

# 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
- CPLD
- 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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## OPTIONS & PART IDENTIFICATION:

(Left blank if standard)

AP5S  -  MHz -   -

### Supply Voltage

Blank: 3.3V  
1: 2.5V

### Frequency in MHz

Please specify the frequency in MHz.  
e.g. 14.31818MHz

### Operating Temp.

I: 0°C ~ +50°C  
D: -10°C ~ +60°C  
E: -20°C ~ +70°C  
F: -30°C ~ +70°C  
N: -30°C ~ +85°C  
L: -40°C ~ +85°C

### Overall Freq. Stability

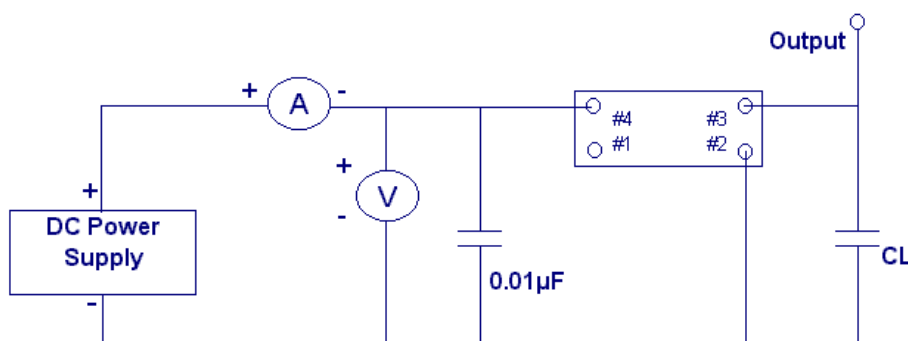
J(\*\*): ±20ppm  
R: ±25ppm  
K: ±30ppm  
C: ±50ppm

### Packaging

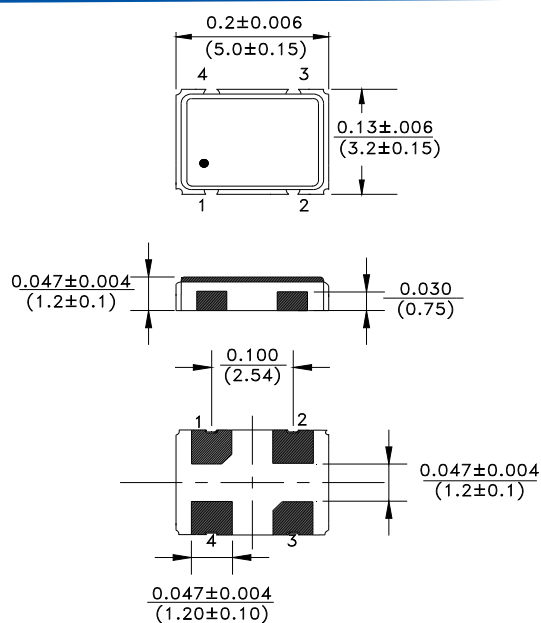
Blank: Bulk  
T: Tape & Reel

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

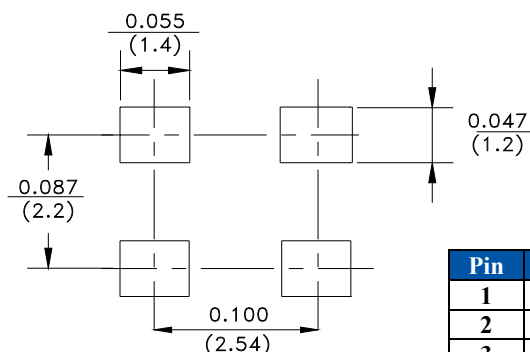
## TEST CIRCUIT:



