Travelling Merchant:_____

DATASHEET

Standard: **CM55F-P128-10.00MHz**

P/N: _____

Plot			The Label
Drew	Audited	Approved	Stamp, please! Thanks!
Amway.wei	Carry.Wang	James.Liu	
Date: 2017.06.09			

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	2017.06.09

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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	
	Low-Level Output Voltage (V_{IL})			0.4	V	
	Pulse Width	10			us	
	Connector		Pin 10			
State Input	Parameters	Min.	Typ.	Max.	Unit.	
	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		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	E-12	24 hour average when locked to 1 PPS
	Short-term stability			2	E-11	Temperature stability, no EMI\EMC or other interference, test after power for 1 hour ref. to 25℃; 1s, using PN9000 equipment.
	Phase noise (All conditions)		-115		dBc/Hz	@ 10Hz offset
			-135		dBc/Hz	@ 100Hz offset
			-145		dBc/Hz	@ 1KHz offset
			-150		dBc/Hz	@ 10KHz offset
			-150		dBc/Hz	@ 100KHz offset
			-150		dBc/Hz	@ 1MHz offset
	Connector		Pin 14			
Holdover Capability	Holdover Time	Min.	Typ.	Max.	Unit.	
	8 hours	-5		+5	us	ΔT=±5℃, 8 hours holdover after power on / lock 1 hours. Temperature variable speed less than 1℃ per minute

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Supply Voltage	Parameters	Min.	Typ.	Max.	Unit.	
	Supply voltage	4.75	5.0	5.25	V	
	Current consumption			1800	mA	During Warm-up
				600	mA	During steady state operation @25℃
	AC ripple			50	mVpk-pk	10Hz to 1MHz
	Connector	Pin 3				
1 PPS Output Waveform Characteristics	Parameters	Min.	Typ.	Max.	Unit.	
	Waveform	HCMOS				
	High-Level Output Voltage(V_{OH})	2.7			V	
	Low-level Output voltage (V_{OL})			0.4	V	
	Pulse width		100		ms	
	Connector	Pin 12				
State Output	Parameters	Min.	Typ.	Max.	Unit.	
	Lock	2.7			V	<5mA Load
	Holdover			0.4	V	<5mA Load
	Connector	Pin 5				
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 hours. (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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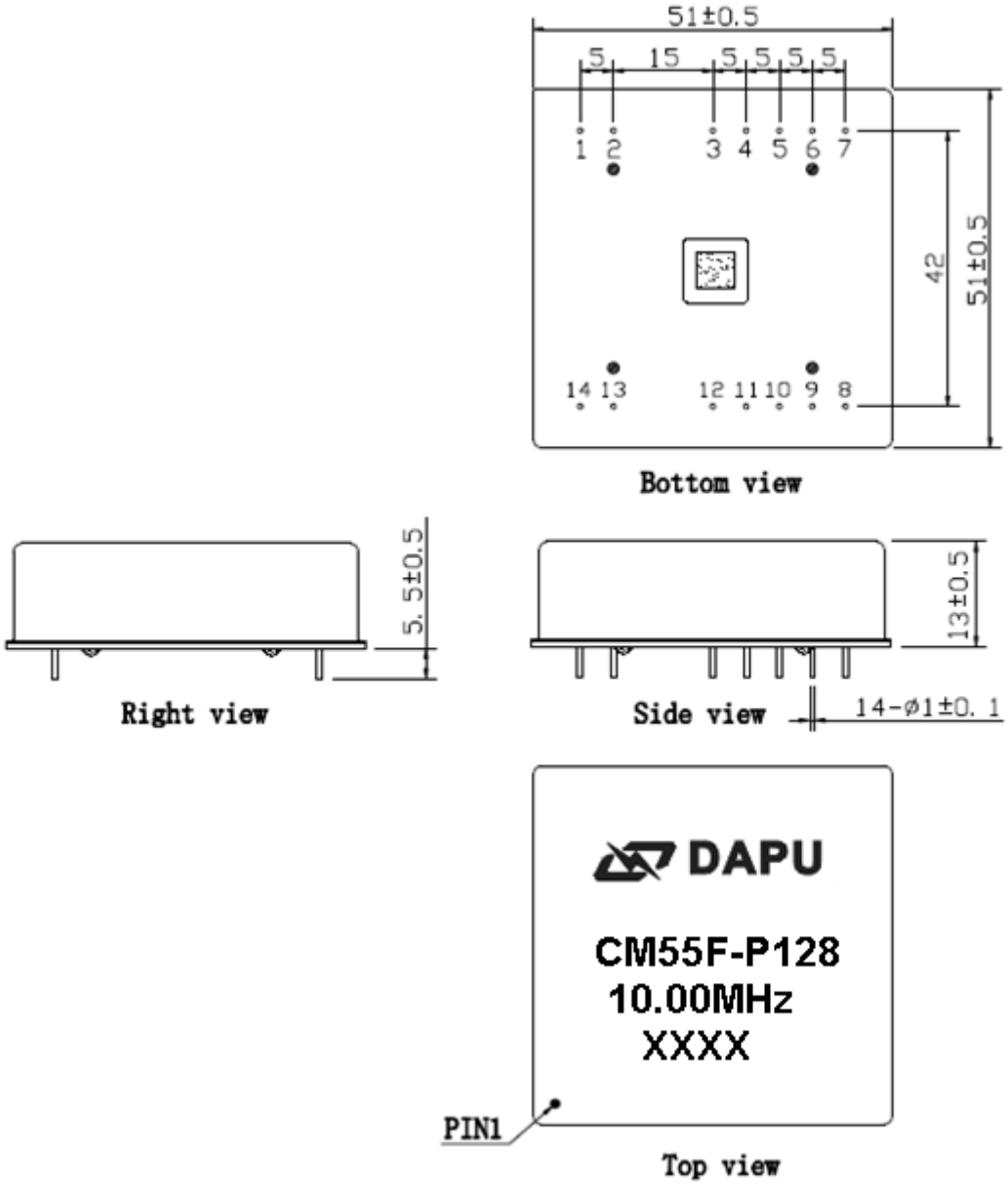
2、Mechanical Structure(mm)



