

Customer Code : \_\_\_\_\_

# DATASHEET

DAPU P/N : CM65A-G128-20.00MH-A

Customer P/N: \_\_\_\_\_

DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2016.10.29			

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## 1. Electrical Parameters

	Parameters	Min.	Typ.	Max.	Unit.	Test Condition	
1 PPS Reference Input	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	20.00			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 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.	
	Aging Tolerance 1 Year	-0.01		+0.01	$\times 10^{-6}$		
	Phase Noise (All conditions)			-110	-100		dBc/Hz
				-135	-125	100Hz	
				-145	-140	1KHz	
			-150	-145	10KHz		
			-150	-145	100KHz		
			-150	-145	1MHz		
Connector	Pin 2						



Holdover Capability	Holdover Time	Min.	Typ.	Max.	Unit.	Test Condition
	8 Hours	-1.5		+1.5	μs	ΔT=±5℃, 8 hours holdover after turn on 7days and lock 3days. 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			3000	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 <sub>OH</sub> )	2.7			V	50Ω
	Low-level Output voltage (V <sub>OL</sub> )			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 <sub>H</sub> )	2.7			V	
	Rx low-level Input Voltage (V <sub>L</sub> )			0.4	V	
	Tx high-level Output Voltage (V <sub>H</sub> )	2.7			V	
	Tx low-level Output Voltage (V <sub>L</sub> )			0.4	V	
	Serial Protocol	9600-N-8-1				
Connector	Pin6 and Pin7					
Environmental Conditions	Parameter	Conditions				
	Operating temperature	-40℃ to +85℃				
	Storage Temperature	-55℃ to +105℃				
	Storage humidity	30%~80%				

