

Customer Code: A021

DATASHEET

DAPU P/N : **O77A-2101-10.00MHz** Customer P/N : **1AB367990002**

DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2015.02.28			

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Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	<i>Amway</i>	2013.05.02
1.1	Modified according to customer requirements	<i>Amway</i>	2014.12.05
1.2	Modified the 1 st page	<i>Amway</i>	2015.02.28



1. Electrical Parameters

MODEL: O77A-2101-10.00MHz						
Item	Description	Parameters			Unit	Test Condition
		Min.	Typ.	Max.		
	Frequency	10.00			MHz	
	Output Waveform	LVTTL				
	Output Low Voltage			0.8	V	$V_{cc}=5.0V, O_{load}=15pF$
	Output High Voltage	2.4			V	$V_{cc}=5.0V, O_{load}=15pF$
	Duty Cycle	40	50	60	%	@50%
	Rise / Fall Time (10%~90%)		2	3	ns	@25°C
	Over shoot and Under shoot			10	%	
	Load	15			pF	
	5MHz sub-harmonic peak			-37	dBc	
	Start up time			2	S	
Output	Frequency Tolerance vs. Operating Temperature Range	-0.085		+0.085	$\times 10^{-9}$	T_A varied from 0°C to 85°C, measurement referenced to frequency observed with $f_{ref}=(f_{max}+f_{min})/2$ $V_{cc}=5.0V, O_{load}=15pF$, temperature variable speed less than 4°C per minute.
		-0.04		+0.04	$\times 10^{-9}$	$\Delta T < 5^\circ C$ within range 0°C to 20°C $V_{cc}=5.0V, O_{load}=15pF$, temperature variable speed less than 1°C per minute.
		-0.02		+0.02	$\times 10^{-9}$	$\Delta T < 5^\circ C$ within range 20°C to 60°C $V_{cc}=5.0V, O_{load}=15pF$, temperature variable speed less than 1°C per minute.
		-0.027		+0.027	$\times 10^{-9}$	$\Delta T < 5^\circ C$ within range 60°C to 85°C $V_{cc}=5.0V, O_{load}=15pF$, temperature variable speed less than 1°C per minute.
		Warm-up stability	-0.015		+0.015	$\times 10^{-6}$
	Frequency variation During Thermal Shock (up to 3 minutes duration)	-2		+2	$\times 10^{-9}$	Ramp rate : 5°C/min up to 3 minutes duration, within entire operating temperature range.
	Initial Frequency Tolerance	-0.05		+0.05	$\times 10^{-6}$	Measurement referenced to frequency observed with $T_A=25^\circ C, V_{cc}=5.0V$, and after 12 minutes of operation, within 30 days after ex-works
	ADEV			0.025	$\times 10^{-9}$	Temperature stability, no EMI\EMC or other interference, test after power for 24hours, 25°C; 1s, using PN9000 equipment.



				0.01	$\times 10^{-9}$	Temperature stability, no EMI\EMC or other interference, test after power for 24hours, 25°C; 10s, using PN9000 equipment.
				0.014	$\times 10^{-9}$	Temperature stability, no EMI\EMC or other interference, test after power for 24hours, 25°C; 200s, using PN9000 equipment.
	Maximum total frequency jump	-0.05		+0.05	$\times 10^{-9}$	Measured during 72h of operation.
	Maximum daily ageing variation,based on mean ageing slope for running 24 hour segments throughout minimum of 48 hour measurement period	-0.02		+0.02	$\times 10^{-9}$	Measured during minimum of 48h of operation.
	Ageing Tolerance 8 hours	-0.48		+0.48	$\times 10^{-9}$	V_{cc} , T_A constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_{cc}=5.0\text{V}$, and after 16 hours of operation, within 30 days power off
	Ageing Tolerance 16 hours	-0.18		+0.18	$\times 10^{-9}$	V_{cc} , T_A constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_{cc}=5.0\text{V}$, and after 60 hours of operation, within 30 days power off
	Ageing Tolerance 24 hours	-0.1		+0.1	$\times 10^{-9}$	V_{cc} , T_A constant measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_{cc}=5.0\text{V}$, and after 7 days of operation, within 30 days power off
	Overall Stability	-0.3		+0.3	$\times 10^{-6}$	Inclusive of the following: operating temperature 0°C to 85°C 5.0V $\pm 5\%$ 15pF load $\pm 5\%$ 10 years aging reference to nominal frequency
Power Supply	Supply Voltage	4.9	5.0	5.1	V	
	Current Consumption			600	mA	@25°C
	Current Consumption			300	mA	$T_A=85^\circ\text{C}$



