

# HCMOS/TTL COMPATIBLE SURFACE-MOUNT PROGRAMMABLE CRYSTAL CLOCK OSCILLATOR

AP5S



RoHS  
Compliant



5.0 x 3.2 x 1.2mm

## FEATURES:

- Comparable performance to fixed frequency oscillator
- Low jitter with PLL technology

## APPLICATIONS:

- Microcontroller
- FPGA
- CPLG
- Prototype evaluation
- Portable computers (Laptop, tablet PC)

For Small  
Quantities,  
Delivery Time  
is 1-5 days

## ELECTRICAL SPECIFICATIONS:

| Parameters   |                        | Minimum  | Typical     | Maximum | Units | Notes                |
|--|------------------------|--|-------------|---------|-------|----------------------|
| Frequency Range:   | V <sub>dd</sub> = 3.3V | 10   | -----       | 200     | MHz   |                      |
|  | V <sub>dd</sub> = 2.5V | 10   | -----       | 166     | MHz   |                      |
| Operating Temperature:   |                        | 0  | -----       | +70     | °C    | See options          |
| Storage Temperature:   |                        | -55  | -----       | +155    | °C    |                      |
| Overall Frequency Stability*:  |                        | -100   | -----       | +100    | ppm   | See options          |
| Supply Voltage (V <sub>dd</sub> ):   | V <sub>dd</sub> = 3.3V | 2.97   | 3.3         | 3.63    | V     | Standard             |
|  | V <sub>dd</sub> = 2.5V | 2.25   | 2.5         | 2.75    | V     | Option 1             |
| Input Current:   | V <sub>dd</sub> = 3.3V | -----  | -----       | 30      | mA    |                      |
|  | V <sub>dd</sub> = 2.5V | -----  | -----       | 20      | mA    |                      |
| Symmetry:  |                        | 45   | 50          | 55      | %     | @ 1/2V <sub>dd</sub> |
| Rise and Fall Time (Tr/Tf)**:  |                        | -----  | 2.5         | 3.5     | ns    |                      |
| Output Load:   |                        |  |             | 15      | pF    | CMOS                 |
| Output Voltage:  | VOH                    | V <sub>dd</sub> -0.4   | -----       | -----   | V     |                      |
|  | VOL                    | -----  | -----       | 0.4     | V     |                      |
| Start-up Time:   |                        | -----  | -----       | 10.0    | ms    |                      |
| Tri-state function (Stand-by) :  |                        | "1" (V <sub>IH</sub> ≥ 0.7*V <sub>dd</sub> ) or Open: Oscillation<br>"0" (V <sub>IL</sub> < 0.3*V <sub>dd</sub> ) : Hi Z |             |         |       |                      |
| Period jitter RMS<br>(Reference only. Please<br>contact Abracon for each<br>frequencies.):             | 25MHz                  | -----  | 2.0         | 4.0     | ps    |                      |
|  | 50MHz                  | -----  | 5.0         | 10.0    | ps    |                      |
|  | 100MHz                 | -----  | 7.0         | 14.0    | ps    |                      |
| Period jitter<br>Peak to Peak<br>(Reference only. Please<br>contact Abracon for each<br>frequencies.): | 25MHz                  | -----  | 14.0        | 25.0    | ps    |                      |
|  | 50MHz                  | -----  | 25.0        | 35.0    | ps    |                      |
|  | 100MHz                 | -----  | 35.0        | 50.0    | ps    |                      |
| Phase jitter RMS   | 20MHz                  | -----  | 0.6         | 1.0     | ps    | 12kHz to 10MHz       |
|  | 25MHz                  | -----  | 5.6         | 7.0     | ps    | 12kHz to 10MHz       |
|  | 50MHz                  | -----  | 16.0 ~ 25.0 | 40.0    | ps    | 12kHz to 20MHz       |
|  | 100MHz                 | -----  | 18.0        | 25.0    | ps    | 12kHz to 20MHz       |
| Aging:   |                        | -3.0   | -----       | +3.0    | ppm   | @+25°C First year    |

\* Inclusive of calibration @25°C, operating temperature range, input voltage variation, load variation, aging, shock, and vibration.

