Customer Code : A021

DATASHEET

DAPU P/N: **O22S-2101-26.00MHz**

Customer P/N:

DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Amway.wei	Tony · Wang	James. Liu	
Date: 2015.08.26			

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Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	Amway	2015.08.26

1. Electrical Parameters

MODEL: O22S-2101-26.00MHz

Item	Description	Parameters Min.	Parameters Typ.	Parameters Max.	Unit	Test Condition
Output	Frequency		26.00		MHz	
	Output Start up Time			200	ms	
	Output Waveform		HCMOS			
	Output Low Voltage			0.5	V	V_{cc}=5.0V, O_{load}=15pF
	Output High Voltage	4.0			V	V_{cc}=5.0V, O_{load}=15pF
	Duty Cycle	40	50	60	%	@50%
	Rise / Fall Time (10%~90%)			15	ns	V_{cc}=5.0V, O_{load}=15pF
	Load		15		pF	
	Sub Harmonics			-40	dBc	
	13MHz, 8.6666MHz and their odd multiples			-25	dBc	
Frequency Stabilities	Frequency Tolerance vs. Operating Temperature Range	-10		+10	$\times 10^{-9}$	T_A varied from -10℃ to 85℃, measurement referenced to frequency observed with T_A = 25℃, V_{cc}=5.0V, V_c=2.0V, $O_{load=}$15pF, temperature variable speed less than 2℃per minute.
	Initial Frequency Tolerance	-0.2		+0.2	$\times 10^{-6}$	Measurement referenced to frequency observed with T_A=25℃, V_{cc}=5.0V, V_c=2.0V, After 24 hours of operation (during the 1st month of operation).
	Frequency Tolerance vs. Supply Voltage	-1		+1	$\times 10^{-9}$	measurement referenced to frequency observed T_A=25℃, V_{cc} varied from 4.75V to 5.25V, V_c =2.0V and O_{Load}=15pF.
	Frequency Tolerance vs. Load	-1		+1	$\times 10^{-9}$	5% load change measurement referenced to frequency observed with T_A= 25℃, V_{cc}=5.0V, V_c=2.0V, and O_{Load}=15pF.
	Short-Term Stability: Allan Variance			1	$\times 10^{-9}$	Temperature stability, no EMI\EMC or other interference， test after power for 1hour ref. to 25℃; 1ms , using PN9000 equipment.
				0.1	$\times 10^{-9}$	Temperature stability, no EMI\EMC or other interference， test after power for 1hour ref. to 25℃; 0.1s , using PN9000 equipment.

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	Aging Tolerance Per Day	-0.8		+0.8	$\times 10^{-9}$	V_{cc}, V_c, T_A constant measurement referenced to frequency observed with T_A=40℃, V_{cc}=5.0V, V_c=2.0V, and after 30 days of operation
	Aging Tolerance Per Month	-0.016		+0.016	$\times 10^{-6}$	
	Aging Tolerance 1 Year	-0.04		+0.04	$\times 10^{-6}$	
	Overall Stability	-0.05		+0.05	$\times 10^{-6}$	Inclusive of the following: - operating temperature -10℃ to 85℃ - 5.0V ±5% - 15pF load ±5%
Power Supply	Supply Voltage	4.75	5.0	5.25	V	
	Steady Consumption			500	mA	@0℃
				250	mA	@25℃
				120	mA	@65℃
	Warm up Time			5	minutes	@25℃within ±0.05$\times 10^{-6}$ of final frequency with reference after 1 hour on.
				8	minutes	@0℃within ±0.05$\times 10^{-6}$ of final frequency with reference after 1 hour on.
	Warm up Current			800	mA	
Voltage Control Characteristics	Frequency Tuning Range	-1.5		-0.7	$\times 10^{-6}$	V_c=0V.measurementreferenced to V_c=2.0V
		-0.2		+0.2	$\times 10^{-6}$	V_c=2.0V. measurement referenced to exactly 26.00MHz
		+0.7		+1.5	$\times 10^{-6}$	V_c=4.0V. measurement referenced to V_c=2.0V
	Linearity			10	%	
	Slope	Positive				
	Input Impedance	200			KΩ	
Vref output	Reference Voltage	3.8	4.0	4.2	V	T_A= 25℃
	Load Current			1	mA	T_A= 25℃
	Internal Resistance Value			10	Ω	T_A= 25℃
	Stability Versus Operating Temperature			5	mV	That means between -10 ℃ to 85 ℃
	Stability Versus Supply Voltage			2	mV	T_A= 25℃

