

Travelling Merchant: _____

DATASHEET

Standard: CM65A-D129-10.00MHz-A

P/N: _____

Plot			The Label
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2014.12.18			

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Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	<i>Amway</i>	2014.12.18

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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	50 Ω	
	Low-Level Output Voltage (V_{IL})			0.4	V		
	Pulse Width	10			μ s		
Connector	Pin 10						
State Input	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
	Lock Enable	2.7			V	<5mA Load	
	Lock Disable			0.4	V	<5mA Load	
	Connector	Pin 8					
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 $^{\circ}$ 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 $T_A=25^{\circ}$ C, $V_{cc}=5.0$ 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)			-125	-115	dBc/Hz	10Hz
				-145	-135		100Hz
				-150	-145		1KHz
			-152	-147	10KHz		
			-155	-150	100KHz		
			-155	-150	1MHz		
Connector	Pin 2						

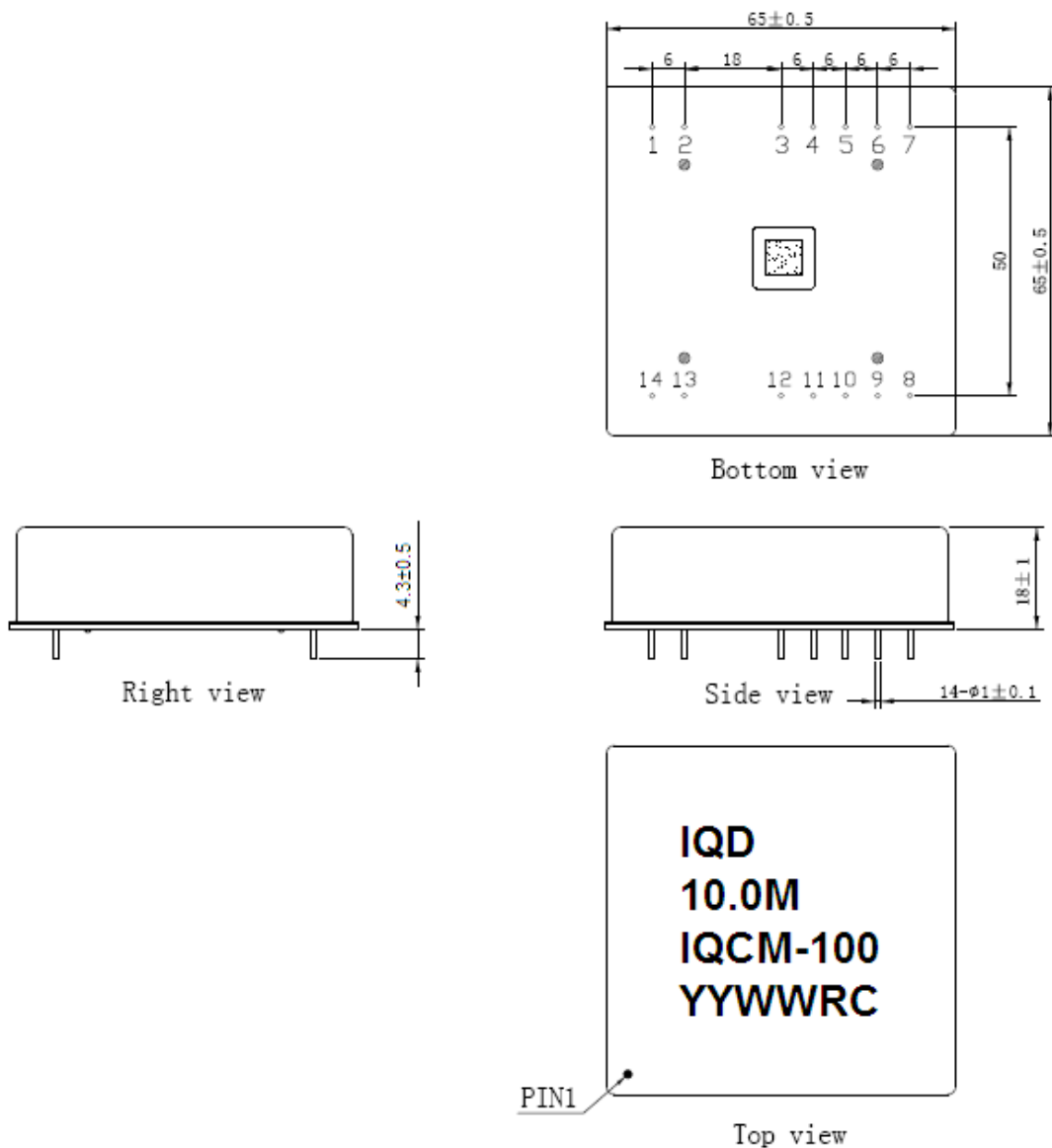


Holdover Capability	Holdover Time	Min.	Typ.	Max.	Unit.	Test Condition
	24 Hours	-1.5		+1.5	μs	ΔT=±5℃, 24 hours holdover after turn on 7days and lock 2days. Temperature variable speed less than 1℃per minute
Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Supply Voltage	4.75	5.0	5.25	V	
	Current Consumption			2500	mA	During Warm-up
				1000	mA	During steady state operation @25℃
