

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

# DATASHEET

DAPU P/N: 079A-M312-20.00MHz-A

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| DAPU             |         |          | Customer Approval      |
|------------------|---------|----------|------------------------|
| Drew             | Audited | Approved | Stamp, please! Thanks! |
|                  |         |          |                        |
| Date: 2024.06.18 |         |          |                        |

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## 1. Electrical Parameters

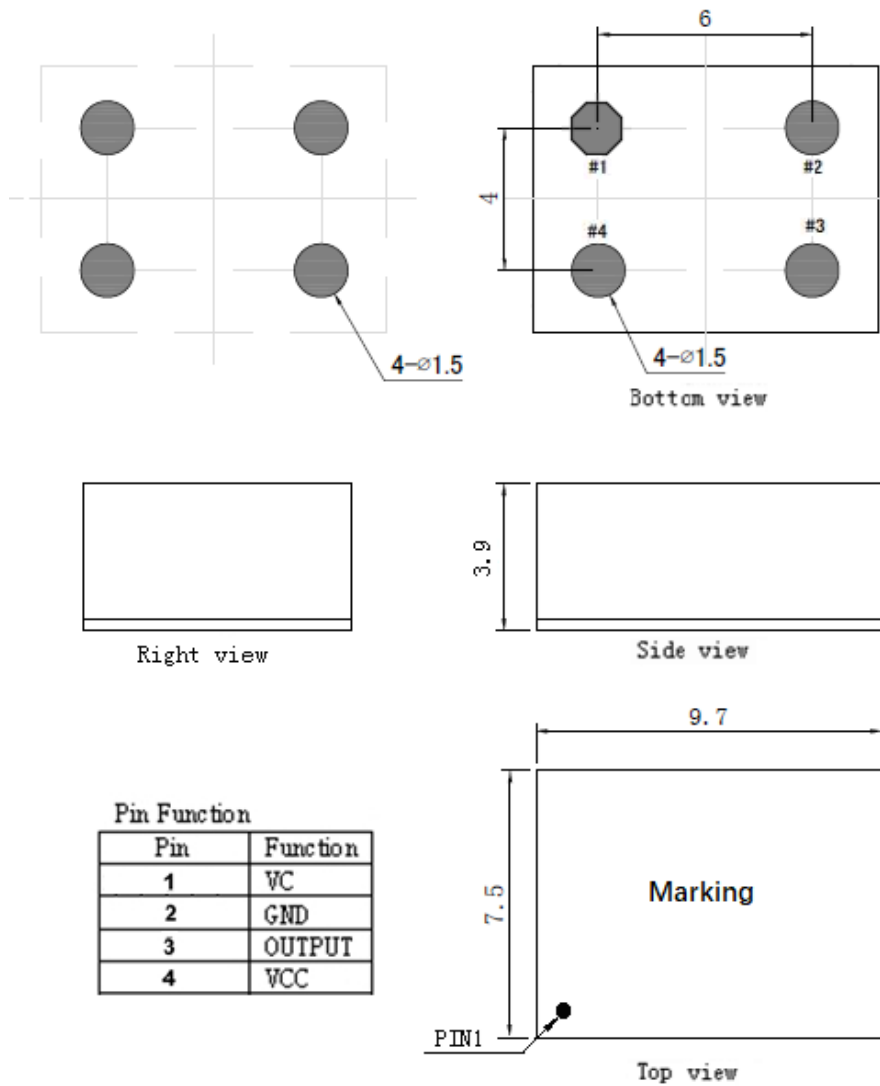
| MODEL: O79A-M312-20.00MHz-A |   |            |      |                  |   |   |
|-----------------------------|---|------------|------|------------------|---|---|
| Item                        | Description   | Parameters |      |                  | Unit  | Test Condition  |
|                             |   | Min.       | Typ. | Max.             |   |   |
| Output                      | Frequency   | 20.00      |      |                  | MHz   |   |
|                             | Output Waveform   | HCMOS      |      |                  |   |   |
|                             | Output Low Voltage  |            |      | 0.4              | V   | $V_{cc}=3.3V, O_{load}=15pF$  |
|                             | Output High Voltage                                       | 2.4        |      |                  | V   | $V_{cc}=3.3V, O_{load}=15pF$  |
|                             | Duty Cycle  | 45         |      | 55               | %   | @50%  |
|                             | Rise / Fall Time<br>(10%~90%)                             |            |      | 5                | ns  |   |
|                             | Load  | 15         |      |                  | pF  |   |
|                             | Frequency Tolerance<br>vs. Operating<br>Temperature Range | -0.02      |      | +0.02            | $\times 10^{-6}$  | $T_A$ varied from $-40^{\circ}C$ to $85^{\circ}C$ , measurement referenced to frequency observed with $T_A=25^{\circ}C, V_{cc}=3.3V, O_{load}=15pF$ , temperature variable speed less than $2^{\circ}C$ per minute. |
|                             | Initial Frequency<br>Tolerance                            | -0.1       |      | +0.1             | $\times 10^{-6}$  | Measurement referenced to frequency observed with $T_A=25^{\circ}C, V_{cc}=3.3V, V_c=1.65V$ , at time of shipment.  |
|                             | Frequency Tolerance<br>vs. Supply Voltage                 | -5         |      | +5               | $\times 10^{-9}$  | measurement referenced to frequency observed $T_A=25^{\circ}C, V_{cc}$ varied from 3.135V to 3.465V, $V_c=1.65V$ and $O_{Load}=15pF$ .  |
|                             | Frequency Tolerance<br>vs. Load                           | -5         |      | +5               | $\times 10^{-9}$  | 5% load change measurement referenced to frequency observed with $T_A=25^{\circ}C, V_{cc}=3.3V, V_c=1.65V$ , and $O_{Load}=15pF$ .  |
|                             | Frequency Slope   | -1         |      | +1               | $\times 10^{-9}/^{\circ}C$  | Temperature ramp $\leq 1^{\circ}C$ /minute  |
|                             | Short-Term Stability:<br>Allan Variance                   |            | 80   |                  | $\times 10^{-12}$   | Temperature stability, no EMI\EMC or other interference, test after power for 1hour ref. to $25^{\circ}C$ ; 1s.   |
|                             | Free-run Accuracy   | -4.6       |      | +4.6             | $\times 10^{-6}$  | All causes, 20years life, reference to $F_n$ .  |
| Aging Tolerance<br>Per Day  | -2  |            | +2   | $\times 10^{-9}$ | $V_{cc}, T_A$ constant measurement referenced to frequency observed with $T_A=25^{\circ}C,$ |   |
| Aging Tolerance<br>Per Year | -0.5  |            | +0.5 | $\times 10^{-6}$ | $V_{cc}= 3.3V, V_c=1.65V,$ and after 30 days of operation.                                  |   |