\*\* Transition times are measured between 10% and 90% of V<sub>dd</sub> with an output load of 15 pF.

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5.0 x 3.2 x 1.2mm

AP5S



## OPTIONS & PART IDENTIFICATION:

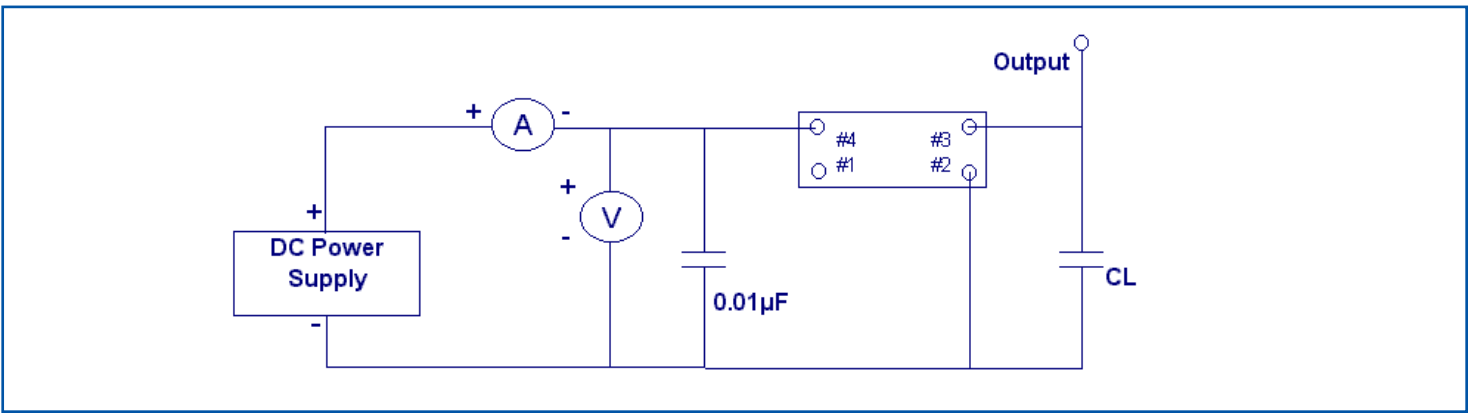
(Left blank if standard)

AP5S  -  MHz -   -

| Supply Voltage | Frequency in MHz   | Operating Temp.  | Overall Freq. Stability | Packaging      |
|----------------|--|------------------|-------------------------|----------------|
| Blank: 3.3V    | Please specify the frequency in MHz.<br>e.g. 14.31818MHz | I: 0°C ~ +50°C   | J(**): ±20ppm           | Blank: Bulk    |
| 1: 2.5V        |  | D: -10°C ~ +60°C | R: ±25ppm               | T: Tape & Reel |
|                |  | E: -20°C ~ +70°C | K: ±30ppm               |                |
|                |  | F: -30°C ~ +70°C | C: ±50ppm               |                |
|                |  | N: -30°C ~ +85°C |                         |                |
|                |  | L: -40°C ~ +85°C |                         |                |

\* Temp. option I, D, E and 0°C ~ +70°C only  
Contact ABRACON for EJ or LR options. (Availability limited)

## TEST CIRCUIT:



## OUTLINE DRAWING:

Recommended land pattern

| Pin | Function  |
|-----|-----------|
| 1   | Tri-State |
| 2   | GND/Case  |
| 3   | Output    |
| 4   | Vdd       |

Note: Recommend using an approximately 0.01µF bypass capacitor between PIN 2 and 4.