	AC Ripple			50	mVpk-pk	10Hz to 1MHz
Connector	Pin 12					
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 3				
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 _H)	2.7			V	
	Rx low-level Input Voltage (V _L)			0.4	V	
	Tx high-level Output Voltage (V _H)	2.7			V	
	Tx low-level Output Voltage (V _L)			0.4	V	
	Serial Protocol	9600-N-8-1				
Connector	Pin6 and Pin7					
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.

2. Mechanical Structure(mm)



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

**PIN DEFINITION**

PIN	Name	DESCRIPTION	
2	10MHz OUTPUT	10MHz OCXO frequency output.	
3	1PPS OUTPUT	The clock module 1PPS output.	
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	H: Lock Enable	The work state is set to normal operation when the state input is high level.
		L: Lock Disable	The module cannot be locked when the state input is low level.
10	1PPS INPUT	1PPS reference input.	
12	VCC	Power supply input, 4.75V to 5.25V.	
1、14	NC	Not connected.	
4、9、11、13	GND	GND	

3. Holdover capability Reference

First holdover time X(hour)	$\pm 1.5\mu\text{S}$ Holdover capability(hour) after GPS recover 1~47hours	
	Training time ≥ 7 days	Training time =4~6days
1	≥ 23	≥ 12
2	≥ 23	≥ 12
3	≥ 22	≥ 11
4	≥ 21	≥ 10
5	≥ 21	≥ 10
6	≥ 20	≥ 10
7	≥ 19	≥ 9
8	≥ 19	≥ 9
9	≥ 18	≥ 9
10	≥ 17	≥ 8
11	≥ 16	≥ 8
12	≥ 16	≥ 8
13	≥ 15	≥ 7
14	≥ 15	≥ 7
15	≥ 14	≥ 7
16	≥ 13	≥ 6
17	≥ 12	≥ 6
18	≥ 12	≥ 6
19	≥ 11	≥ 5
20	≥ 10	≥ 5
21	≥ 9	≥ 4

