

# HCMOS SMD Crystal Oscillator

ASD SERIES



ESD Sensitive



RoHS/RoHS II compliant



2.5 X 2.0 X 1.0 mm

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable

For Vdd=3.3V & 2.5V and custom frequencies between 8.00MHz & 200.000MHz, or carrier frequency > 60.0MHz, please consider Abracon's [ASG2-C series](#) of XO and VCXO's

## FEATURES:

- Low height 1.0mm max
- Low current consumption
- Tri-state function
- Suitable for RoHS compliant reflow
- Tight stability option
- Seam sealed package assures high reliability

## APPLICATIONS:

- CCD clock for VTR Camera
- Equipment connected to PC or PC cards
- Thin equipment

## STANDARD SPECIFICATIONS:

| Parameters                  |             | Minimum  | Typical | Maximum  | Units | Notes                                 |
|-----------------------------|-------------|----------|---------|----------|-------|---------------------------------------|
| Frequency Range             |             | 0.750    |         | 60       | MHz   |                                       |
| Operating Temperature       |             | -20      |         | +70      | °C    | STD temp. Option code E (See options) |
| Storage Temperature         |             | -55      |         | +100     | °C    |                                       |
| Overall Frequency Stability |             | -100     |         | +100     | ppm   | See options                           |
| Supply Voltage (Vdd)        |             | +3.135   | +3.3    | +3.465   | V     | ASD (Standard)                        |
|                             |             | +2.85    | +3.0    | +3.15    |       | ASD1                                  |
|                             |             | +2.375   | +2.5    | +2.625   |       | ASD2                                  |
|                             |             | +1.71    | +1.8    | +1.89    |       | ASD3                                  |
|                             |             | +0.95    | +1.0    | +1.05    |       | ASD6                                  |
| Input Current (Idd)         | ASD (3.3V)  |          | 2.5     | 5        | mA    | 0.750~15.999 MHz                      |
|                             |             |          | 4       | 7        |       | 16.000~39.999 MHz                     |
|                             |             |          | 9       | 13       |       | 40.000~60.000 MHz                     |
|                             | ASD1 (3.0V) |          | 2.5     | 4        | mA    | 0.750~15.999 MHz                      |
|                             |             |          | 3.5     | 6        |       | 16.000~39.999 MHz                     |
|                             |             |          | 8       | 12       |       | 40.000~60.000 MHz                     |
|                             | ASD2 (2.5V) |          | 2       | 3.5      | mA    | 0.750~15.999 MHz                      |
|                             |             |          | 3       | 5        |       | 16.000~39.999 MHz                     |
|                             |             |          | 7       | 10       |       | 40.000~60.000 MHz                     |
|                             | ASD3 (1.8V) |          | 1       | 2.5      | mA    | 0.750~15.999 MHz                      |
|                             |             |          | 2       | 4        |       | 16.000~39.999 MHz                     |
|                             |             |          | 4       | 7        |       | 40.000~60.000 MHz                     |
|                             | ASD6 (1.0V) |          | 1.0     | 2.5      | mA    | 25.000 MHz                            |
| Symmetry @ 1/2Vdd           |             | 40       |         | 60       | %     | STD (See option)                      |
| Output Load:                |             |          |         | 15       | pF    | CMOS                                  |
| Output Voltage (VOH):       |             | 0.9* Vdd |         |          | V     |                                       |
| Output Voltage (VOL):       |             |          |         | 0.1* Vdd | V     |                                       |



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(Continued)



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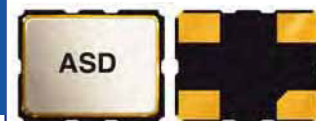
2.5 X 2.0 X 1.0 mm

