

# OVEN CONTROLLED CRYSTAL OSCILLATOR

AOCJY1 Series



RoHS  
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 |                    |                     |                    |                         |
| Waveform                                                                    | CMOS                                                 |                    |                     |                    |                         |
| Level "1" (Logic High)                                                      | $0.9 \times V_{dd}$                                  |                    |                     | Volts              |                         |
| Level "0" (Logic Low)                                                       |                                                      |                    | $0.1 \times V_{dd}$ | Volts              |                         |
| 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                                                        |                                                      | $1 \times 10^{-9}$ |                     | /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 (<math>V_{dd} \pm 5\%</math>)</b> |                                                      |                    |                     |                    |                         |
| Warm-Up @ $25^{\circ}\text{C}$                                              |                                                      |                    | $\pm 500.00$        | ppb                | In $\leq 3$ -minutes    |
| <b>Power Consumption</b>                                                    |                                                      |                    |                     |                    |                         |
| Power Consumption @ turn on                                                 |                                                      |                    | 2.00                | Watts              |                         |
| Power Consumption Steady State                                              |                                                      |                    | 1.00                | Watt               |                         |
| Supply Voltage ( $V_{dd}$ )                                                 | 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                | $V_{DD} \pm 5\%$ 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 ( $V_c$ )                                             | 0.0                                                  |                    | $V_{dd}$            | Volts              |                         |
| Frequency Pull Range                                                        | $\pm 5.00$                                           |                    |                     | ppm                |                         |
| Frequency Pull Slope                                                        |                                                      | Positive           |                     |                    |                         |
| Control Voltage Port Impedance                                              | 10                                                   |                    |                     | k $\Omega$         |                         |
| Center Control Voltage                                                      | $(V_{dd}/2) - 0.5$                                   | $V_{dd}/2$         | $(V_{dd}/2) + 0.5$  | Volts              |                         |
| Control Port Linearity                                                      |                                                      | $\pm 10$           |                     | %                  |                         |
| Storage Temperature                                                         | -40                                                  |                    | +100                | $^{\circ}\text{C}$ |                         |

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## 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

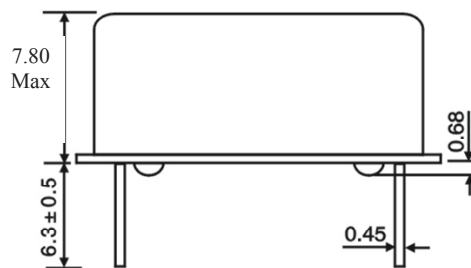
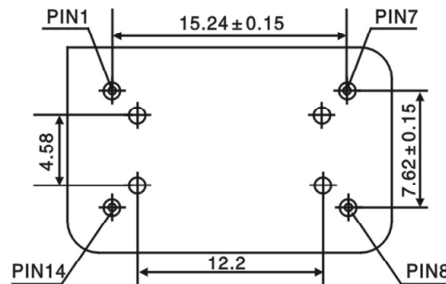
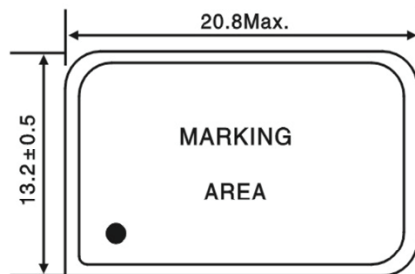
F: -40°C to +75°C

### 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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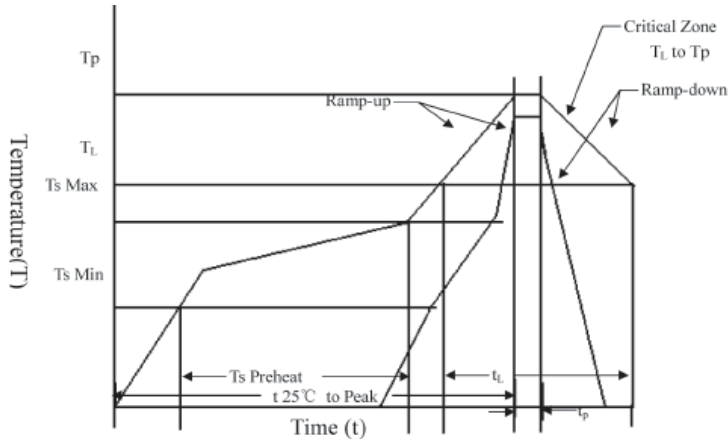


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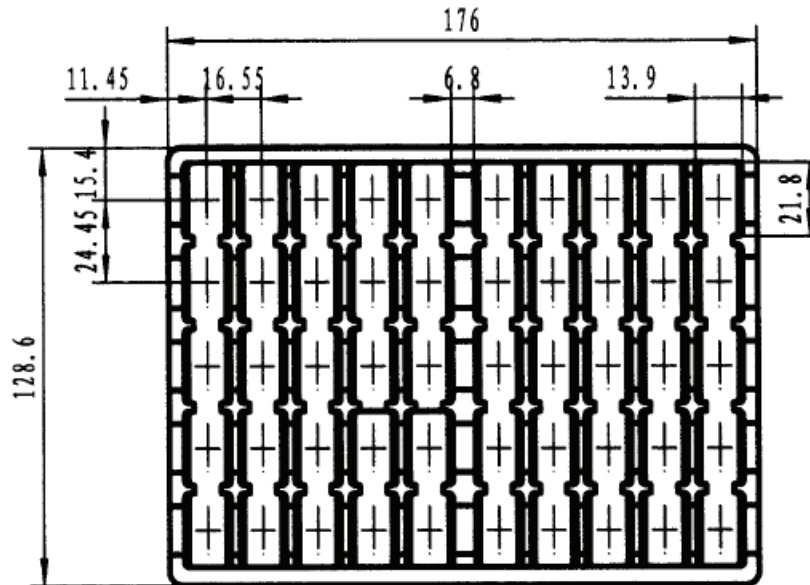
20.8 x 13.2 x 8.2 mm

## 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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