Travelling Merchant:_____

DATASHEET

Standard: **CM77P-D129-10.00MHz**

P/N: _____

Plot			The Label
Drew	Audited	Approved	
Amway.wei	Steven.Sun	James.Liu	
Date: 2014.03.28			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	2014.01.25
1.1	"Mechanical Structure" changed	Amway	2014.03.28

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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	50Ω
	Low-Level Output Voltage (V_{IL})			0.4	V	
	Pulse Width	10			μs	
	Connector	Pin 10				
PTP Interface	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	SGMII Rx analogue supply voltage DC, 1.2 V.	-0.5		1.4	V	
	SGMII Tx analogue supply voltage DC. 1.2 V	-0.5		1.4	V	
	SGMII Rx analogue supply DC, 3.3 V	-0.5		3.7	V	
	SGMII TX analogue supply DC, 3.3 V.	-0.5		3.7	V	
	SGMII digital supply DC, 1.2 V	-0.5		1.4	V	
	SGMII RX analogue supply DC, 1.2 V.	-0.5		1.4	V	
	SGMII TX analogue supply DC, 1.2 V	-0.5		1.4	V	
	SGMII RX analogue supply DC, 3.3 V.	-0.5		3.7	V	
	SGMII TX analogue supply DC, 3.3 V	-0.5		3.7	V	
FORCE HOLD	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Lock Enable	2.7			V	<5mA Load
	Force Hold			0.4	V	<5mA Load
	Connector	Pin 11				
RF Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Nominal Frequency	10.00		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			5	$\times 10^{-12}$	Temperature stability, no EMI\EMC or other interference, test after power for 1 hour ref. to

						25℃; 1s, using PN9000 equipment.
	Aging Tolerance Per Day	-0.2		+0.2	$\times10^{-9}$	V_{cc},T_A constant measurement referenced to frequency observed with T_A=25℃,V_{cc}=5.0V, in FREE RUN condition and after 30 days of operation.
	Aging Tolerance 1 Year	-0.01		+0.01	$\times10^{-6}$	
	Phase Noise (All conditions)		-118	-113	dBc/Hz	10Hz
			-138	-133		100Hz
			-148	-143		1KHz
			-150	-145		10KHz
			-150	-150		100KHz
			-150	-150		1MHz
	Connector	Pin 18				
Holdover Capability	Holdover Time	Min.	Typ.	Max.	Unit.	Test Condition
	24 Hours	-1.5		+1.5	μs	ΔT= ±5℃, 24 hours holdover after turn on 7days and lock 3days
Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Supply Voltage	4.75	5.0	5.25	V	
	Current Consumption			2000	mA	During Warm-up
				1000	mA	During steady state operation @25℃
	AC Ripple			50	mVpk-pk	10Hz to 1MHz
	Connector	Pin 9				
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		100		ms	
	Connector	Pin 12				
State Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Lock	2.7			V	<5mA Load

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	Free run/Holdover			0.4	V	<5mA Load
	Connector	Pin 16				

Serial Interfaces	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	9600-N-8-1				
	Connector	Pin 14 and Pin 15				

Environmental Conditions	Parameter	Conditions
	Operating temperature	-20℃ to +75℃
	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.

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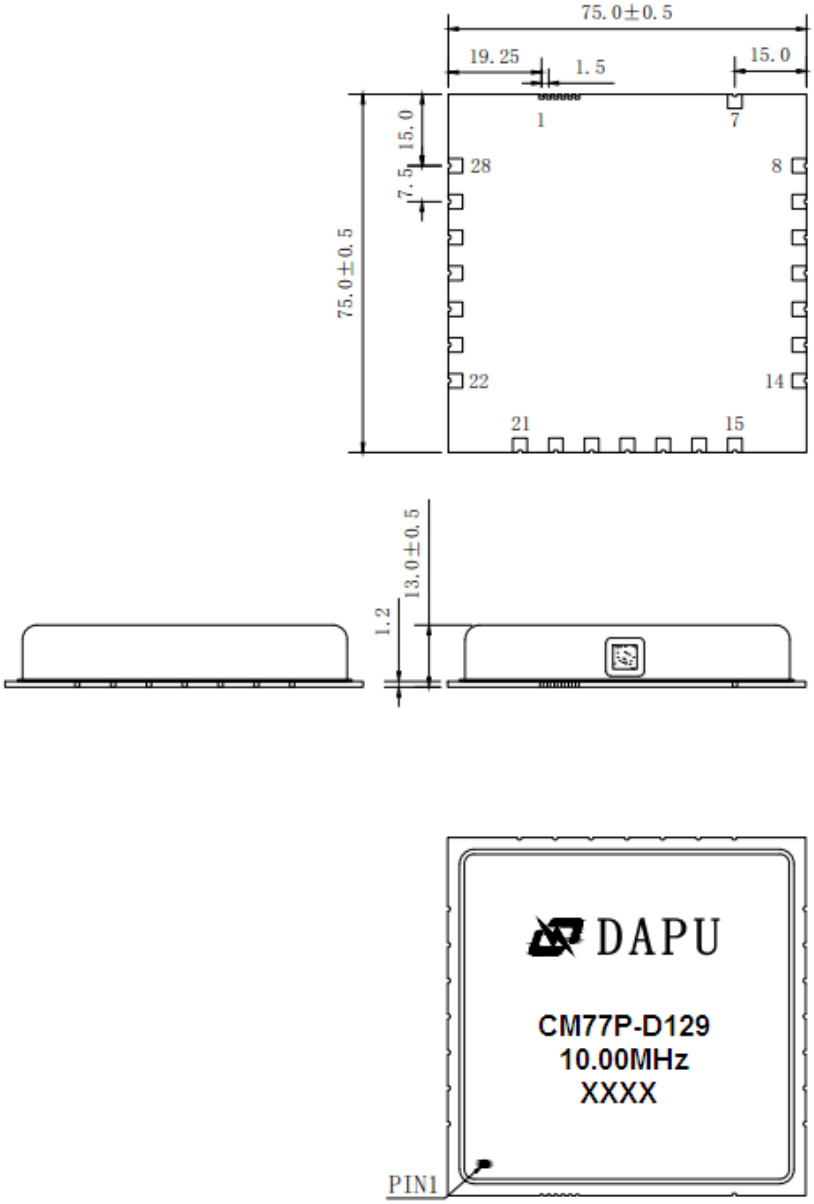
2. Mechanical Structure(mm)