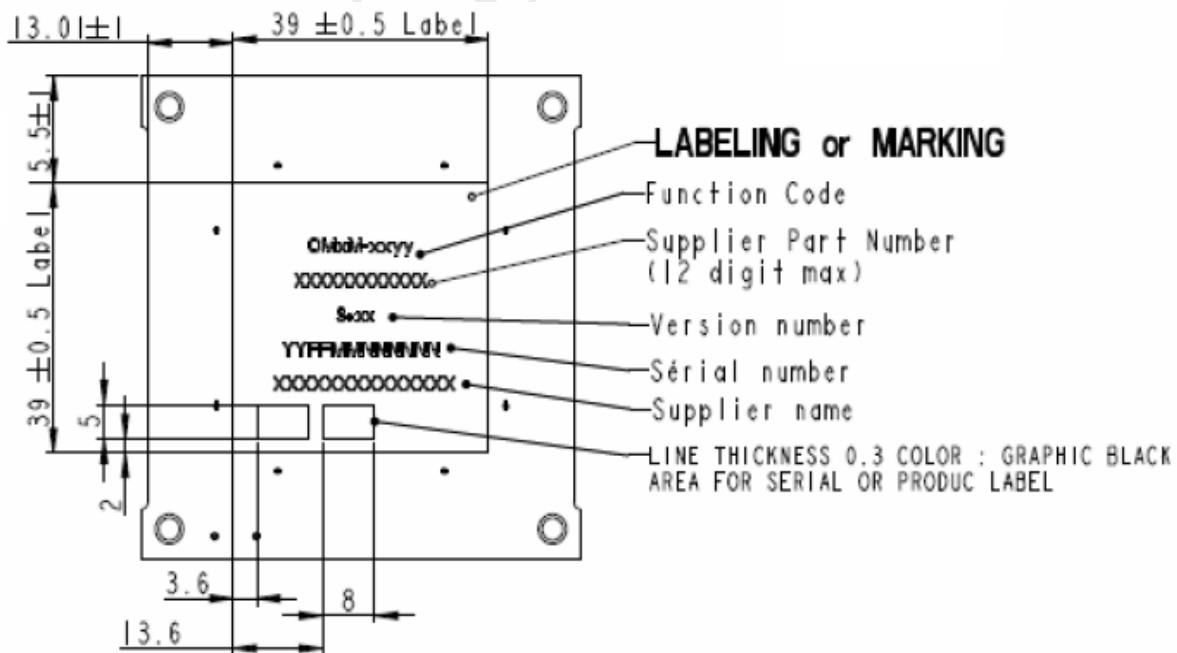
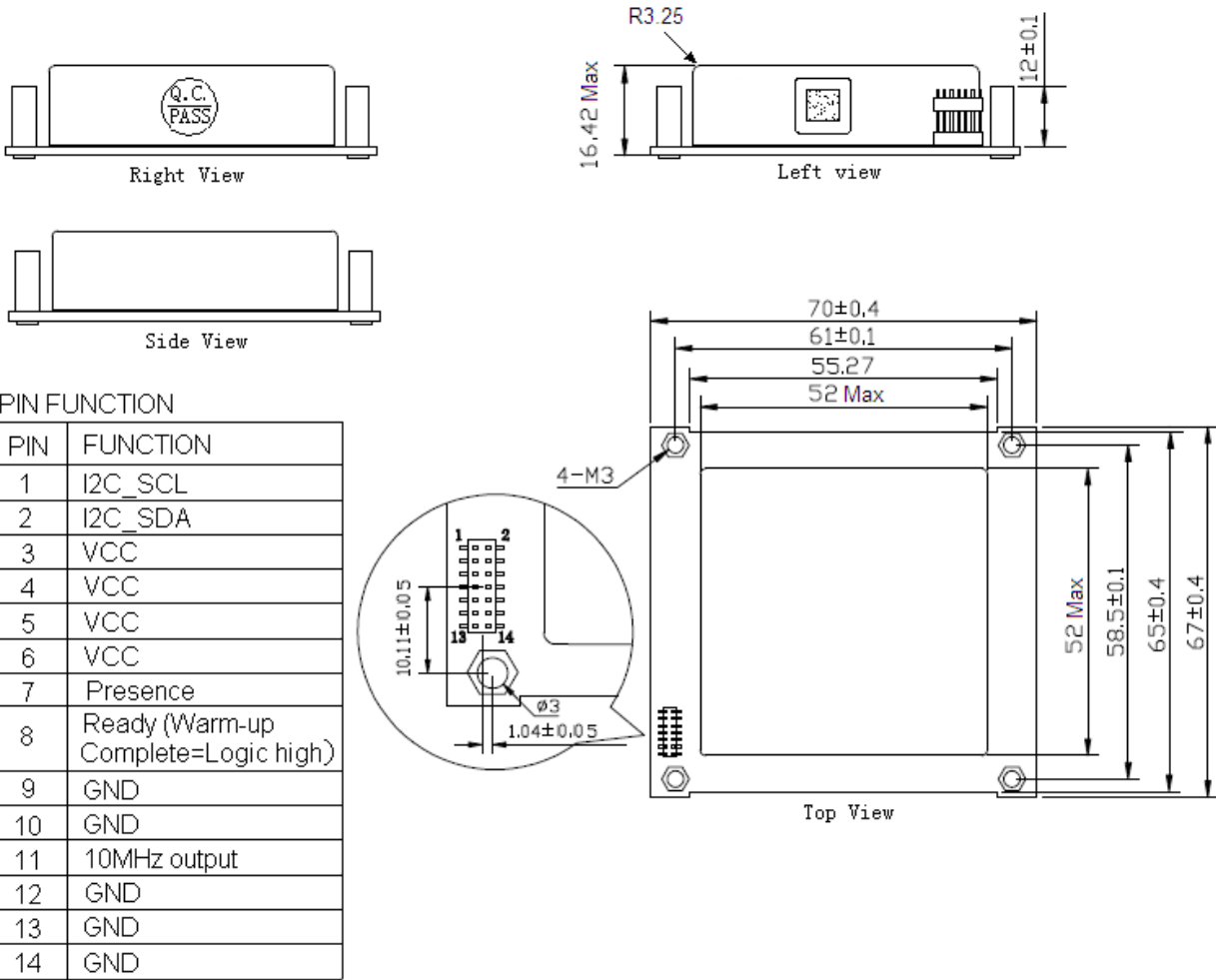
	Warm-up completion time			4	min	$T_A=25^{\circ}\text{C}$, Oscillator frequency within $\pm 0.015 \times 10^{-6}$, With reference to 24 hour value .Warm-up completion bit 0 to 1 transition.
				12	min	T_A in range 0°C to 85°C , Oscillator frequency within $\pm 0.015 \times 10^{-6}$, With reference to 24 hour value .Warm-up completion bit 0 to 1 transition.
	Warm up current			1200	mA	
	Ripple noise on power supply			10	mV	Peak to peak
	Inrush current on the 5V supply, at power up			3500	mA	For a $50\mu\text{s}$ max
Phase Noise	Phase Noise			-70	dBc/Hz	1Hz
				-100		10Hz
				-120		100Hz
				-130		1KHz
				-130		10KHz
				-130		1MHz
Environmental Conditions	Reference Air Velocity	1	2	3	m/s	
	Operable Temperature			+85	$^{\circ}\text{C}$	
	Storage Temperature	-40		+85	$^{\circ}\text{C}$	
	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.				
Environmental Reliability (Operational Conditions)	Vibration(Sinusoidal)	1. Frequency range:5-9Hz (displacement: 1,2mm) 2. Frequency range:9-200Hz (displacement: 4m/s^2) 3. Duration:3 \times 5 sweep cycles				
	Vibration(Random)	1. Frequency range:5-10Hz,10-50Hz,50-100Hz 2. ASD:0,04 m^2/s^3 3. Duration:3 \times 30 minutes				
	Shocks	1. Shock spectrum: half sine 2. Duration:11ms 3. Acceleration:50 m/s^2 4. Directions of bumps:6 5. Duration:100 in each direction				
	Humidity	1. Temperature:30 $^{\circ}\text{C}$ 2. Humidity: 93%RH 3. Duration: 4d (96h)				



