

# OVEN CONTROLLED CRYSTAL OSCILLATOR

AOCJY4 Series



**RoHS**  
Compliant



36.1x 27.2 x 13mm

## FEATURES:

- 36.1x 27.2 x 13mm Leaded- RoHS Compliant Reflow-able Package
- SC-Cut, High "Q" resonator based design
- Either Sinewave or CMOS RF output
- Available with  $\pm 10$  ppb over  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$  operating temperature Range
- Tighter Stabilities to  $\pm 2.0$  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                        |
|-------------------------------------------------------------|----------------------------------------------|---------------------|--------------|--------------------|------------------------------|
| <b>RF Output</b>                                            |                                              |                     |              |                    |                              |
| Frequency                                                   | 10.00                                        |                     | 40.00        | MHz                | Overall Frequency range      |
| Standard Available Frequencies                              | 10.00, 12.80, 13.00, 26.00, 38.88, 40.00 MHz |                     |              |                    |                              |
| <b>Waveform</b>                                             | <b>CMOS</b>                                  |                     |              |                    |                              |
| Level "1" (Logic High)                                      | 4.50                                         |                     |              | Volts              |                              |
| Level "0" (Logic Low)                                       |                                              |                     | 0.50         | Volts              |                              |
| Load                                                        |                                              | 15                  |              | pf                 |                              |
| Rise & Fall Time                                            |                                              |                     | 6.0          | ns                 |                              |
| Duty Cycle                                                  | 45                                           |                     | 55           | %                  |                              |
| <b>Waveform</b>                                             | <b>Sinewave</b>                              |                     |              |                    |                              |
| Peak Power                                                  | 2.00                                         |                     |              | dBm                |                              |
| Output Load                                                 |                                              | 50                  |              | $\Omega$           |                              |
| <b>Short Term Stability</b>                                 |                                              | $1 \times 10^{-10}$ |              | /second            | <b>Alan Variance</b>         |
| <b>Operable Temperature Range</b>                           | -40                                          |                     | 75           | $^{\circ}\text{C}$ | <i>See Stability Options</i> |
| <b>Frequency Stability Options</b>                          |                                              |                     |              |                    |                              |
| $0^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ (Note #1)      |                                              |                     | $\pm 2.00$   | ppb                | Default Spec.                |
| $-20^{\circ}\text{C}$ to $+70^{\circ}\text{C}$              |                                              |                     | $\pm 10.00$  | ppb                | Option "E"                   |
| $-40^{\circ}\text{C}$ to $+75^{\circ}\text{C}$              |                                              |                     | $\pm 10.00$  | ppb                | Option "F"                   |
| Frequency Stability vs. Supply Voltage ( $V_{dd} \pm 5\%$ ) |                                              |                     | $\pm 1.00$   | ppb                |                              |
| Frequency Stability vs. Load Variation ( $\pm 10\%$ )       |                                              |                     | $\pm 1.00$   | ppb                |                              |
| Warm-Up @ $25^{\circ}\text{C}$                              |                                              |                     | $\pm 100.00$ | ppb                | In $\leq 3$ -minutes         |
| Power Consumption @ turn on                                 |                                              |                     | 4.00         | Watts              |                              |
| Power Consumption Steady State                              |                                              |                     | 1.50         | Watts              |                              |
| Supply Voltage ( $V_{dd}$ )                                 | 4.75                                         | 5.00                | 5.25         | Volts              | <i>See Options</i>           |

**Note #1:**  $\pm 2.00$  ppb stability is only available for  $F_0 \leq 13\text{MHz}$ . For frequencies above 13MHz, the best available frequency stability is  $\pm 10.00$  ppb over  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$



