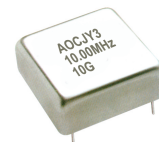


# OVEN CONTROLLED CRYSTAL OSCILLATOR

## AOCJY3 Series



RoHS  
Compliant



25.4x 25.4 x 13.0 mm

### FEATURES:

- 25.4x 25.4 x 13.0 mm Leaded- RoHS Compliant Reflow-able Package
- SC-Cut, High "Q" resonator based design
- Either Sinewave or CMOS RF output
- Available with  $\pm 30$  ppb over  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$  operating temperature Range
- Tighter Stabilities to  $\pm 5.0$  ppb over  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  also available
- Exceptional long-term Aging of  $\pm 500$  ppb max. over 10-Year Product Life
- Excellent close-in phase noise ( $-140$  dBc/Hz Typical @100 Hz offset; 10MHz carrier)

### APPLICATIONS:

- Cellular Infrastructure
- Radar Systems
- Test & Measurement Equipment
- GPS Tracking with precision hold-over accuracy
- WiMax / WLAN

### STANDARD SPECIFICATIONS:

| Parameters                                              | Minimum                                              | Typical             | Maximum     | Units              | Notes                                |
|---------------------------------------------------------|------------------------------------------------------|---------------------|-------------|--------------------|--------------------------------------|
| RF Output                                               |                                                      |                     |             |                    |                                      |
| Frequency                                               | 10.00                                                |                     | 100.00      | MHz                | Overall Frequency Range<br>(Note #1) |
| Standard Available Frequencies                          | 10.00, 12.80, 13.00, 26.00, 38.88, 40.00, 100.00 MHz |                     |             |                    |                                      |
| Waveform                                                | CMOS                                                 |                     |             |                    |                                      |
| Level "1" (Logic High)                                  | 0.9*Vdd                                              |                     |             | Volts              | (Note #2)                            |
| Level "0" (Logic Low)                                   |                                                      |                     | 0.1*Vdd     | Volts              | (Note #2)                            |
| Load                                                    |                                                      | 15                  |             | pf                 |                                      |
| Rise & Fall Time                                        |                                                      |                     | 6.0         | ns                 |                                      |
| Duty Cycle                                              | 45                                                   |                     | 55          | %                  |                                      |
| Waveform                                                | Sinewave                                             |                     |             |                    |                                      |
| Peak Power                                              | 2.00                                                 |                     |             | dBm                |                                      |
| Output Load                                             |                                                      | 50                  |             | $\Omega$           |                                      |
| Short Term Stability                                    |                                                      | $1 \times 10^{-10}$ |             | /second            | Alan Variance                        |
| Operable Temperature Range                              | -40                                                  |                     | 75          | $^{\circ}\text{C}$ | See Stability Options                |
| Frequency Stability Options                             |                                                      |                     |             |                    |                                      |
| 0 $^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ (Note #3) |                                                      |                     | $\pm 5.00$  | ppb                | Default Spec.                        |
| -20 $^{\circ}\text{C}$ to $+70^{\circ}\text{C}$         |                                                      |                     | $\pm 10.00$ | ppb                | Option "E"                           |
| -40 $^{\circ}\text{C}$ to $+75^{\circ}\text{C}$         |                                                      |                     | $\pm 30.00$ | ppb                | Option "F"                           |
| Frequency Stability vs. Supply Voltage (Vdd $\pm 5\%$ ) |                                                      |                     | $\pm 2.00$  | ppb                |                                      |
| Frequency Stability vs. Load Variation ( $\pm 10\%$ )   |                                                      |                     | $\pm 2.00$  | ppb                |                                      |
| Warm-Up @ 25 $^{\circ}\text{C}$                         |                                                      |                     | $\pm 30.00$ | ppb                | In $\leq 3$ -minutes                 |
| Power Consumption @ turn on                             |                                                      |                     | 3.60        | Watts              |                                      |
| Power Consumption Steady State                          |                                                      |                     | 1.20        | Watts              |                                      |
| Supply Voltage (Vdd)                                    | 3.13                                                 | 3.30                | 3.46        | Volts              | See Options                          |

**Note #1:** Carrier frequency 100.000MHz is not offered @ Vdd=12.0V

**Note #2:** When Vdd=12.0V; Level "1" = 4.50 V minimum; Level "0" = 0.50V maximum

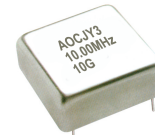
**Note #3:**  $\pm 5.00$  ppb stability is only available for  $F_0 \leq 40\text{MHz}$ . For frequencies above 40MHz, the best available frequency stability is  $\pm 10.00$  ppb over  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