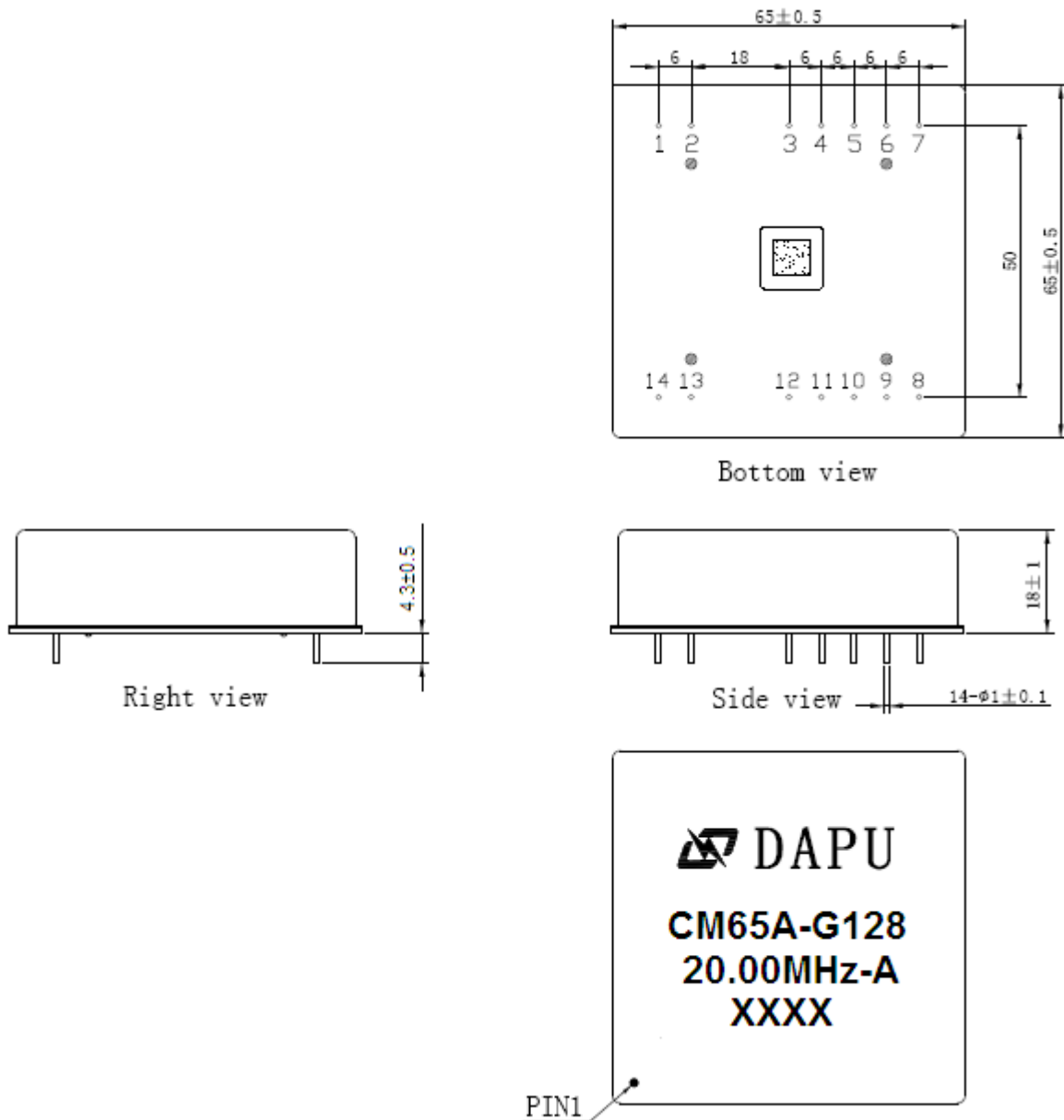


	ESD Level	Human Body Model,class2: 2000V to 4000V; ANSI/ESDA/JEDEC JS-001-2010.
		Machine Model, class B: 200V to 400V; ANSI/ESDA/JEDEC JS-001-2010.
	Moisture Sensitivity Level	Not humidity sensitive.
	Vibration	Test Condition: 0.75mm ;acceleration:10g;10Hz~500Hz, one cycle per 30 min, test 2 hour. (3 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)



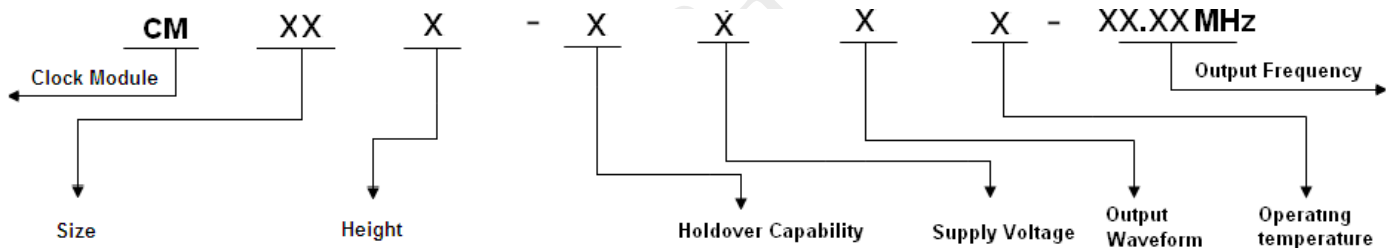
- Note1:** Tolerance  $\pm 0.2$ mm without mark
- Note2:** The first two xx representative: week  
After two xx representative: year
- Note3:** Referential Weight  $135 \pm 15$ g



**PIN DEFINITION**

PIN	Name	DESCRIPTION
2	20MHz OUTPUT	20MHz 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

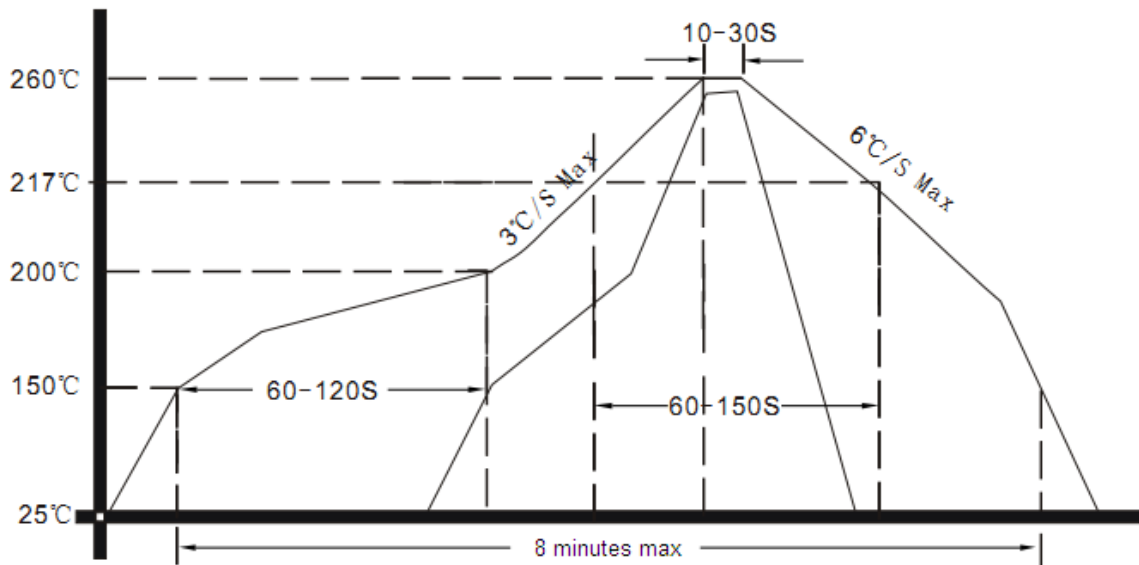
**3. Coding Rules**



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	1	0°C~80°C
66	60×60 (mm)	B	19mm, single Freq, internal GPS receiver	B	±3.0µs 0°C~60°C 24hours			2	HCMOS	2	-10°C~70°C
65	65×65 (mm)	C	19mm, single Freq, internal dual-mode receiver	C	±8.0µs 0°C~60°C 24hours					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						



#### 4. Reflow Soldering Curve (RoHS)



#### 5. Package (mm)