## 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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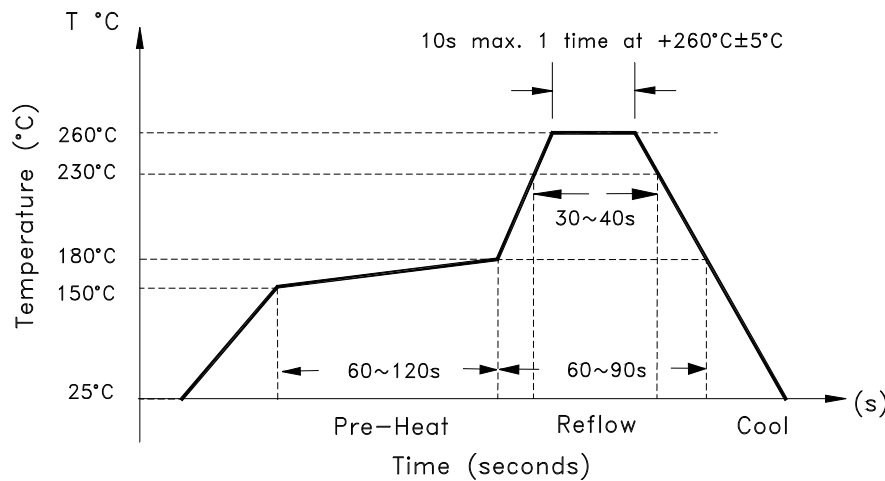


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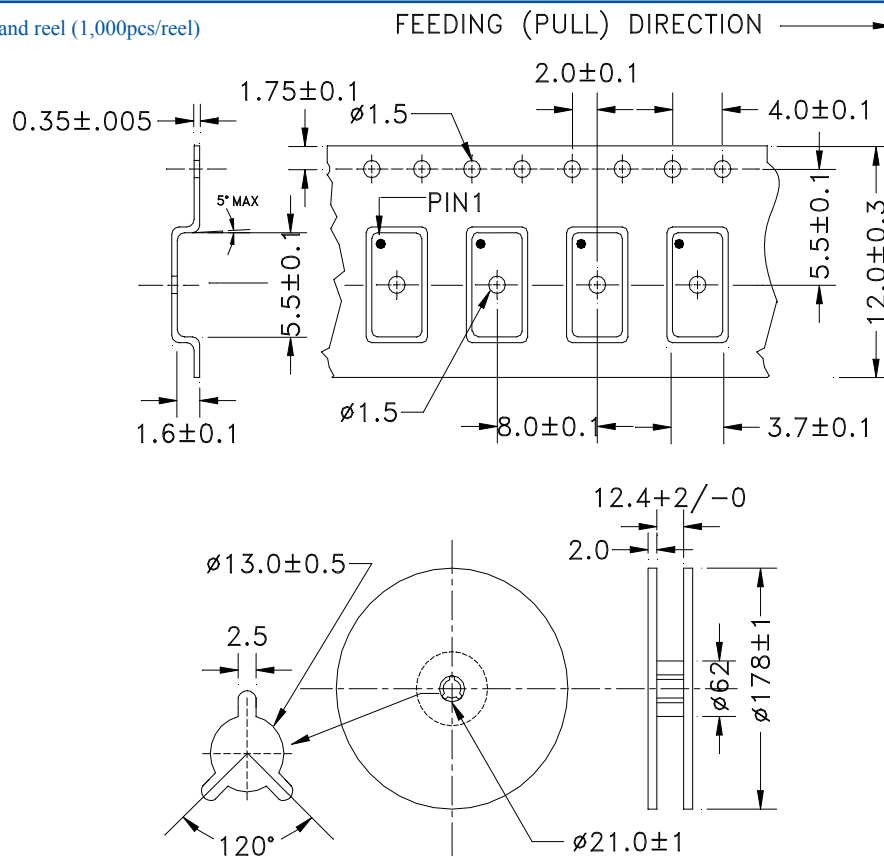
5.0 x 3.2 x 1.2mm

## REFLOW PROFILE:



## TAPE & REEL:

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



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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