Environmental Reliability (Non Operational Conditions)	Random Vibration	1. Frequency range:5-20Hz,20-200Hz. 2. ASD:1 m ² /s ³ 3. Duration:3 × 30 minutes
	Shocks	1. Shock spectrum: half sine 2. Duration:6ms 3. Acceleration:180m/s ² 4. Directions of bumps:6 5. Duration:100 in each direction
	Free fall	1. Height:0.1m 2. Duration:1 fall on each face
Environmental Reliability (Air temperature)	Low	1. low Temp:-25℃ ; 2. Duration: 72h
	High	1. low Temp:70℃ ; 2. Duration: 72h
	air/air Change	1. Temp Change:-25℃ ~ 30℃ 2. Cycle:5
	Humidity	1. Temperature:30℃ 2. Humidity: 93%RH 3. Duration: 4d (96h)
	Humidity(Condensation)	1. Temperature:30℃ 2. Humidity: 90-100%RH 3. Duration: 2Cycle



2. Mechanical Structure(mm)



Note: Referential Weight 65g



LABEL OR MARKING NOTES:

- The label marking shall agree with information stored in the OMxM memory at the time of delivery.
- Graphic shown is a visual representation only. Do not use to make an art master.
- Label shall be 0.25mm thick polycarbonate/polyester. Text shall be rear printed black on Lucent Central Office White per OS-11150 background, backed with 3M 468 permanent acrylic adhesive or equivalent. Finish shall be matte over clear. Approved equivalents are allowed.
- Label shall meet UL 969 requirements. Material must be of UL recognized component plastic. Supplier must be UL approved.
- A certification sheet verifying the suppliers UL approval for this material shall be provided by the supplier with each package/container or verification may be part of the adhesive release liner
- All dimensions millimeters Unless otherwise listed, all tolerances are ±0.38mm.
- All corners shall have a 1.52mm radius.
- Line 1 shall be 12 point Helvetica Bold Condensed font
- Line 2 shall be 10 point Helvetica Light Condensed font with a 12 characters per line maximum consisting of the Supplier's Part Number .
- Line 3 shall be 10 point Helvetica Light Condensed font with a 6 characters per line maximum consisting of the Version Number.
- Line 4 shall be 8 point Helvetica Light Condensed font with a 12 characters per line maximum consisting of the Supplier Serial Number.
- The Supplier name shall be black in color.(DAPU)

3. I²C Devices Address

3.1.1 8K I²C SERIAL EEPROM

Device name : AT24C08C

Device supplier : Atmel

Device address : 1010100~1010111

3.1.2 EEPROM for inventory and data storage

Address	Total number of bytes	Usage
0x000 – 0x05F	96	Inventory record
0x060 – 0x07F	32	Reserved future inventory format extension
0x080 – 0x1FF	384	Reserved for temperature correction record
0x0200 – 0x2FF	256	Reserved for aging correction record
0x0300 – 0x3FF	256	Reserved for future use



3.1.3 Inventory record in EEPROM

The inventory record inside the EEPROM will be in the following format. This is a 96 byte format.

Identification Fields	D#	# of bytes	Values (in Hex)
Header	D0	1	80
Function Code: OM-SD	D1-D11	11	5 ASCII bytes to show "OM-SD" See note 1 for unused position filling
Serial Number: "Y ₁ Y ₀ F ₁ F ₀ M ₁ M ₀ N ₅ N ₄ N ₃ N ₂ N ₁ N ₀ " Y ₁ Y ₀ =year,F ₁ F ₀ =factory code, M ₁ M ₀ =month N ₅ N ₄ N ₃ N ₂ N ₁ N ₀ =unit number	D12-D24	13	Variable Note 1,2, 4
Doc Number	D25-D36	12	9 ASCII bytes to show "DD/036179" See note 1 for unused position filling
Doc Issue No. "I ₁ -I ₀ " (e.g. 1.5)	D37-D41	5	Note 1,6
Version "SS ₂ :S ₁ S ₀ " (eg. S4:00)	D42-D47	6	Note 1,4
Supplier's Part Number : numbering scheme (12-digit)	D48-D62	15	12 ASCII bytes See note 1 for unused position filling See note 5 for value
Supplier Specific Information (If applicable)	D63-D73	11	Note 1
Specific information per function code	D74-D80	7	Note 1, 3
Supplier Code (Supplier's company name in capital letter)	D81-D94	14	"DAPU" See note 1 for unused position filling
End of File	D95	1	04

