Travelling Merchant:_____

DATASHEET

Standard: **CM65A-D129-10.00MHz-I**

P/N: _____

Plot			The Label
Drew	Audited	Approved	
Amway.wei	Tony · Wang	Jason Zhao	
Date: 2021.03.30			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 based on CM65A-D129-10.00MHz-A	David	2021.03.30

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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			
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	$\times10^{-12}$	24 hours average when locked to 1 PPS
	Short-term Stability			5	$\times10^{-12}$	Temperature stability, no EMI\EMC or other interference, test after power for 1 hour ref. to 25℃; 1s.
	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)		-125	-115	dBc/Hz	10Hz
			-145	-135		100Hz
			-150	-145		1KHz
			-152	-147		10KHz
			-155	-150		100KHz
			-155	-150		1MHz
	Connector		Pin 2			
Holdover	Holdover Time	Min.	Typ.	Max.	Unit.	Test Condition

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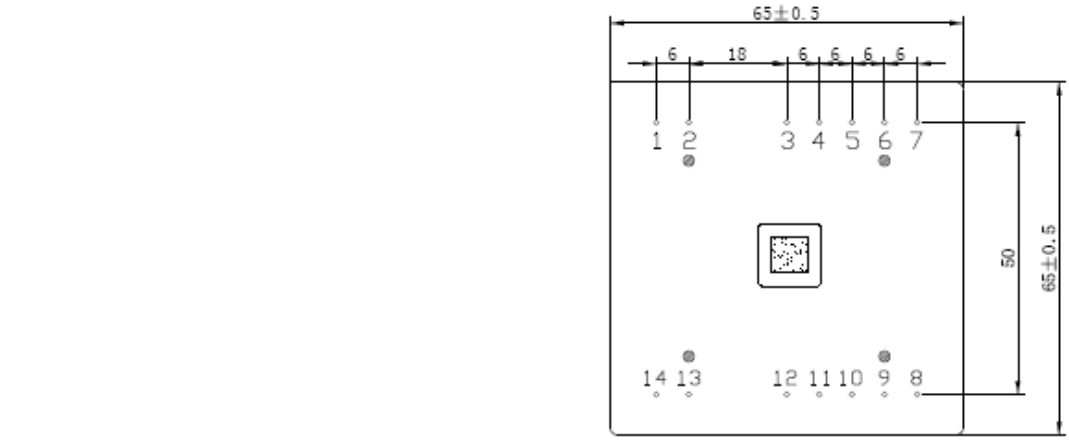
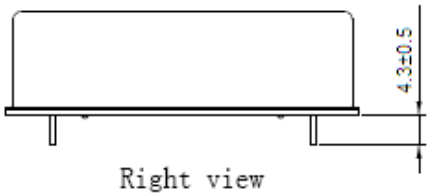
Capability	24 Hours	-1.5		+1.5	μs	△T=±5℃, 24 hours holdover after turn on 7days and lock 2days. Temperature variable speed less than 1℃per minute
Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Supply Voltage	4.75	5.0	5.25	V	
	Current Consumption			2500	mA	During Warm-up
				1000	mA	During 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 (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	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; 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.

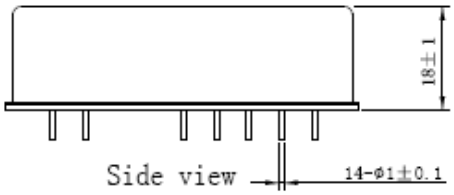
2. Mechanical Structure(mm)



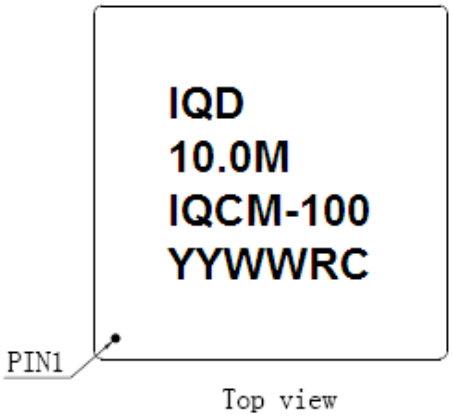
Bottom view



Right view



Side view



Top view

Note1: Tolerance ± 0.2mm without mark

Note2: Referential Weight 135±15g

Note3: The YY representative: year
The WW representative: week

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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. The Output Message Protocol

Example：

$PDP,00,0,F,Q,-0000,32995.0000,32769.0000,000,000,00000.0000,00000.0000,00000.0000,00000.0000,0-00,+058.6416,-0001,www.iqdfq.com,2.4,2014-04-08*55

In the Format column, c stand for char ,d stand for digit, s stand for sign.