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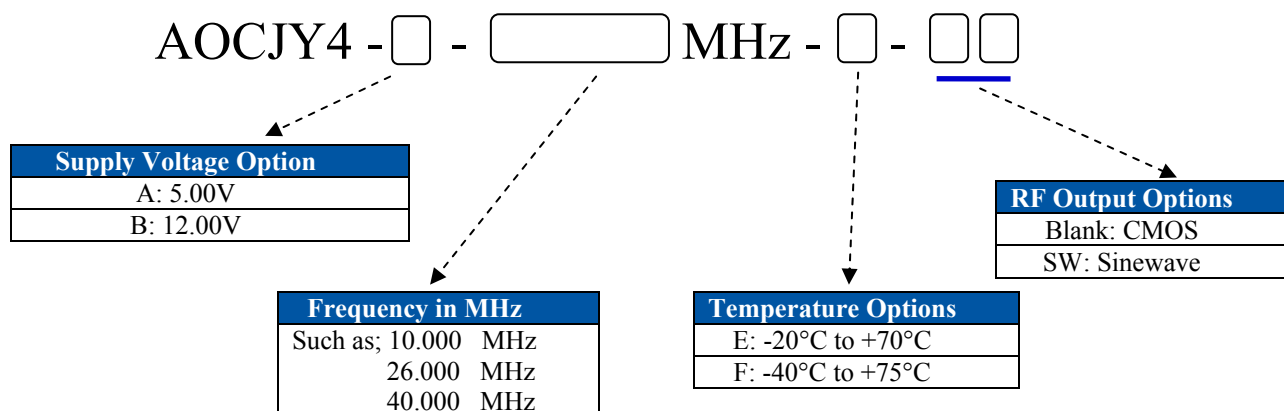


36.1x 27.2 x 13mm

## 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                     |         |          | -150    | dBc   |                |
| <b>Electrical Frequency Adjustment</b> |         |          |         |       |                |
| Control Voltage Range (Vc)             | 0.0     |          | 5.00    | Volts |                |
| Frequency Pull Range                   | ±0.700  |          |         | ppm   |                |
| Frequency Pull Slope                   |         | Positive |         |       |                |
| Control Voltage Port Impedance         | 10      |          |         | kΩ    |                |
| Center Control Voltage                 | 2.00    | 2.50     | 3.00    | Volts |                |
| Control Port Linearity                 |         | ±10      |         | %     |                |
| Reference Voltage (Vdd=5.0V)           | 4.40    | 4.50     | 4.60    | Volts | Output @ Pin#2 |
| Reference Voltage (Vdd=12.0V)          | 4.90    | 5.00     | 5.10    | Volts | Output @ Pin#2 |
| Storage Temperature                    | -40     |          | +100    | °C    |                |

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



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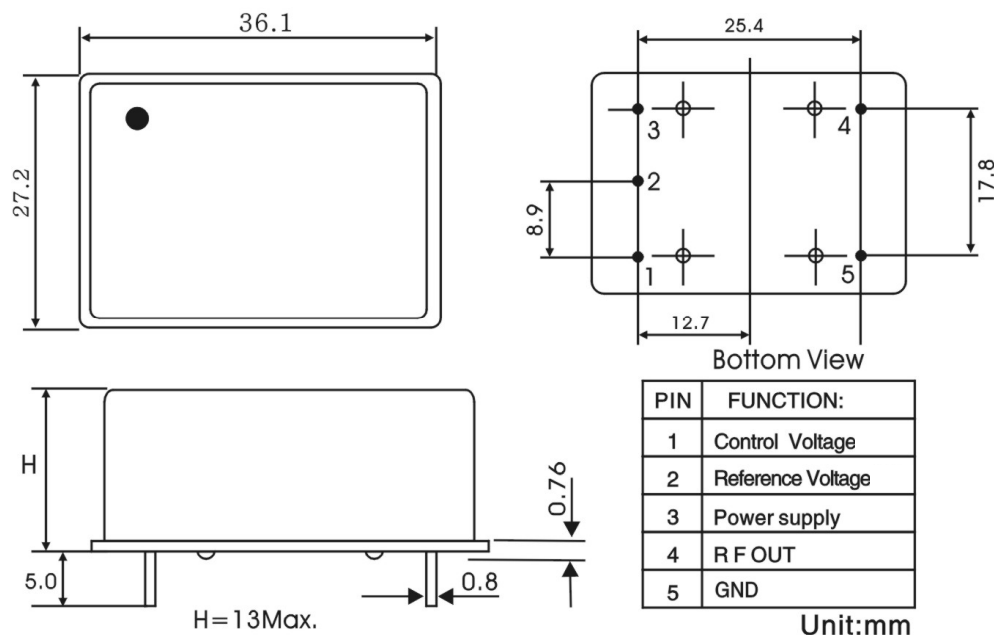