Note1: Tolerance ± 0.2mm without mark

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

Note3: Referential weight 52±5g

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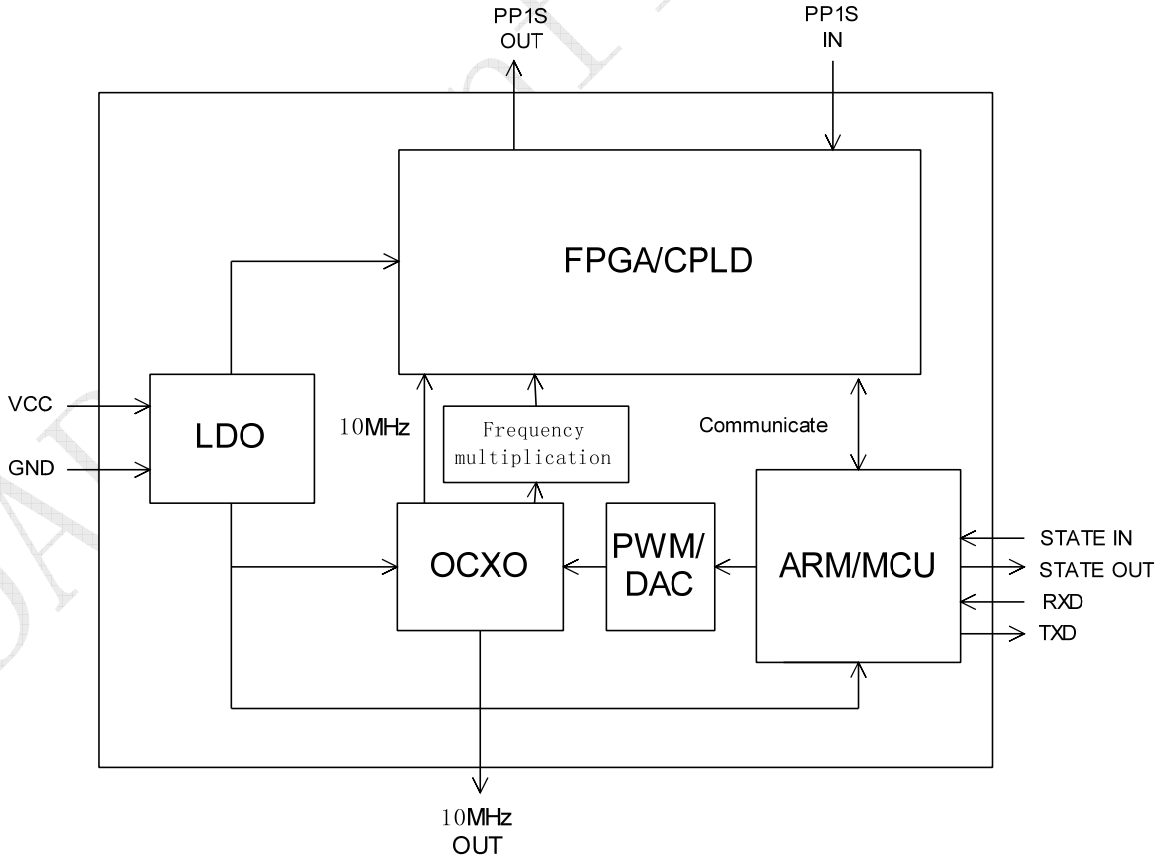
PIN DEFINITION			
PIN	**Name**		**DESCRIPTION**
3	Vcc		Power supply input,4.75V to 5.25V.
5	State Output		State output. Output high level means the CM is locked and stable ,others low level.
6	RX INPUT		Asynchronous serial data input.9600-N-8-1.
7	TX OUTPUT		Asynchronous serial data output.9600-N-8-1.
8	State INPUT	H: Lock Enable	The work state is set to normal operation when the state input is high.
		L: Lock Disable	The work state is set to Holdover when the state input is low.
9	NC		Not connected.
10	1PPS INPUT		1PPS reference input.
12	1PPS OUTPUT		The clock module 1PPS output.
14	10MHz OUTPUT		10MHz OCXO frequency output.
1、2	NC		Not connected.
4、11、13	GND		GND

