

# OVEN CONTROLLED CRYSTAL OSCILLATOR

AOCJY1 Series



ESD Sensitive



RoHS / RoHS II Compliant



20.8 x 13.2 x 8.2 mm

## FEATURES:

- 20.8 x 13.2 x 8.2 mm Leaded- RoHS Compliant Reflow-able Package
- AT-Cut, High “Q” resonator based design
- Either Sinewave or CMOS RF output
- Available with  $\pm 500$  ppb over  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$  operating temperature Range
- Tighter Stabilities to  $\pm 50.0$  ppb over  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  also available
- Exceptional long-term Aging of  $\pm 3$  ppm max. over 10-Year Product Life
- Excellent close-in phase noise ( $-145$  dBc/Hz Typical @1k 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                   |
|--|--|--------------------|--------------|--------------------|-------------------------|
| <b>RF Output</b>   |  |                    |              |                    |                         |
| Frequency  | 10.00  |                    | 100.00       | MHz                | Overall Frequency range |
| Standard Available Frequencies   | 10.00, 12.80, 13.00, 26.00, 38.88, 40.00, 100.00 MHz |                    |              |                    |                         |
| <b>Waveform</b>  |  |                    |              |                    |                         |
| <b>CMOS</b>  |  |                    |              |                    |                         |
| Level "1" (Logic High)   | 0.9*Vdd  |                    |              | Volts              |                         |
| Level "0" (Logic Low)  |  |                    | 0.1*Vdd      | Volts              |                         |
| Load   |  | 15                 |              | pf                 |                         |
| Rise & Fall Time   |  |                    | 6.0          | ns                 |                         |
| Duty Cycle   | 45   |                    | 55           | %                  |                         |
| <b>Sinewave</b>  |  |                    |              |                    |                         |
| Peak Power   | 2.00   |                    |              | dBm                |                         |
| Output Load  |  | 50                 |              | $\Omega$           |                         |
| Short Term Stability   |  | $1 \times 10^{-9}$ |              | /second            | Alan Variance           |
| Operable Temperature Range   | -40  |                    | 75           | $^{\circ}\text{C}$ | See Stability Options   |
| <b>Frequency Stability Options</b>                                       |  |                    |              |                    |                         |
| 0 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$                           |  |                    | $\pm 50.00$  | ppb                | Default Spec.           |
| -20 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$                         |  |                    | $\pm 200.00$ | ppb                | Option "E"              |
| -40 $^{\circ}\text{C}$ to +75 $^{\circ}\text{C}$                         |  |                    | $\pm 500.00$ | ppb                | Option "F"              |
| <b>Frequency Stability vs. Supply Voltage (Vdd <math>\pm 5\%</math>)</b> |  |                    |              |                    |                         |
| Warm-Up @ 25 $^{\circ}\text{C}$  |  |                    | $\pm 500.00$ | ppb                | In $\leq 3$ -minutes    |
| Power Consumption @ turn on  |  |                    | 2.00         | Watts              |                         |
| Power Consumption Steady State   |  |                    | 1.00         | Watt               |                         |
| Supply Voltage (Vdd)   | 3.13   | 3.30               | 3.46         | Volts              | See Options             |
| <b>Aging</b>   |  |                    |              |                    |                         |
| Yearly   |  |                    | $\pm 500$    | ppb                |                         |
| 10-Years   |  |                    | $\pm 3.00$   | ppm                |                         |
| Supply Voltage Variation   |  |                    | $\pm 50$     | ppb                | VDD $\pm 5\%$ change    |
| <b>Spectral Content</b>  |  |                    |              |                    |                         |
| Spurious Response  |  |                    | -35          | dBc                |                         |
| <b>Phase Noise (10MHz Carrier) @ 5V</b>                                  |  |                    |              |                    |                         |
| @ 10 Hz offset   |  |                    | -90          | dBc / Hz           |                         |
| @ 100 Hz offset  |  |                    | -120         | dBc / Hz           |                         |
| @ 1,000 Hz offset  |  |                    | -145         | dBc / Hz           |                         |
| @ 10,000 Hz offset   |  |                    | -150         | dBc / Hz           |                         |
| <b>Electrical Frequency Adjustment</b>                                   |  |                    |              |                    |                         |
| Control Voltage Range (Vc)   | 0.0  |                    | Vdd          | Volts              |                         |
| Frequency Pull Range   | $\pm 5.00$   |                    |              | 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              |                         |
| Control Port Linearity   |  | $\pm 10$           |              | %                  |                         |
| Storage Temperature  | -40  |                    | +100         | $^{\circ}\text{C}$ |                         |

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20.8 x 13.2 x 8.2 mm

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

AOCJY1 -  -  MHz -  -

### Supply Voltage Option

|              |
|--------------|
| Blank: 3.30V |
| A: 5.00V     |

### 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 |

\* For temp. option "F", 100MHz is only available with CMOS output

### RF Output Options

|              |
|--------------|
| Blank: CMOS  |
| SW: Sinewave |

## OUTLINE DIMENSIONS



| Pin | Function        |
|-----|-----------------|
| 1   | Control Voltage |
| 7   | GND             |
| 8   | Output          |
| 14  | Power Supply    |

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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: (50) units per tray



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