Note1: Tolerance ±0.2mm without mark

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

Note3: Referential Weight 135±15g

PIN	NAME	DESCRIPTION
2	SGMII_ RXN	PTP port ,SGMII interface
3	SGMII_ RXP	
4	SGMII_TXN	
5	SGMII_TXP	

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1, 6, 8	GND	GND
7	BITS_IN	2MHz reference clock input
9	VCC_5V	Power supply input, 4.75V to 5.25V
10	1PPS_INPUT	1PPS input clock, it can come from GPS receiver or other 1PPS reference
11	FORCE_HOLD	Force the clock module into holdover mode
12	1PPS_OUTPUT	The clock module 1PPS output
13	Clock output	Frequency-aligned outputs: 1 Hz and programmable frequency 1 kHz to 180 MHz. Low jitter frequency-aligned outputs: SONET and SDH OC-n rates: 3.84 MHz to 155.52 MHz. SyncE rates: 25 MHz, 50 MHz, 62.5 MHz and 125 MHz
14	TXD	Serial Interfaces, 9600-N-8-1
15	RXD	
16	STATUS	State output. Output high level when the CM is locked and stable, others low level
17	SYS_MODE0	See Table 2 for more details
18	RF OUT	The output 10MHz from the high precision OCXO in the clock module
19	RESET	Reset the clock module
20	TOPSYNC_FAULT	Fault alarm
21	SYS_MODE1	See Table 2 for more details
22	SPI_CLK	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
23	SPI_SDI	
24	SPI_SDO	
25	SPI_CS	
26	SPI_INT	
27	TOD_RX	Time of day input interface, NMEA 0183 or UBX protocol ,The UART has an integrated baud rate generator using 1 stop bit and no parity.The maximum baud rate of the UART port is 19200 baud
28	TOD_TX	Time of day output interface, NMEA 0183 or UBX protocol ,The UART has an integrated baud rate generator using 1 stop bit and no parity.The maximum baud rate of the UART port is 19200 baud

TABLE2

SYS_MODE0	SYS_MODE1	Operating mode
0	0	Combined PTP and Physical Layer Timing.
0	1	SGMII / Ethernet self test physical port 0
1	0	SGMII / Ethernet self test physical port 1
1	1	Restore default factory programmed device settings

3. Coding Rules

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

Clock Module

Output Frequency

Size

33	36×36 (mm)
55	50×50 (mm)
66	60×60 (mm)
65	65×65 (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

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

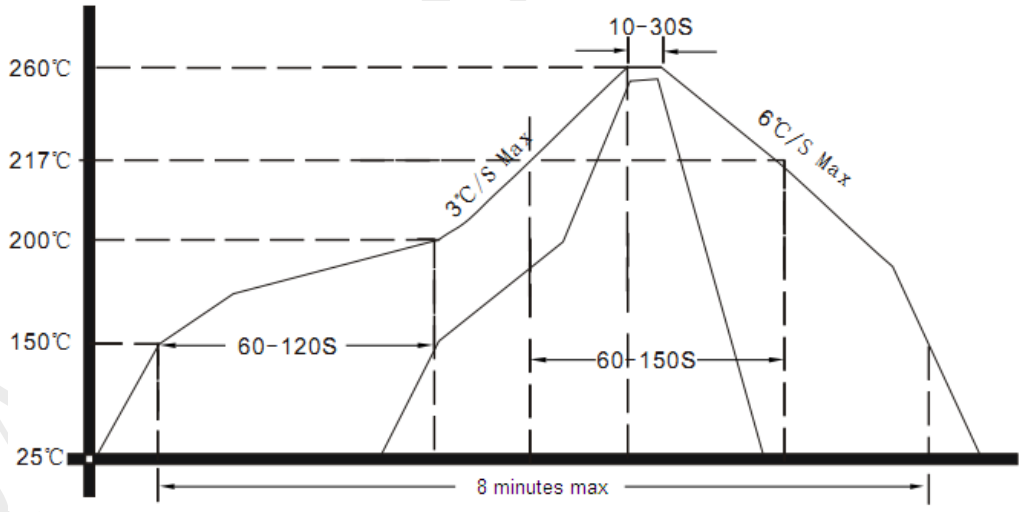
Output Waveform

1	Sine Wave
2	HCMOS

Operating temperature

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

4. Reflow Soldering Curve (RoHS)



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5. Package（mm）