3、Functional Block Diagram



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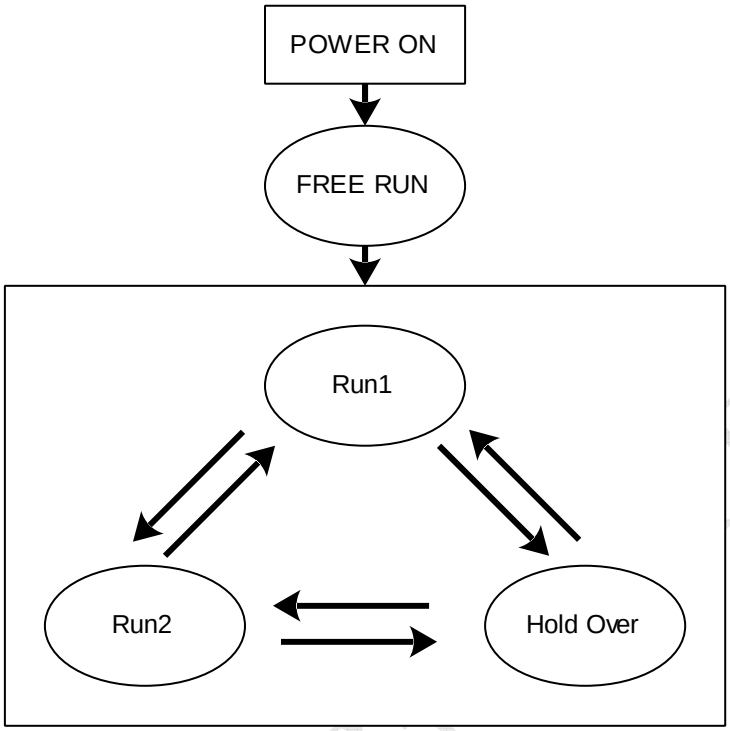
4、Workflow Diagram



Run1: Fast track. Adjust the OCXO 10MHz output frequency quickly to track the 1PPS of 10MHz with 1PPS reference.
Run2: Slow track. Adjust the OCXO 10MHz output frequency slowly when the phase error is in the define range.
Hold Over: GPS 1PPS reference miss, an algorithm has been developed which enables adaptive modeling of the frequency stability of an OCXO with reference to a GPS timing signal.
Free Run: Clock module power on without 1PPS reference anyway.

