

Travelling Merchant: _____

DATASHEET

Standard: CM77P-D129-10.00MHz-A

P/N: _____

Plot			The Label
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 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	50 Ω
Low-Level Output Voltage (V_{IL})			0.4		V	
Pulse Width	10				μ s	
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



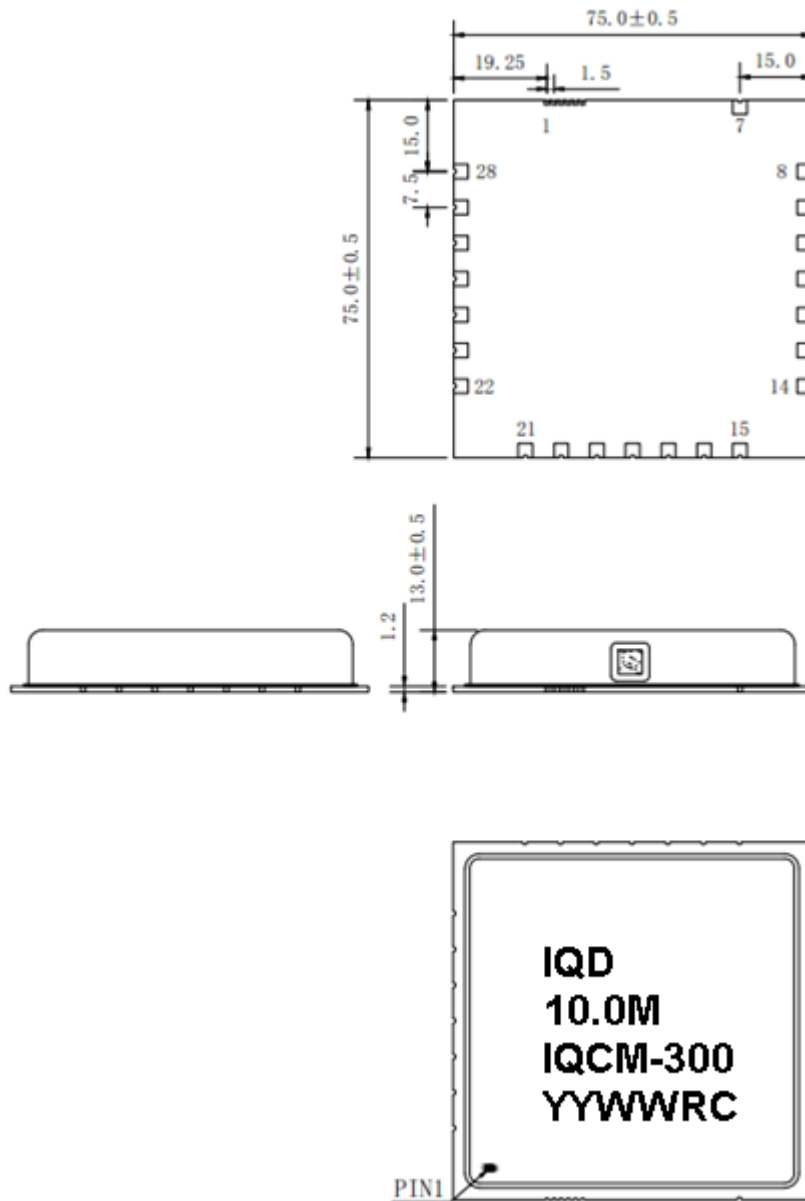
						25°C; 1s, using PN9000 equipment.	
	Aging Tolerance Per Day	-0.2		+0.2	$\times 10^{-9}$	V_{cc}, T_A constant	
	Aging Tolerance 1 Year	-0.01		+0.01	$\times 10^{-6}$	measurement referenced to frequency observed with $T_A=25^\circ\text{C}, V_{cc}=5.0\text{V}$, in FREE RUN condition and after 30 days of operation.	
	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	$\Delta T = \pm 5^\circ\text{C}$, 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°C	
	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	50 Ω	
	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	



	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°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; 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.					