|                                 |   |  |      |       |                  |  |
|---------------------------------|---|--|------|-------|------------------|--|
| Power Supply                    | Supply Voltage  | 3.135  | 3.3  | 3.465 | V                |  |
|                                 | Steady Consumption  |  |      | 160   | mA               | @25°C  |
|                                 | Warm up current   |  |      | 500   | mA               |  |
| Voltage Control Characteristics | Frequency Tuning Range  | -3.3   |      | -1.9  | $\times 10^{-6}$ | $V_c=0V$ . measurement referenced to $V_c=1.65V$                               |
|                                 |   | -0.1   |      | +0.1  | $\times 10^{-6}$ | $V_c=1.65V$ . measurement referenced to exactly 20.00MHz, at time of shipment. |
|                                 |   | +1.9   |      | +3.3  | $\times 10^{-6}$ | $V_c=3.3V$ . measurement referenced to $V_c=1.65V$                             |
|                                 | Linearity   |  |      | 10    | %                |  |
|                                 | Slope   | Positive   |      |       |                  |  |
|                                 | Input Impedance   | 100  |      |       | K $\Omega$       |  |
| Phase Noise                     | Phase Noise @25°C   |  | -78  | -70   | dBc/Hz           | 1Hz  |
|                                 |   |  | -110 | -105  |                  | 10Hz   |
|                                 |   |  | -138 | -133  |                  | 100Hz  |
|                                 |   |  | -152 | -147  |                  | 1KHz   |
|                                 |   |  | -157 | -152  |                  | 10KHz  |
|                                 |   |  | -158 | -155  |                  | 100KHz   |
|                                 |   |  | -163 | -160  |                  | 1MHz   |
| Jitter                          | RMS   |  | 0.28 | 1.5   | ps               | 12kHz~5MHz   |
| Environmental Conditions        | Operating Temperature   | -40  |      | +85   | °C               |  |
|                                 | Operable Temperature  | -45  |      | +105  | °C               |  |
|                                 | Storage Temperature   | -55  |      | +105  | °C               |  |
|                                 | 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  | Level 3.   |      |       |                  |  |
| 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 (°C)  | -10~35°C   |      |       |                  |  |