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5、The Product Test Output Message

Example:

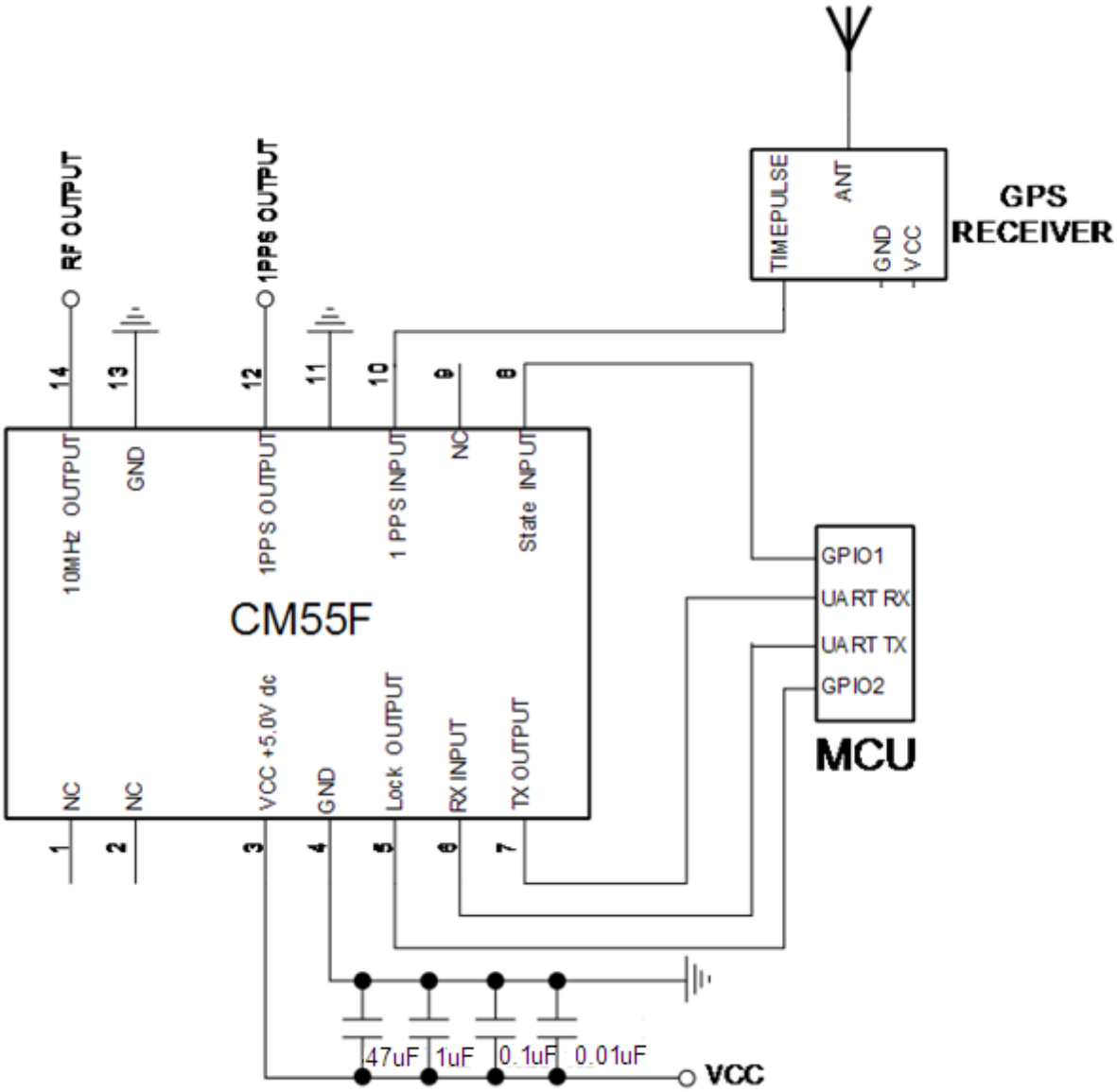
$PDP,00,0,F,Q,-3095,32768.0000,32768.0000,000,000,00000.0000,00000.0000,00000.0000,00000.0000,3-23,+000.0000,-0000,www.dptel.com,1.1,2011-05-16*55

Notes:

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: 3 mins warm-up; L: Lock; H: Hold over)	1
4	TrackStatus	d	Track status (Q: fast track;1: slow track;S: slow track over 1 hour;S: track over 48 hours)	1
5	cPHDiff	sdddd	Current phase difference	5
6	cPWM1	ddddd.dddd	Current DAC1 (Voltage-controlled value1)	10
7	cDAC2	ddddd.dddd	Current DAC2 (Voltage-controlled value2)	10
8	SYNCNT	ddd	The synchronous times	3
9	HCNT	ddd	Hours after enter slow track	3
10	HPAVG	ddddd.dddd	The average of the DAC in the last 1 hour	10
11	VCH1	ddddd.dddd	Voltage-controlled compensation value every 1 hour	10
12	HPMOD	ddddd.dddd	The Module DAC 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	inT	sddd.dddd	NA	9
16	TcPHDiff	sdddd	The product current phase difference	5
17	Website		www.dptel.com	13
18	Version	d.d	version	3
19	Date	dddd-dd-dd	Date	10
20		dd	55	2
21	END		<CR><LF>	2

6、Application Information



GPS RECEIVER supply 1PPS signal to the clock module CM55F.