| Parameters                      |             | Minimum                                                                            | Typical | Maximum | Units | Notes             |
|---------------------------------|-------------|------------------------------------------------------------------------------------|---------|---------|-------|-------------------|
| Rise and Fall Time (Tr/Tf):     | ASD (3.3V)  |                                                                                    | 3       | 7       | ns    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 2.5     | 6       |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 2       | 4       |       | 40.000~60.000 MHz |
|                                 | ASD1 (3.0V) |                                                                                    | 3       | 7       | ns    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 2.5     | 6       |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 2       | 4       |       | 40.000~60.000 MHz |
|                                 | ASD2 (2.5V) |                                                                                    | 4       | 8       | ns    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 3       | 7       |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 2.5     | 5       |       | 40.000~60.000 MHz |
|                                 | ASD3 (1.8V) |                                                                                    | 5       | 10      | ns    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 3.5     | 8       |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 3       | 6       |       | 40.000~60.000 MHz |
|                                 | ASD6 (1.0V) |                                                                                    | 1.9     | 6.0     | ns    | 25.000 MHz        |
| Start-up Time:                  | ASD (3.3V)  |                                                                                    | 6       | 10      | ms    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 6       | 10      |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 5       | 10      |       | 40.000~60.000 MHz |
|                                 | ASD1 (3.0V) |                                                                                    | 6       | 10      | ms    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 6       | 10      |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 5       | 10      |       | 40.000~60.000 MHz |
|                                 | ASD2 (2.5V) |                                                                                    | 6       | 10      | ms    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 6       | 10      |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 5       | 10      |       | 40.000~60.000 MHz |
|                                 | ASD3 (1.8V) |                                                                                    | 6       | 10      | ms    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 6       | 10      |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 5       | 10      |       | 40.000~60.000 MHz |
|                                 | ASD6 (1.0V) |                                                                                    | 2.0     | 10      | ms    | 25.000 MHz        |
| Tri-state function (Stand-by) : |             | "1" (VIH≥0.7*Vdd) or Open: Oscillation;<br>"0" (VIH<0.3*Vdd) : No oscillation/Hi Z |         |         |       |                   |
| Phase Jitter (12kHz to 20MHz)   | ASD (3.3V)  |                                                                                    | 0.4     | 1.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 0.4     | 1.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 0.3     | 1.0     |       | 40.000~60.000 MHz |
|                                 | ASD1 (3.0V) |                                                                                    | 0.4     | 1.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 0.4     | 1.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 0.3     | 1.0     |       | 40.000~60.000 MHz |
|                                 | ASD2 (2.5V) |                                                                                    | 0.5     | 1.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 0.5     | 1.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 0.5     | 1.0     |       | 40.000~60.000 MHz |
|                                 | ASD3 (1.8V) |                                                                                    | 0.5     | 1.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 0.5     | 1.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 0.5     | 1.0     |       | 40.000~60.000 MHz |
|                                 | ASD6 (1.0V) |                                                                                    | 0.3     | 1.0     | ps    | 25.000 MHz        |
| Period Jitter RMS               | ASD (3.3V)  |                                                                                    | 3.0     | 5.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 40.000~60.000 MHz |
|                                 | ASD1 (3.0V) |                                                                                    | 3.0     | 5.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 40.000~60.000 MHz |
|                                 | ASD2 (2.5V) |                                                                                    | 3.0     | 5.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 40.000~60.000 MHz |
|                                 | ASD3 (1.8V) |                                                                                    | 3.0     | 5.0     | ps    | 0.750~15.999 MHz  |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 16.000~39.999 MHz |
|                                 |             |                                                                                    | 3.0     | 5.0     |       | 40.000~60.000 MHz |
|                                 | ASD6 (1.0V) |                                                                                    | 4.8     | 6.0     | ps    | 25.000 MHz        |
| Aging at 25°C/year              |             | -5                                                                                 |         | +5      | ppm   |                   |
| Disable Current:                |             |                                                                                    |         | 20      | μA    |                   |



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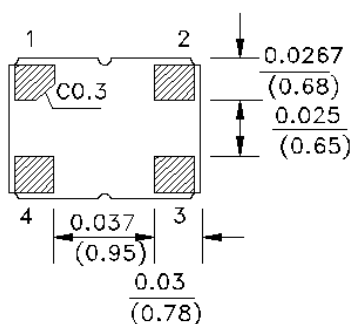
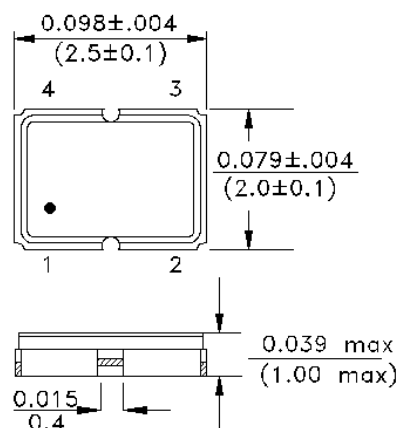