Dimensions: inches (mm)

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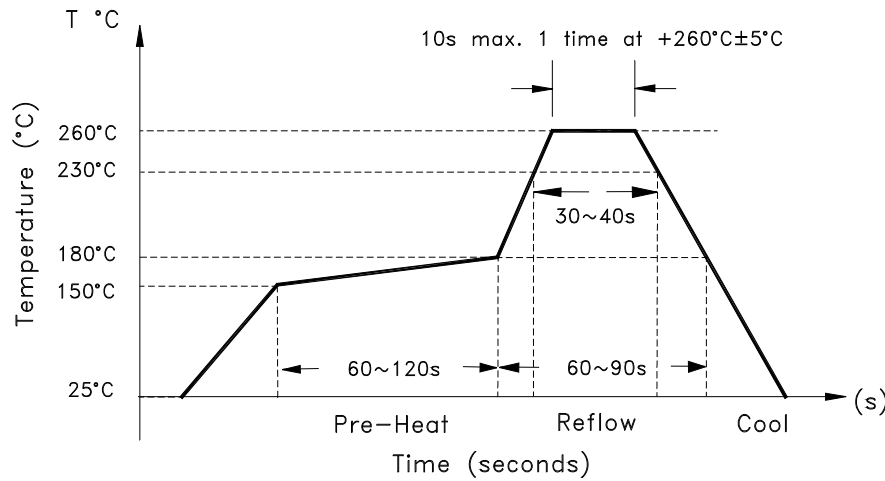
5.0 x 3.2 x 1.2mm

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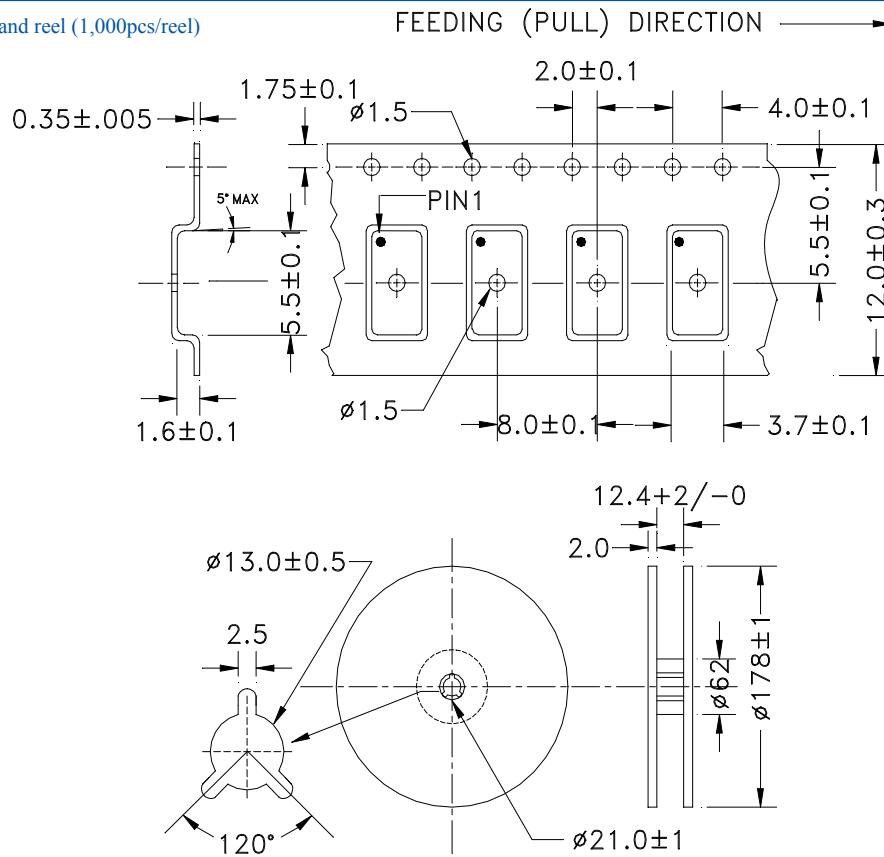
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## REFLOW PROFILE:

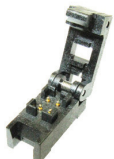


## TAPE & REEL:

T= Tape and reel (1,000pcs/reel)



Dimensions (mm)



Need a test socket for the AP5S Series? To view compatible **PRECISION TEST SOCKETS** for these parts, click here. P/N AXS-5032-04-02

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