# OVEN CONTROLLED CRYSTAL OSCILLATOR

AOCJY3 Series



**RoHS**  
Compliant



25.4x 25.4 x 13.0 mm

## STANDARD SPECIFICATIONS - continued.

| Parameters                                | Minimum      | Typical  | Maximum      | Units | Notes                  |
|-------------------------------------------|--------------|----------|--------------|-------|------------------------|
| <b>Aging</b>                              |              |          |              |       |                        |
| Daily                                     |              |          | ±1.0         | ppb   |                        |
| First Year                                |              |          | ±100         | ppb   |                        |
| 10-Years                                  |              |          | ±500         | ppb   |                        |
| <b>Spectral Content</b>                   |              |          |              |       |                        |
| Spurious Response                         |              |          | -35          | dBc   |                        |
| Phase Noise (10MHz Carrier) @ 5V          |              |          |              |       |                        |
| @ 1 Hz offset                             |              |          | -90          | dBc   |                        |
| @ 10 Hz offset                            |              |          | -120         | dBc   |                        |
| @ 100 Hz offset                           |              |          | -140         | dBc   |                        |
| @ 1,000 Hz offset                         |              |          | -145         | dBc   |                        |
| @ 10,000 Hz offset                        |              |          | -155         | dBc   |                        |
| <b>Electrical Frequency Adjustment</b>    |              |          |              |       |                        |
| Control Voltage Range (Vc)                | 0.0          |          | Vdd          | Volts |                        |
| Frequency Pull Range                      | ±0.700       |          |              | ppm   |                        |
| Frequency Pull Slope                      |              | Positive |              |       |                        |
| Control Voltage Port Impedance            | 10           |          |              | kΩ    |                        |
| Center Control Voltage ( <i>Note #4</i> ) | (Vdd/2) -0.5 | Vdd/2    | (Vdd/2) +0.5 | Volts | Center Control Voltage |
| Control Port Linearity                    |              | ±10      |              | %     |                        |
| <b>Reference Voltage (Vdd=3.3V)</b>       | 2.70         | 2.80     | 2.90         | Volts | Output @ Pin#4         |
| <b>Reference Voltage (Vdd=5.0V)</b>       | 4.40         | 4.50     | 4.60         | Volts | Output @ Pin#4         |
| <b>Reference Voltage (Vdd=12.0V)</b>      | 4.90         | 5.00     | 5.10         | Volts | Output @ Pin#4         |
| Storage Temperature                       | -40          |          | +100         | °C    |                        |

**Note #4:** When Vdd=12.0V, Control Voltage Range is 0.0V to 5.0V and therefore, the Center Control Voltage is (2.50V±0.50V)

## OPTIONS AND PART IDENTIFICATION (Left blank if standard)

AOCJY3 -  -  MHz -  -

### Supply Voltage Option

Blank: 3.30V

A: 5.00V

B: 12.00V(\*)