2. Mechanical Structure(mm)



- Note1:** Tolerance ± 0.2 mm without mark
Note2: The first two YY representative: year
 After two WW representative: week
Note3: Referential weight 135 ± 15 g

PIN	NAME	DESCRIPTION
2	SGMII_RXN	PTP port ,SGMII interface
3	SGMII_RXP	
4	SGMII_TXN	
5	SGMII_TXP	



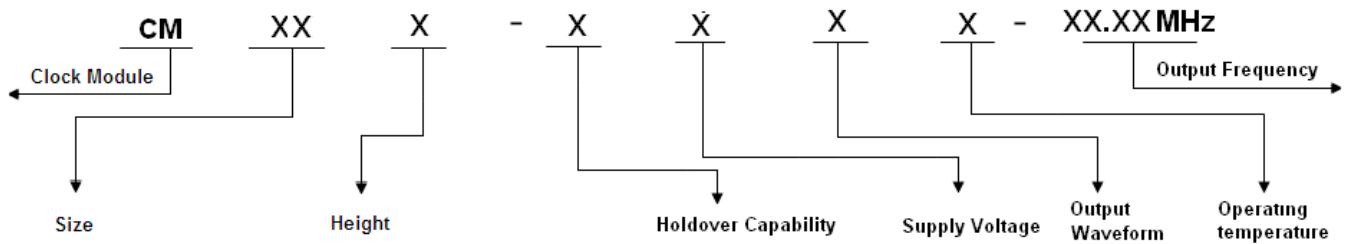
1, 6, 8	GND	GND
7	BITS_IN	2MHz reference clock input
9	VCC_5V	Power supply input, 4.75V to 5.25V
10	1PPS_INPUT	1PPS input clock, it can come from GPS receiver or other 1PPS reference
11	FORCE_HOLD	Force the clock module into holdover mode
12	1PPS_OUTPUT	The clock module 1PPS output
13	Clock output	Frequency-aligned 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