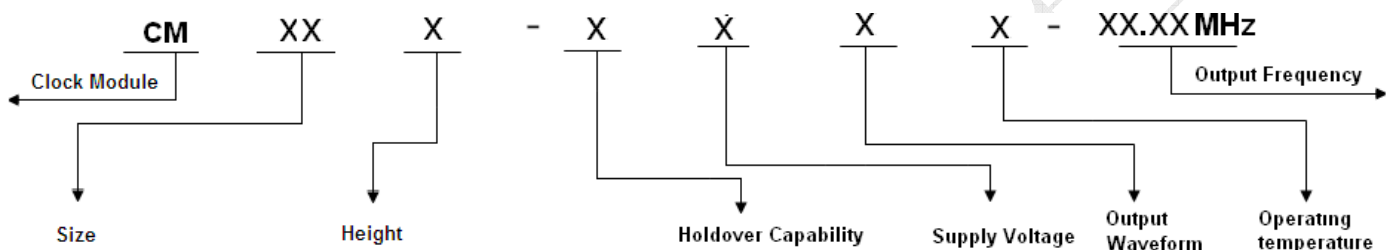


22	≥9	≥4
23	≥8	≥4
24	≥8	≥4
25	≥7	≥3
26	≥6	≥3
27	≥5	≥2
28	≥5	≥2

±1.5μS holdover capability after locked for 4~6days: ≥12hours .

±1.5μS holdover capability after GPS recover over 48hours: ≥24hours (Power on time≥7days)
≥12hours (Power on time=5~6days) .

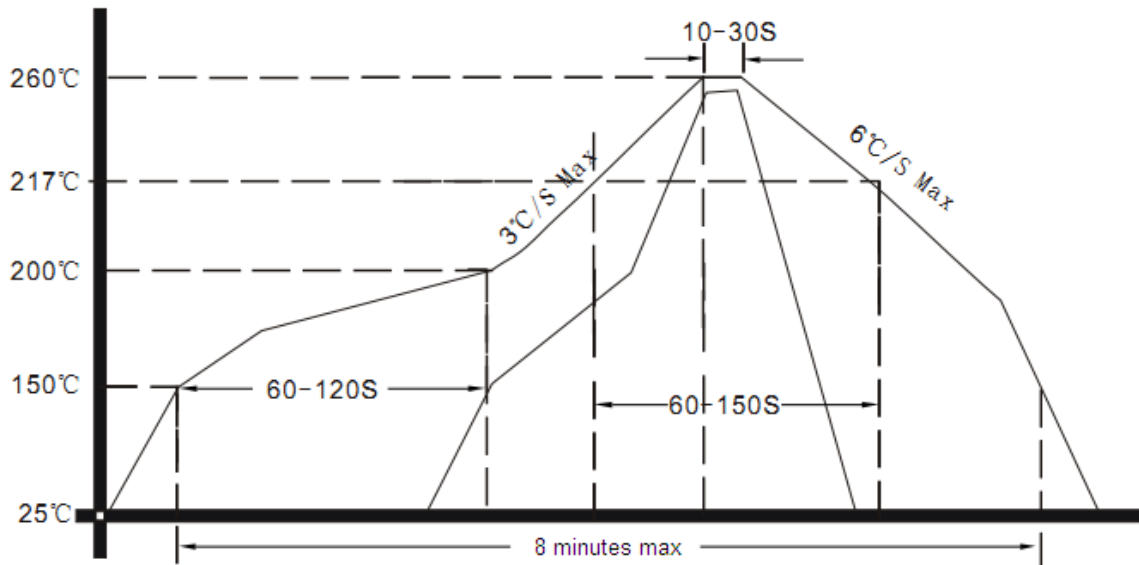
4. Coding Rules



Size	Height	Holdover Capability	Supply Voltage	Output Waveform	Operating temperature
55 50×50 (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 9 -20°C~75°C
66 60×60 (mm)	B 19mm, single Freq, internal GPS receiver	B ±3.0μs 0°C~60°C 24hours			
65 65×65 (mm)	C 19mm, single Freq, internal dual-mode receiver	C ±8.0μs 0°C~60°C 24hours	1 5.0V	1 Sine Wave 2 HCMOS	1 0°C~80°C 2 -10°C~70°C 9 -20°C~75°C
	F 13mm, single Freq, external GPS receiver	D ±1.5μs ΔT=±5°C 24hours			
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				
	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				



5. Reflow Soldering Curve (RoHS)



6. Package (mm)