(\*) Frequency Range limited to 10 – 40MHz

### Frequency in MHz

Such as; 10.000 MHz

26.000 MHz

100.000 MHz

### Temperature Options

E: -20°C to +70°C

F: -40°C to +75°C

### RF Output Options

Blank: CMOS

SW: Sinewave



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AOCJY3 Series

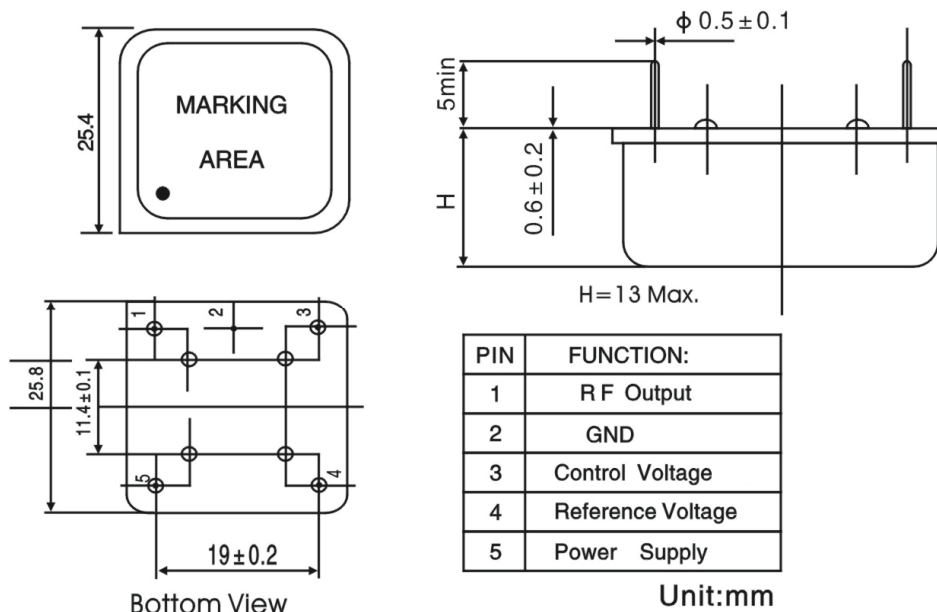


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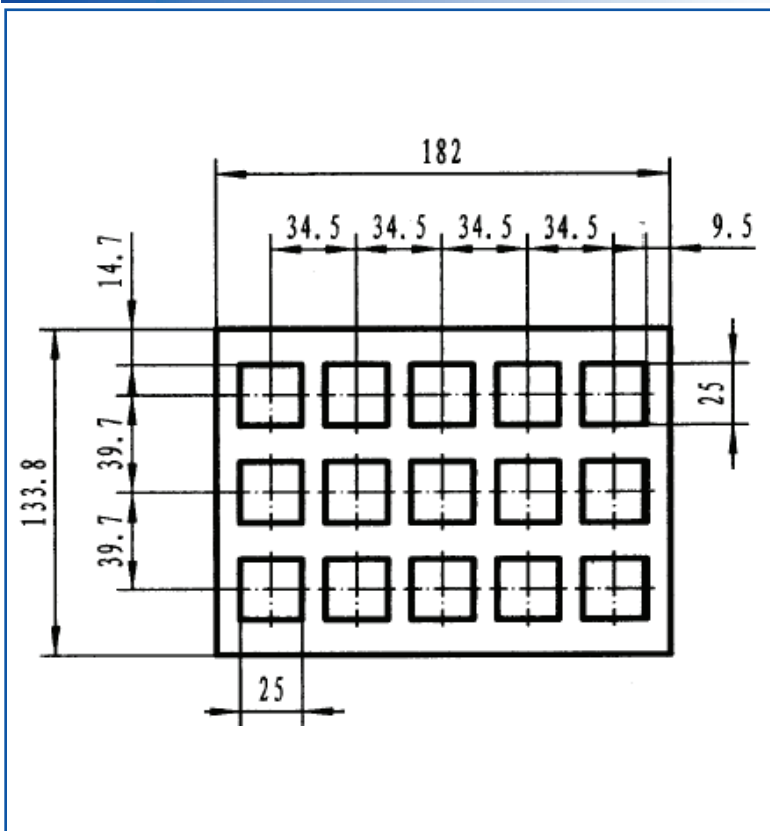


25.4x 25.4 x 13.0 mm

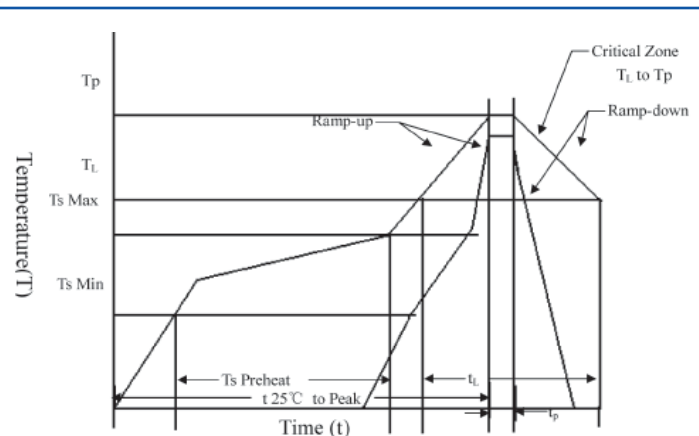
## OUTLINE DIMENSIONS



## PACKAGING: 15 pcs/tray



## REFLOW PROFILE:



|                                                        |                           |
|--------------------------------------------------------|---------------------------|
| T <sub>S</sub> max to T <sub>L</sub> (Ramp-up Rate)    | 3°C/second max.           |
| Preheat                                                |                           |
| Temperature Min. (T <sub>S</sub> Min.)                 | 150°C                     |
| Temperature Typical (T <sub>S</sub> Typ.)              | 175°C                     |
| Temperature Max. (T <sub>S</sub> Max.)                 | 200°C                     |
| Time (t <sub>s</sub> )                                 | 60 ~ 180 seconds          |
| Ramp-up rate (T <sub>L</sub> to T <sub>p</sub> )       | 3°C/second max.           |
| Time Maintained Above:                                 |                           |
| --Temperature (T <sub>L</sub> )/Time (T <sub>L</sub> ) | 217°C/60 ~ 150 seconds    |
| Peak Temperature (T <sub>p</sub> )                     | 250°C max. for 10 seconds |
| Target Peak Temperature (T <sub>p</sub> Target)        | 250°C +0/-5°C             |
| Time within 5°C of actual peak (t <sub>p</sub> )       | 20 ~ 40 seconds           |
| Ramp-down Rate                                         | 6°C/second max.           |
| Tune 25°C to Peak Temperature (t)                      | 8 minutes max.            |

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