Notes

- The I/D values are in ASCII representation except where explicitly noted. Unused positions in a field are filled with the ASCII space character (20h). A null character (00h) is in the last byte of each field, except header and End-of-file. The end-of-file ASCII character (04h) indicates end of inventory data.
- The variable values will be provided by or agreed to by SCN contact for use here.
- This field is reserved for future use
- F₁F₀ is defined by Supplier to identify different factory of the Supplier to manufacture the part.
SS₂:S₁S₀ is defined by Supplier to differentiate different version of the part.
Every Hardware or software modification must be identified by a new value.
- This part number is specific to each supplier, and must clearly identify the product.
Different values must be used before and after qualification.
- The Doc Issue in inventory is the version used by supplier to design product.

3.2. DIGITAL THERMOMETER AND THERMOSTAT

Device name: LM75

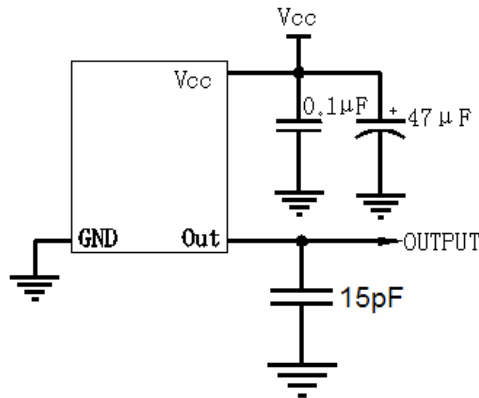
Device supplier: National

Device address: 1001000

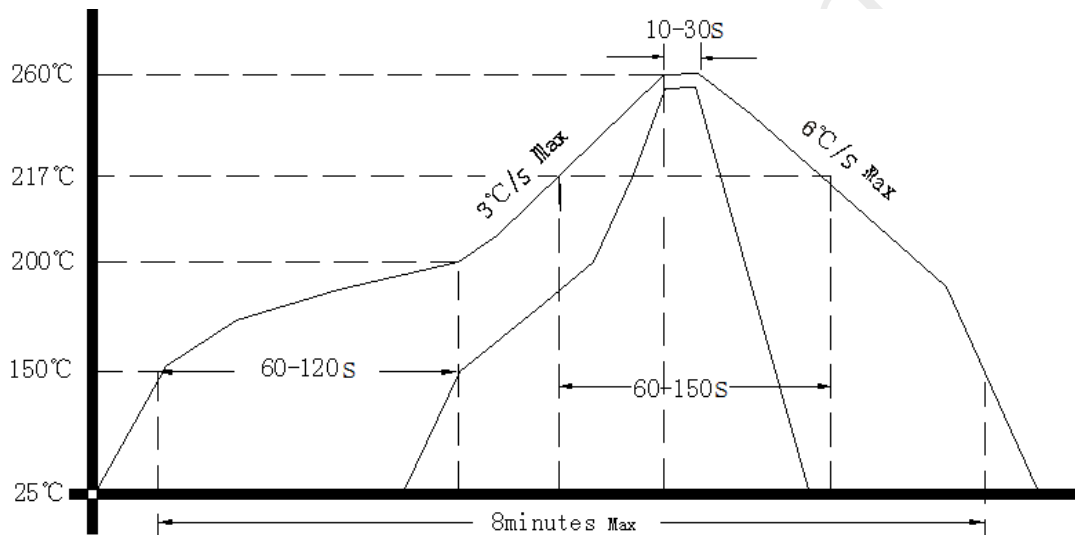
Note: More detailed information see the datasheet provide by the supplier.



4. Test Circuit



5. Reflow Soldering Curve (RoHS)



6. Package(mm)