Phase Noise	Phase Noise			-70	dBc/Hz	1Hz
				-90		10Hz
				-120		100Hz
				-140		1KHz
				-145		10KHz
Environmental Conditions	Operable Temperature	-40		+85	℃	
	Storage Temperature	-55		+105	℃	
	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.				
	Vibration	Test Condition: 0.75mm ;acceleration:5g;9Hz～200Hz, one cycle per 30 min, test 2 hour. (3 times for each 3 directions X ,Y , Z)， IEC 68-2-06 Test Fc.				
	Shock	5 m/s^2; 11ms; half sine wave (3 times for each 3 directions X ,Y, Z),IEC 68-2-27 Test Ea/Severity 50A.				
	Humidity	IEC 60068-2-30				
Full Package Storage	Relative humidity (%)	20%～70%				
	Temperature (℃)	-10~35℃				

2. Remote Inventory

2.1 Characteristic frequency sample points

We provided The tuning behaviour of the OCXO (F=f(vc)) in terms of 11 equidistant frequency sample points F_i on an integral Flash memory.

The equidistant tuning voltage increment has to be dv_c= 4V/10.

Therefore the equidistant tuning voltage samples will be v_{ci} = 0 + (i-1)*dvc, with i=1 to 11 (see 2.1.1, Definitions)

2.1.1 Definitions

n ≡ number of sample points, n=11

i ≡ index

vc_{min} ≡ 0V

vc_{max} ≡ 4V

Fi ≡ equidistant frequency sample

vc ≡ tuning voltage

dvc ≡ tuning voltage increment, (vc_{max}-vc_{min})/ (n-1) -> 0.4V

2.1.2 Format of the frequency readings

The frequency readings is applied as follows:

Typical frequency readings Fi:

e. g. F1 = 25 999 971.35 Hz -> F1 = 97135 (no decimal point in the data)

e. g. F2 = 26 000 031.49 Hz -> F2 = 03149

Only the five last digits, without a decimal point have to get written into the Flash.

Confer to 2.1.3, Coding requirement of the characteristic frequency samples in the Flash memory.

2.1.3 Coding requirements of the characteristic frequency samples in the Flash memory

Manufacturers name, Crystal Oscillator Type, Date Code, Serial number without blanks	= 16 characters
One blank	=1 characters
11*5 Frequency samples without blanks	= 55 characters
	72 characters

e. g. Manufacturers name = DAPU

Crystal Oscillator Type=O

Date Code = 0429 year, calendar week

Serial number = xxx1234

One blank

First frequency sample = 96337, second one = 96804… …eleventh = 04491

DAPUO0429xxx1234 96337968049756798224989499977000674016340260803567044 91

2.1.4 Accuracy for the frequency measurement

The frequency measurement is accomplished by means of a two-digit mantissa reading, like e.g. 25 999 971.35 (rounded)

The frequency measurement itself is implemented with an accuracy of at least better than Fi ±0.19ppb, (This results from ±5mHz ≡ ±0.19ppb).

2.1.5 Accuracy and stability to set the tuning voltage

During the whole measurement, the accordant tuning voltage vci is set with a relative accuracy of better than vci ±0.5mV and the tuning voltage stability is maintained better than vci ±0.1mV.

2.2 The integral Flash memory

The Flash memory is a 3.3V serial I2C-bus EEPROM.