2.5 X 2.0 X 1.0 mm

## OPTIONS AND PART IDENTIFICATION:

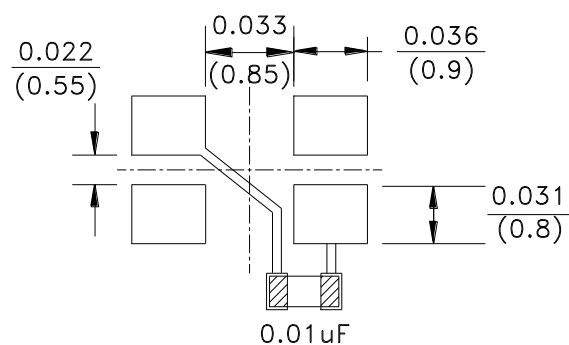


## OUTLINE DRAWING:



Bottom view

Recommended land pattern



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

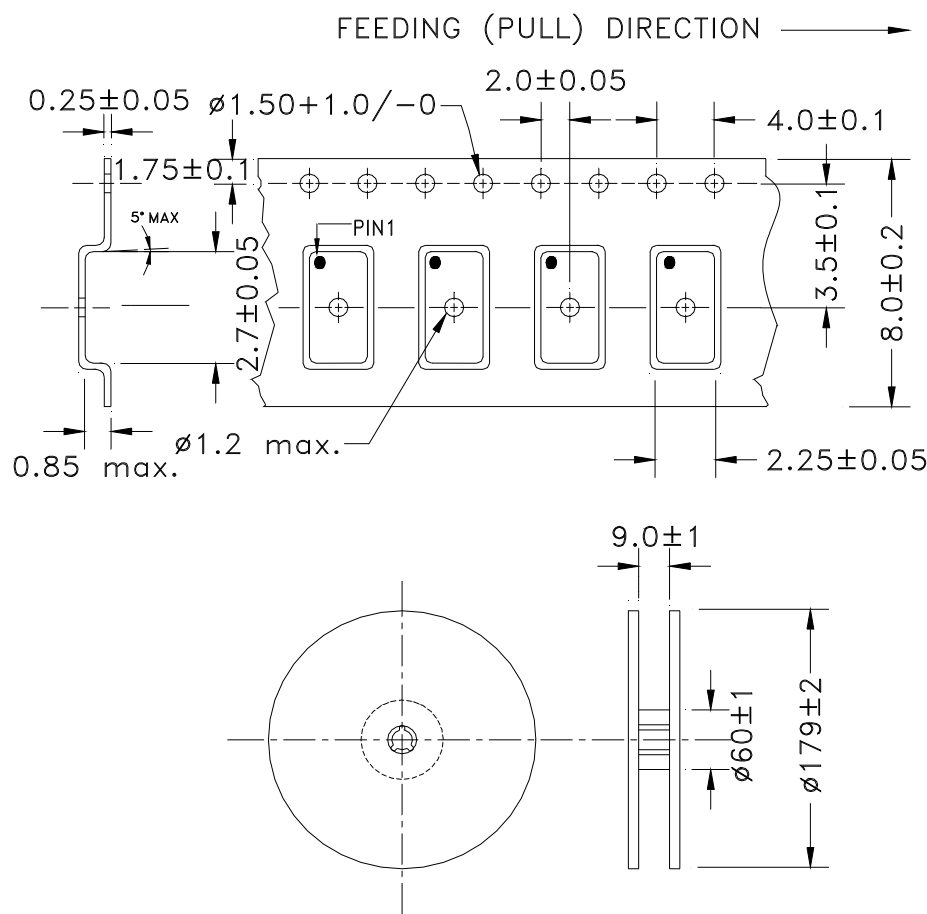
Note1: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

Dimensions: inches (mm)



**2.5 X 2.0 X 1.0 mm**

**T: 1000pcs/reel**  
**T2: 250pcs/reel**  
**T3: 3000pcs/reel**



### Dimensions: mm

The graph illustrates the temperature profile for a reflow soldering process. The Y-axis represents Temperature (°C) and the X-axis represents Time (seconds). The profile is divided into three main phases: Pre-Heat, Reflow, and Cool.

- Pre-Heat:** The temperature rises from 25°C to 150°C. This phase is labeled with a time interval of 60~120s.
- Reflow:** The temperature rises from 150°C to 260°C, remains at 260°C for a short duration, and then falls back to 150°C. This phase is labeled with a time interval of 30~40s. A note above the peak indicates "10s max. 1 time at +260°C±5°C".
- Cool:** The temperature falls from 150°C to 25°C. This phase is labeled with a time interval of 60~90s.



Need a test socket for the ASD Series? To view compatible **PRECISION TEST & BURN-IN SOCKETS** for these parts, [\*\*click here. P/N AXS-2520-04-01\*\*](#)

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