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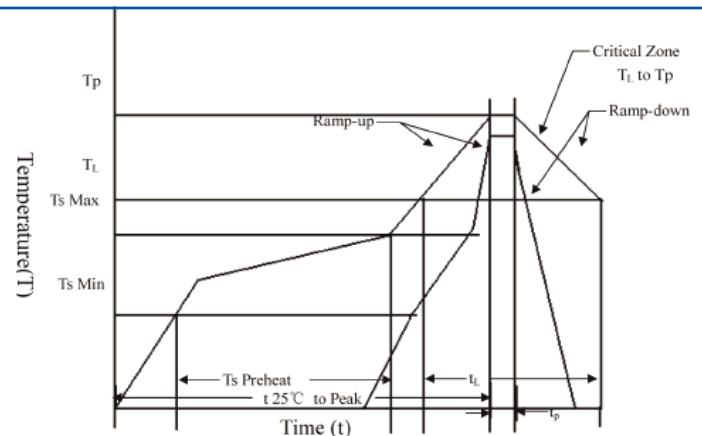
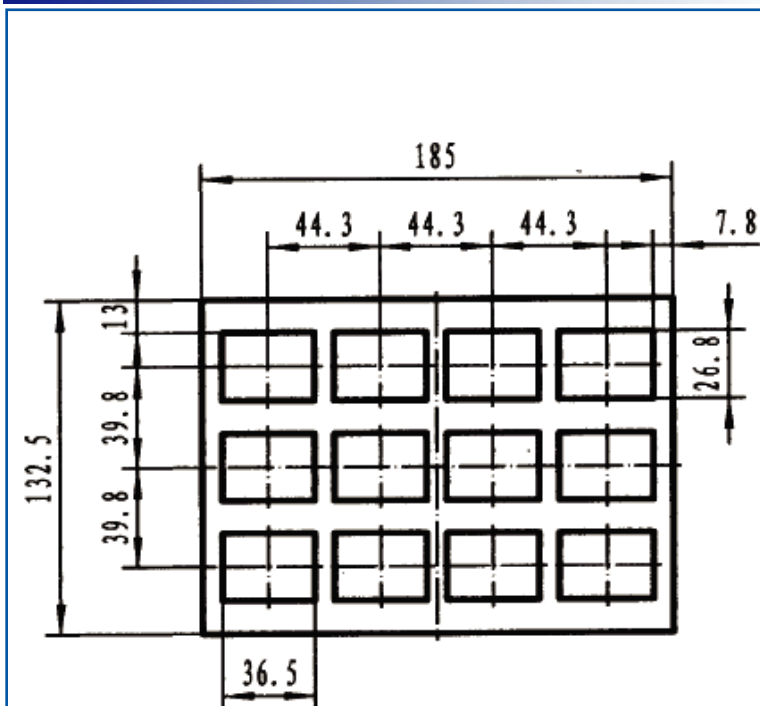
36.1x 27.2 x 13mm

## OUTLINE DIMENSIONS



## PACKAGING: 12 pcs/tray

## 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.           |
| Time 25°C to Peak Temperature (t)        | 8 minutes max.            |

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