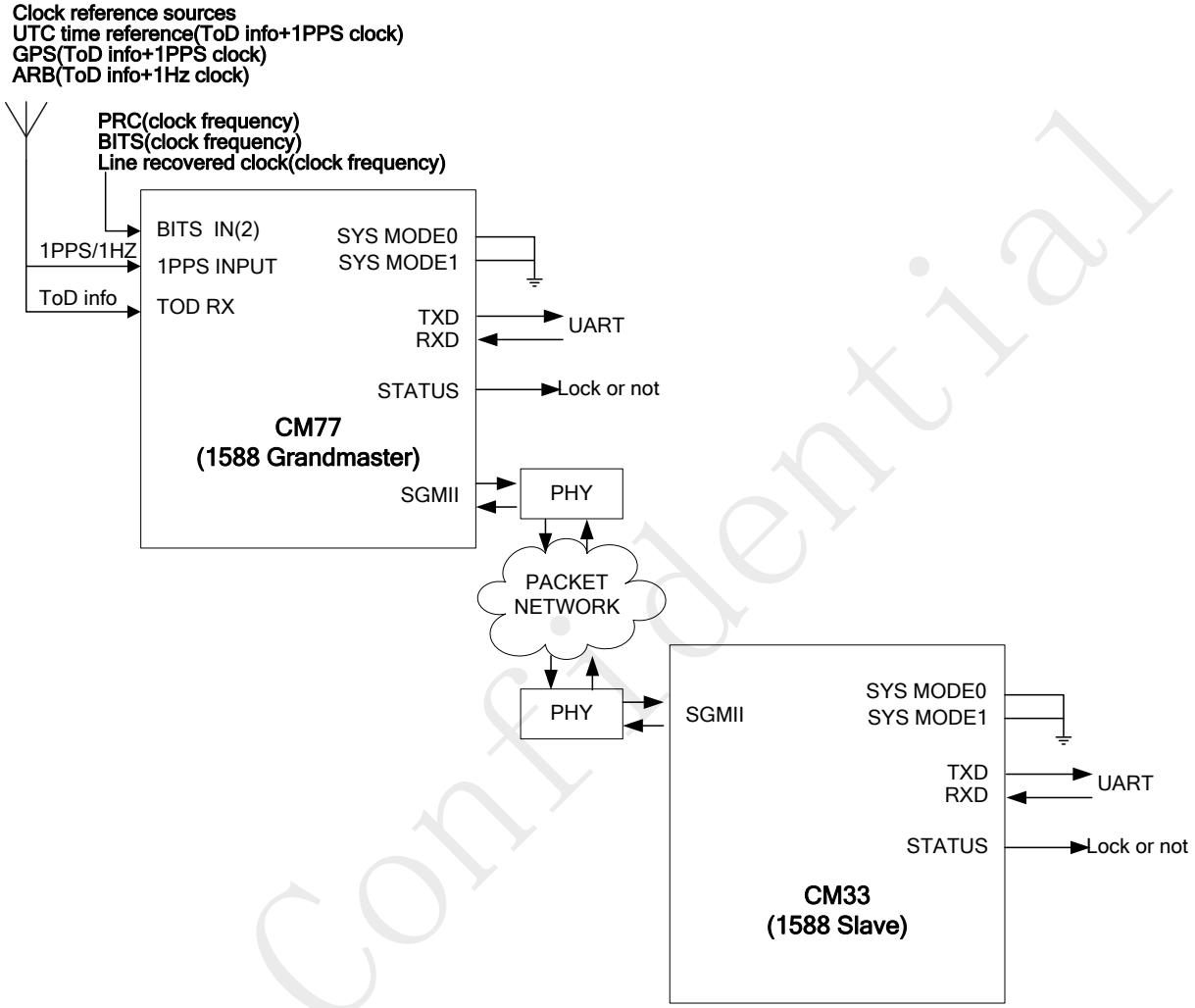
3. Application Information

Typical application



4. Coding Rules

CM XX X - X X X X - XX.XX MHz

Clock Module — Output Frequency

Size	
33	35×35 (mm)
55	50×50 (mm)
66	60×60 (mm)
65	65×65 (mm)
64	60×54 (mm)
77	75×75 (mm)

Height	
A	19mm,single Freq,external GPS receiver
B	19mm,single Freq,internal GPS receiver
C	19mm,single Freq,internal dual-mode receiver
F	13mm,single Freq,external GPS receiver
G	13mm,single Freq,internal GPS receiver
H	13mm,dual-Freqs,internal GPS receiver
K	13mm,single Freq,internal dual-mode receiver
L	13mm,dual-Freqs,internal dual-mode receiver
P	13mm,for PTP,1588 applications
T	19mm,for PTP,1588 applications

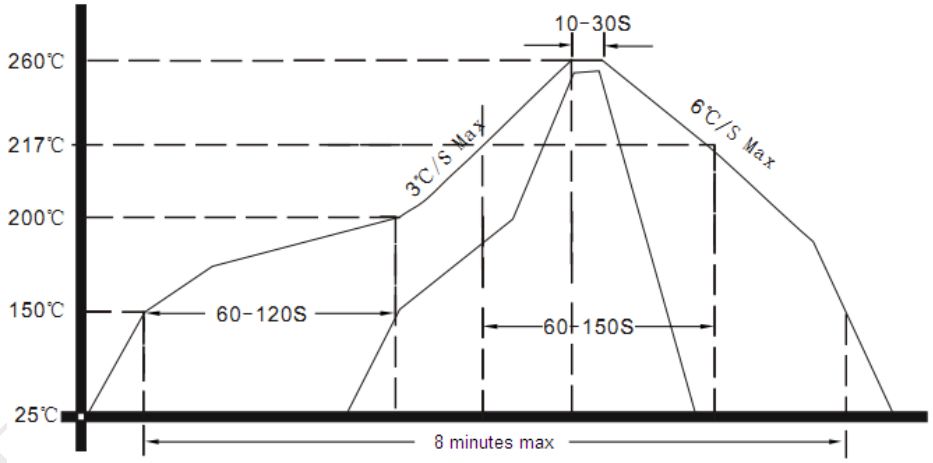
Holdover Capability			
A	±1.5μs	0℃~60℃	24hours
B	±3.0μs	0℃~60℃	24hours
C	±8.0μs	0℃~60℃	24hours
D	±1.5μs	ΔT=±5℃	24hours
E	±3.0μs	ΔT=±5℃	24hours
F	±8.0μs	ΔT=±5℃	24hours
G	±1.5μs	ΔT=±5℃	8hours
H	±3.0μs	ΔT=±5℃	8hours
I	±8.0μs	ΔT=±5℃	8hours
K	±1.5μs	ΔT=±2℃	24hours
M	±3.0μs	ΔT=±2℃	24hours
N	±8.0μs	ΔT=±2℃	24hours
O	±1.5μs	ΔT=±2℃	8hours
P	±3.0μs	ΔT=±2℃	8hours
Q	±8.0μs	ΔT=±2℃	8hours
Z	±12 μs	ΔT=±5℃	12hours

Supply Voltage	
1	5.0V

Output Waveform	
1	Sine Wave
2	HCMOS

Operating temperature	
1	0℃~80℃
2	-10℃~70℃
9	-20℃~75℃
8	-40℃~85℃

5. Reflow Soldering Curve (RoHS)



6. Package（mm）