Field No.	**Name**	**Format**	**Description**	**Length** (byte)
0	$PDP	$ccc	Message ID, DAPU Telecom Technology protocol header	4
1	No	dd	Message No.	2
2	TxRxFlag	d	The transmit and receive flag.(0: upper computer transmit; 1: upper computer receive)	1
3	CStatus	c	Current status.(F: warm-up; L: Lock; H: Hold over)	1
4	TrackStatus	d	Track status (Q: fast track;S: slow track)	1
5	cPHDiff	sdddd	Current phase difference, 1 unit stand for 6.25ns	5
6	cPWM1	ddddd.dddd	Current PWM1 (Voltage-controlled value1)	10

7	cPWM2	ddddd.dddd	Current PWM2 (Voltage-controlled value2), not used, output 32769.0000 as default.	10
8	SYNCNT	ddd	The synchronous times	3
9	HCNT	ddd	Power on hours count	3
10	HPAVG	ddddd.dddd	The average of the PWM in the last half hour	10
11	VCH1	ddddd.dddd	Voltage-controlled compensation value every half hour	10
12	HPMOD	ddddd.dddd	The Module PWM Value	
13	VCM10	ddddd.dddd	Voltage-controlled compensation value every 10 minutes	10
14	POS	d-dd	The position of the product.(Layer-No), just for the inner test.	4
15	TEMP	sddd.dddd	The temperature monitored inside the module	9
16	AlarmFlag	sdddd	The first 4 bytes are invalid, only the last 1 byte indicate Alarm flag(0: Normal; 1:OCXO heat up abnormal; 2:OCXO output abnormal; 3:The inside temperature sensor abnormal)	5
17	Website		www.iqdfq.com	13
18	Version	d.d	version	3
19	Date	dddd-dd-dd	Date	10
20		dd	55	2
21	END		<CR><LF>	2

The message output from Tx(PIN7), 9600 baud rate, data bits 8, stop bit 1, parity bit none, flow control bit none.

4. Holdover capability Reference

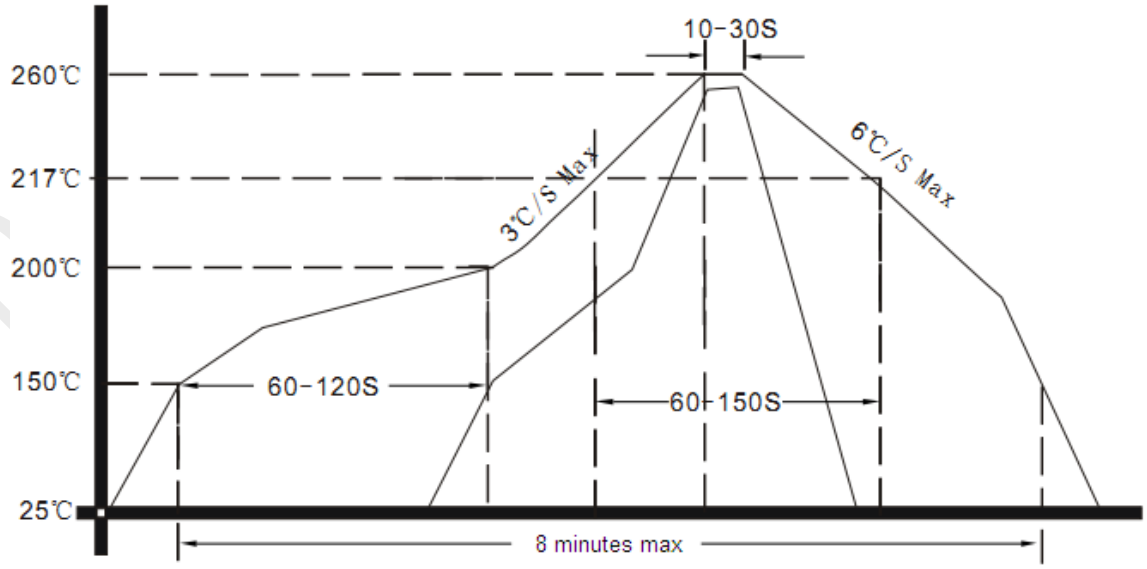
First holdover time	±1.5μS Holdover capability(hour) after GPS recover 1~47hours	
X(hour)	Training time≥7days	Training time =4~6days
1	≥23	≥12
2	≥23	≥12
3	≥22	≥11
4	≥21	≥10
5	≥21	≥10
6	≥20	≥10
7	≥19	≥9

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）.

5. Reflow Soldering Curve (RoHS)



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6. Package（mm）