Storage capacity: 16kByte

SDA (input/ output) -> 3.3V HCMOS, with an integral pull up 50KΩ

SCL (input) -> 3.3V HCMOS, with an integral pull up 50KΩ

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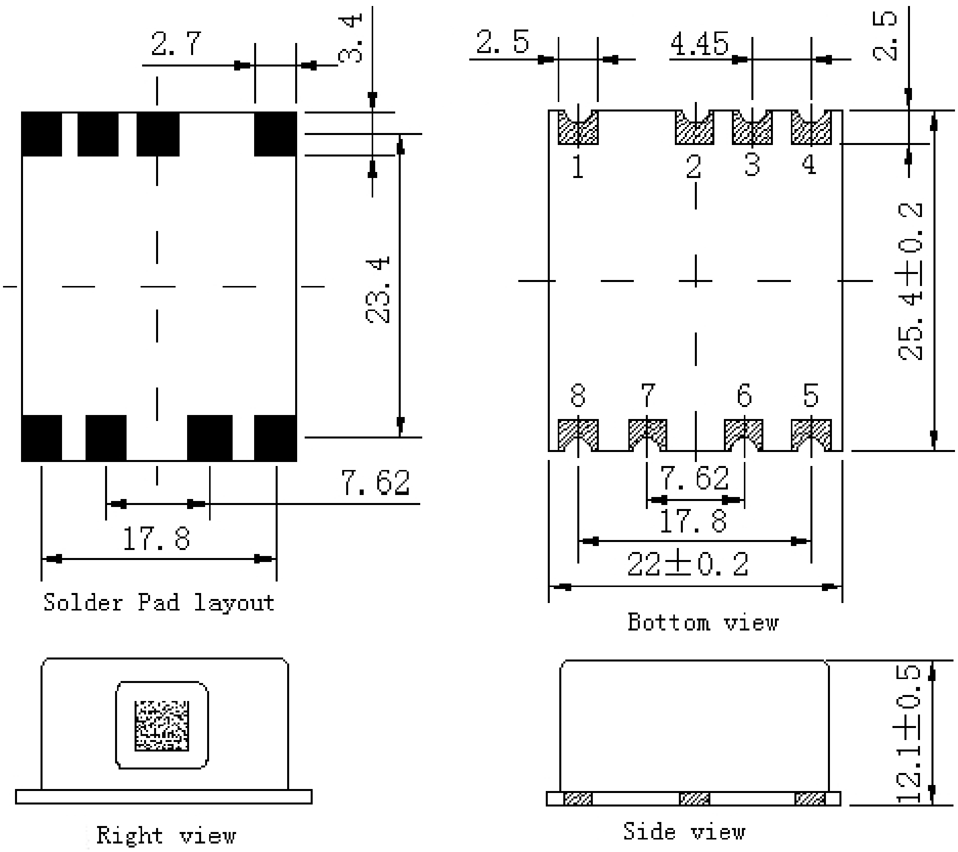
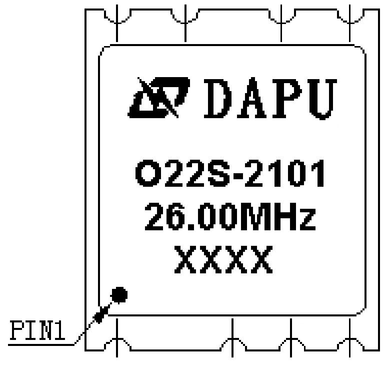
3. Mechanical Structure (mm)



PIN FUNCTTON

PIN	FUNCTTON
1	VC
2	Vref Output
3	E/D
4	VCC Input
5	OUTPUT
6	SCL
7	SDA
8	GND



Top view

Note1: Tolerance ±0.20mm without mark

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

Note3: Referential Weight 12g

Note4: Output E/D:
"0" -> output disabled (high Z)
"1" -> output enabled
"open/ no connection" -> output enabled

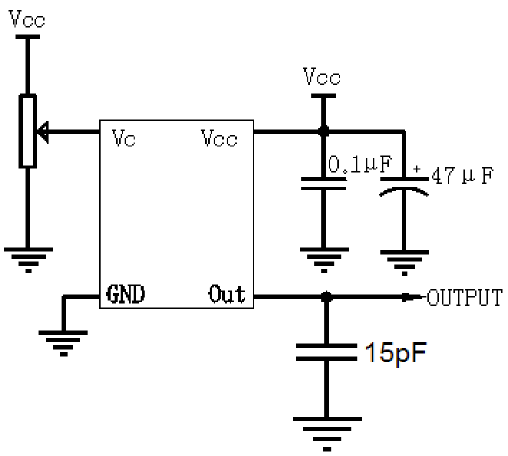
Note5: Material composition :

Pad/terminals：Cu （Surface plating: Ni 3-6um，Au 0.1～0.5um）

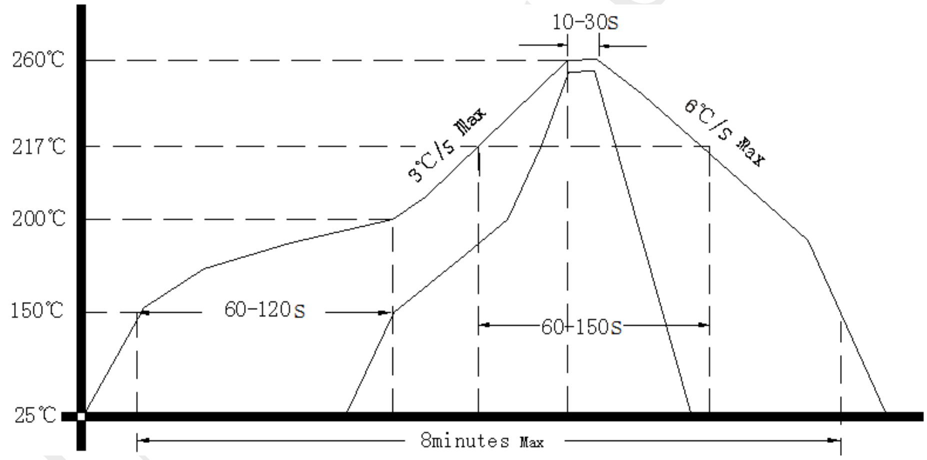
Base: High-TG FR4

Cover：Stainless steel

4. Test Circuit



5. Reflow Soldering Curve (RoHS)



6. Package: Tape & Reel（mm）