

# SMD OVEN CONTROLLED CRYSTAL OSCILLATOR

AOCJY Series



25.4 x 22.1 x 12.7 mm

## FEATURES:

- 25.4 x 22.1 x 12.7 mm True SMT- 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 over 10-Year Product Life
- Excellent close-in phase noise ( $-135$  dBc/Hz Typical @100 Hz offset from 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                        |
|---|--|---------|--------------|--------------------|------------------------------|
| <b>RF Output</b>  |  |         |              |                    |                              |
| Frequency   | 1.00   |         | 160.00       | MHz                | CMOS output                  |
|   | 1.00   |         | 100.00       | MHz                | Sinewave output*             |
| Standard Available Frequencies  | 10.00, 12.80, 13.00, 16.384, 20.00, 26.00, 38.40, 38.88, 40.00, 100.00 MHz |         |              |                    |                              |
| Operable Temperature Range  | 0  |         | 50           | $^{\circ}\text{C}$ | <i>See Stability Options</i> |
| <b>Frequency Stability Options</b>  |  |         |              |                    |                              |
| 0 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$  |  |         | $\pm 5.00$   | 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”                   |
| <b>Frequency Stability vs. Supply Voltage (Vdd <math>\pm 5\%</math>)</b>                            |  |         |              |                    |                              |
| Warm-Up @ 25 $^{\circ}\text{C}$   |  |         | $\pm 100.00$ | ppb                | In $\leq 3$ -minutes         |
| Power Consumption @ turn on   |  |         | 3.60         | Watts              |                              |
| Power Consumption Steady State  |  |         | 1.40         | Watt               |                              |
| Supply Voltage (Vdd)  | 3.135  | 3.30    | 3.465        | Volts              | <i>See Options</i>           |
| Reference Voltage (Vref)<br><small>(available as an output to facilitate oscillator tuning)</small> | 2.60   | 2.80    | 3.00         | Volts              | <i>For Vdd=+3.3V version</i> |
|   | 4.30   | 4.50    | 4.70         | Volts              | <i>For Vdd=+5.0V version</i> |
| <b>Aging</b>  |  |         |              |                    |                              |
| Daily aging (after 30 days)   |  |         | $\pm 1.0$    | ppb                |                              |
| Yearly  |  |         | $\pm 100$    | ppb                |                              |
| 10-Years  |  |         | $\pm 500$    | ppb                |                              |
| Waveform  | LVCMOS   |         |              |                    |                              |
| Level "1" (Logic High)  | 0.9*Vdd  |         |              | Volts              |                              |
| Level "0" (Logic Low)   |  |         | 0.1*Vdd      | Volts              |                              |
| Load  |  | 15      |              | pf                 |                              |
| Rise & Fall Time  |  |         | 5.0          | ns                 |                              |
| Duty Cycle  | 45   |         | 55           | %                  |                              |

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Compliant



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## STANDARD SPECIFICATIONS contd.

| Parameters                               | Minimum      | Typical  | Maximum      | Units      | Notes |
|--|--------------|----------|--------------|------------|-------|
| <b>Waveform</b>                          | Sinewave     |          |              |            |       |
| Peak Power                               | 2.00         |          |              | dBm        |       |
| Output Load                              |              | 50       |              | $\Omega$   |       |
| <b>Spectral Content</b>                  |              |          |              |            |       |
| Spurious Response                        |              |          | -70          | dBc        |       |
| Phase Noise @ 10MHz carrier (Vdd = 3.3V) |              |          |              |            |       |
| 1Hz                                      |              |          | -90          | dBc / Hz   |       |
| 10Hz                                     |              |          | -120         | dBc / Hz   |       |
| 100Hz                                    |              |          | -135         | dBc / Hz   |       |
| 1,000Hz                                  |              |          | -145         | dBc / Hz   |       |
| 10,000 Hz                                |              |          | -150         | dBc / Hz   |       |
| 100,000Hz                                |              |          | -150         | dBc / Hz   |       |
| 1,000,000Hz                              |              |          | -150         | dBc / Hz   |       |
| <b>Electrical Frequency Adjustment</b>   |              |          |              |            |       |
| Control Voltage Range (Vc)               | 0.0          |          | Vdd          | Volts      |       |
| Frequency Pull Range                     | $\pm 0.7$    |          |              | ppm        |       |
| Frequency Pull Slope                     |              | Positive |              |            |       |
| Control Voltage Port Impedance           | 10           |          |              | k $\Omega$ |       |
| Center Control Voltage                   | (Vdd/2) -0.5 | Vdd/2    | (Vdd/2) +0.5 | Volts      |       |

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

AOCJY -  -  MHz -  -

| Supply Voltage Option  |
|------------------------|
| Blank: 3.30V $\pm 5\%$ |
| A: 5.00V $\pm 5\%$     |

| RF Output Options |
|-------------------|
| Blank: CMOS       |
| SW: Sinewave      |

| Frequency in MHz    |
|---------------------|
| Such as; 10.000 MHz |
| 26.000 MHz          |
| 100.000 MHz         |

| Temperature Options  |
|--|
| Blank: $\pm 5.0$ ppb/ $0^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ |
| E: $\pm 10.0$ ppb/ $-20^{\circ}\text{C}$ to $+70^{\circ}\text{C}$  |
| F: $\pm 30.0$ ppb/ $-40^{\circ}\text{C}$ to $+75^{\circ}\text{C}$  |

## OUTLINE DIMENSIONS

### Recommended Soldering Pattern

| Pin | Function        |
|-----|-----------------|
| 1   | Control Voltage |
| 2   | VREF            |
| 3   | Supply Voltage  |
| 4   | RF-output       |
| 5   | Ground. Case    |

Dimensions: Inches (mm)

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## REFLOW PROFILE:



|  |                           |
|--|---------------------------|
| $T_s$ max to $T_L$ (Ramp-up Rate)        | 3°C/second max.           |
| Preheat                                  |                           |
| Temperature Min. ( $T_s$ Min.)           | 150°C                     |
| Temperature Typical ( $T_s$ Typ.)        | 175°C                     |
| Temperature Max. ( $T_s$ Max.)           | 200°C                     |
| Time ( $t_s$ )                           | 60 ~ 180 seconds          |
| Ramp-up rate ( $T_L$ to $T_p$ )          | 3°C/second max.           |
| Time Maintained Above:                   |                           |
| --Temperature ( $T_L$ )/Time ( $T_L$ )   | 217°C/60 ~ 150 seconds    |
| Peak Temperature ( $T_p$ )               | 250°C max. for 10 seconds |
| Target Peak Temperature ( $T_p$ Target)  | 250°C +0/-5°C             |
| Time within 5°C of actual peak ( $t_p$ ) | 20 ~ 40 seconds           |
| Ramp-down Rate                           | 6°C/second max.           |
| Tune 25°C to Peak Temperature (t)        | 8 minutes max.            |

## PACKAGING: 15 pcs/tray



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