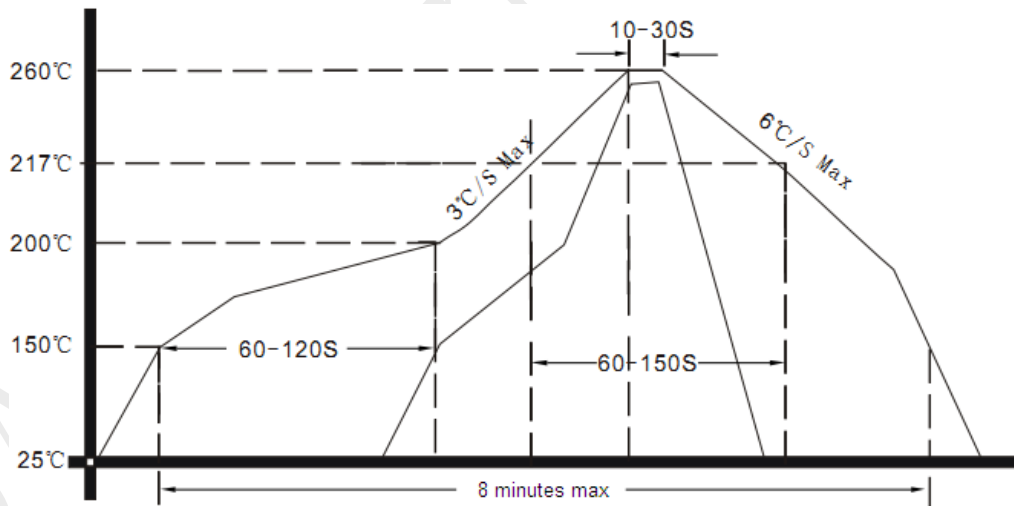


3. Coding Rules



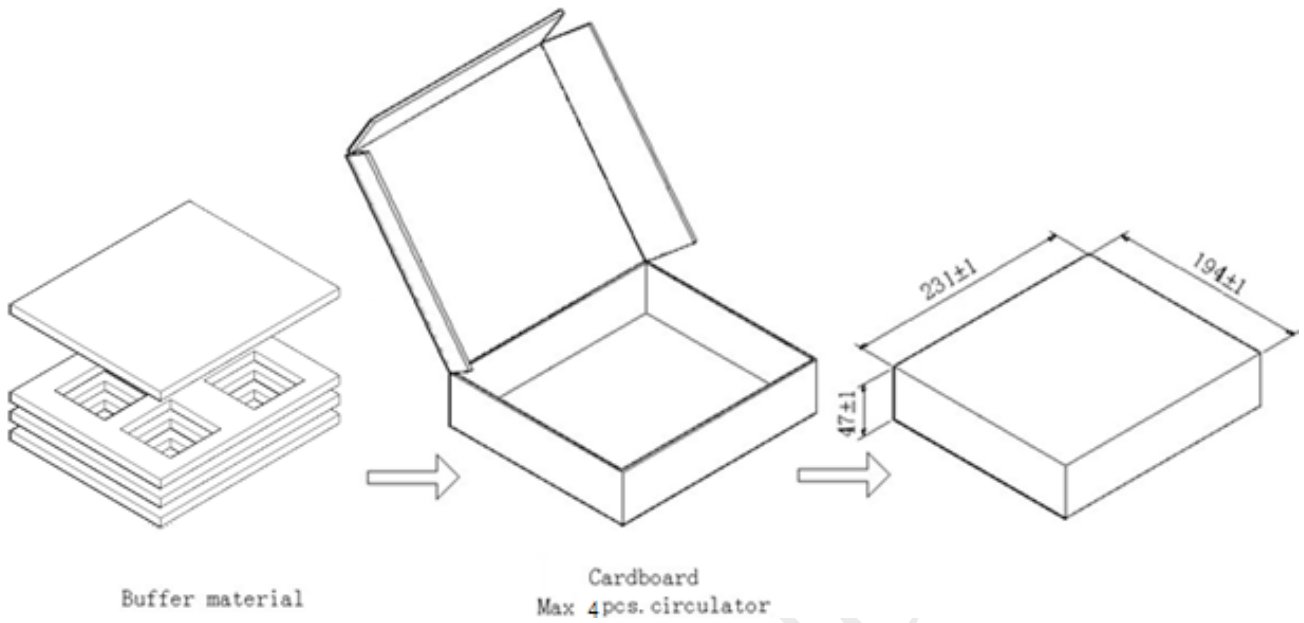
Size	Height	Holdover Capability	Supply Voltage	Output Waveform	Operating temperature
33 36×36 (mm)	A 19mm, single Freq, external GPS receiver	A ±1.5µs 0°C~60°C 24hours	1 5.0V	1 Sine Wave 2 HCMOS	1 0°C~80°C 2 -10°C~70°C
55 50×50 (mm)	B 19mm, single Freq, internal GPS receiver	B ±3.0µs 0°C~60°C 24hours			
66 60×60 (mm)	C 19mm, single Freq, internal dual-mode receiver	C ±8.0µs 0°C~60°C 24hours			9 -20°C~75°C
65 65×65 (mm)	F 13mm, single Freq, external GPS receiver	D ±1.5µs ΔT=±5°C 24hours			8 -40°C~85°C
77 75×75 (mm)	G 13mm, single Freq, internal GPS receiver	E ±3.0µs ΔT=±5°C 24hours			
	H 13mm, dual-Freqs, internal GPS receiver	F ±8.0µs ΔT=±5°C 24hours			
	K 13mm, single Freq, internal dual-mode receiver	G ±1.5µs ΔT=±5°C 8hours			
	L 13mm, dual-Freqs, internal dual-mode receiver	H ±3.0µs ΔT=±5°C 8hours			
	P 13mm, for PTP, 1588 applications	I ±8.0µs ΔT=±5°C 8hours			
		K ±1.5µs ΔT=±2°C 24hours			
		M ±3.0µs ΔT=±2°C 24hours			
		N ±8.0µs ΔT=±2°C 24hours			
		O ±1.5µs ΔT=±2°C 8hours			
		P ±3.0µs ΔT=±2°C 8hours			
		Q ±8.0µs ΔT=±2°C 8hours			
		Z ±12 µs ΔT=±5°C 12hours			

4. Reflow Soldering Curve (RoHS)





5. Package (mm)



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