## 2. Mechanical Structure (mm)



Marking:



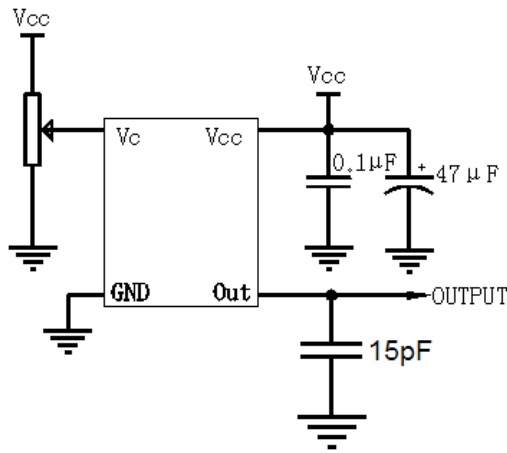
**Note1:** Tolerance  $\pm 0.30$ mm without mark

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

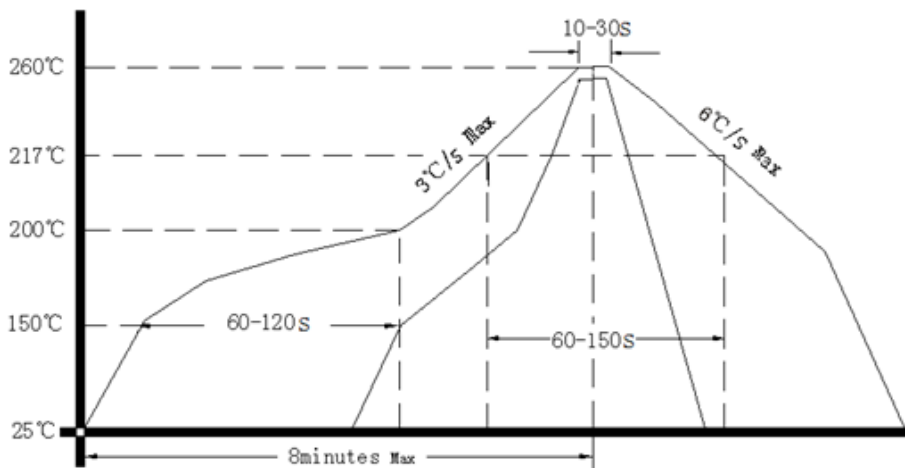
**Note3:** Referential weight 0.4g



### 3. Test Circuit



### 4. Reflow Soldering Curve (RoHS)



Note: passing through reflow upside down is not supported



### 5. Package: Tape & Reel (mm)