The MCU Monitors the work state of CM55F.

The CM55F is operated with a supply of 5V.

Note1: Power on more than seven days is necessary for the OCXO drift fast in the first four days.

Note2: The adaptive model can be built with at least two days good GPS signal. Every time power off will lose the model.

Note3: The work state is set to hold over when the state input is low, no matter the GPS 1PPS effective or not.

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7、Coding Rules

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

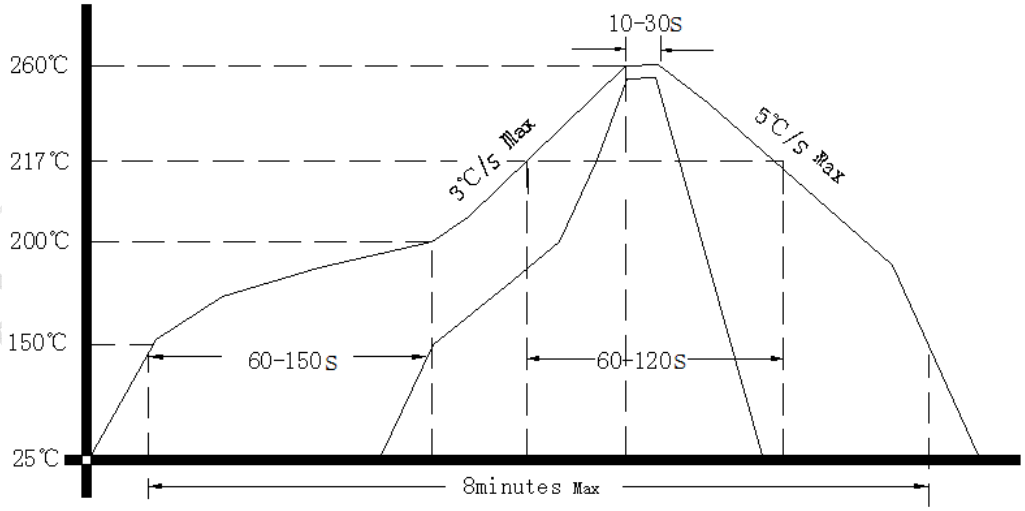
Clock Module

Output Frequency

Size		Height		Holdover Capability				Supply Voltage		Output Waveform		Operating temperature	
65	65×65(mm)	A	Without GPS Receiver,single Freq.19mm	A	±1.5μs	ΔT=±30℃	24hours	1	5.0V	1	Sine Wave	8	-40℃~85℃
55	50×50(mm)	B	Without GPS Receiver,single Freq.15mm	W	±1.5μs	ΔT=±15℃	24hours	3	3.3V	2	HCMOS	9	-20℃~75℃
22	20×20(mm)	F	Without GPS Receiver,single Freq.13mm	D	±1.5μs	ΔT=±5℃	24hours						
				E	±3.0μs	ΔT=±5℃	24hours						
		G	Build-in GPS Receiver,single Freq.13mm	F	±8.0μs	ΔT=±5℃	24hours						
66	60×60(mm)	H	Build-in GPS Receiver,dual-Freq.13mm	J	±80μs	ΔT=±5℃	24hours *1						
		K	Build-in GPS/BeiDou Receiver,single Freq.13mm	S	±44μs	ΔT=±5℃	24hours *2						
		L	Build-in GPS/BeiDou Receiver,dual-Freq.13mm										
77	75×75(mm)	P	13mm,PTP Function,SMT										
33	35×35(mm)	T	19mm, PTP Function,DIP										
54	54×50(mm)												

NOTE:*1 Power on and lock to the GPS 1PPS 2 hours
*2 Power on and lock to the PTP 48 hours
Default power on 7 days and lock to the reference source 3 days

8、 Reflow Soldering Curve (RoHS)



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9、Package（mm）