

# Oven Controlled Crystal Oscillators

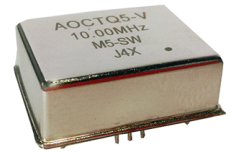
**AOCTQ5**



**ESD Sensitive**



**RoHS/RoHS II compliant**



36.1 x 27.1 x 12.1 mm Leaded

## FEATURES:

- 36.1x 27.1 x 12.1mm Leaded- RoHS Compliant Package
- SC-Cut, High “Q” resonator based design
- Either CMOS or Sinewave output
- Tight frequency stability:
  - ± 3 ppb accuracy over -40°C to +85°C temperature range
  - ± 5 ppb accuracy over -55°C to +85°C temperature range
- Excellent close-in phase noise (-145 dBc/Hz max. @1kHz offset; 10MHz carrier)
- Ideal for Low-g-Sensitivity Designs (0.3 ppb/g maximum)

## APPLICATIONS:

- COTS Military & Industrial Radios & Timing Circuits
- Cellular Infrastructure
- Radar Systems
- Test & Measurement Equipment
- GPS Tracking with precision hold-over accuracy
- WiMax / WLAN

## STANDARD SPECIFICATIONS:

| Parameters  | Min.     | Typ.  | Max.                  | Units   | Notes                                    |
|---|----------|-------|-----------------------|---------|--|
| <b>RF Output</b>  |          |       |                       |         |  |
| Frequency   |          | 10.00 |                       | MHz     |  |
| <b>Supply Voltage (Vdd)</b>                               |          | 5     |                       | Vdc     |  |
| <b>Power Consumption</b>                                  |          |       | 5                     | W       | During Warming-up                        |
|   |          |       | 1.6                   | W       | Steady-State @ +25°C & under still air   |
| <b>Waveform</b>   | Sinewave |       |                       |         |  |
| Output Level  | +7       |       | +14                   | dBm     |  |
| Harmonics   |          |       | -35                   | dBc     |  |
| Spurious  |          |       | -70                   | dBc     |  |
| Output Load   |          | 50    |                       | Ω       |  |
| <b>Waveform</b>   | HCMOS    |       |                       |         |  |
| V <sub>OH</sub>   | 2.4      |       |                       | V       | With Load =15pF                          |
| V <sub>OL</sub>   |          |       | 0.4                   | V       |  |
| Duty Cycle  | 45       |       | 55                    | %       | @ (V <sub>OH</sub> - V <sub>OL</sub> )/2 |
| Rise/Fall Time  |          |       | 6                     | ns      | With Load =15pF                          |
| Output Load   |          |       | 15                    | pF      |  |
| <b>Storage Temperature Range</b>                          | -55      |       | +125                  | °C      |  |
| <b>Initial Frequency Tolerance</b>                        |          |       | ±10                   | ppb     | At shipment, nominal EFC                 |
| <b>Short-term Stability (1 sec)</b>                       |          |       | 5 x 10 <sup>-11</sup> |         | Test after 15 minutes                    |
| <b>Warm-up Time</b>                                       |          |       | 10                    | Minutes | @+25°C, with-in ±5ppb of final frequency |
| <b>G-Sensitivity</b>                                      |          |       | 0.3                   | ppb/g   |  |
| <b>Frequency Stability vs. Temp.</b>                      |          |       |                       |         | Available Options                        |
| -40° C to +85°C   |          |       | ±3                    | ppb     | Option “I3”                              |
|   |          |       | ±5                    | ppb     | Option “I5”                              |
| -55° C to +85°C   |          |       | ±5                    | ppb     | Option “M5”                              |
|   |          |       | ±10                   | ppb     | Option “M10”                             |
| <b>Frequency Stability vs. Supply Voltage (Vdd ± 5%)</b>  |          |       | ±3                    | ppb     |  |
| <b>Frequency Stability vs. Load Variation (Load ± 5%)</b> |          |       | ±3                    | ppb     |  |
| <b>Aging</b>  |          |       |                       |         |  |
| Per Day   |          |       | ±0.5                  | ppb     | After 30 days in operation               |
| Per Year  |          |       | ±50                   | ppb     |  |

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| Parameters                                     | Min.     | Typ. | Max. | Units  | Notes  |
|--|----------|------|------|--------|--|
| <b>Phase Noise (10MHz Carrier)<br/>@ +25°C</b> |          |      |      |        |  |
| @ 10 Hz offset                                 |          | -120 |      | dBc/Hz |  |
| @ 100 Hz offset                                |          | -140 |      | dBc/Hz |  |
| @ 1,000 Hz offset                              |          | -145 |      | dBc/Hz |  |
| @ 10,000 Hz offset                             |          | -155 |      | dBc/Hz |  |
| @ 100,000 Hz offset                            |          | -160 |      | dBc/Hz |  |
| <b>Electrical Frequency Adjustment</b>         |          |      |      |        | For Voltage Control Option only                    |
| Control Voltage Range (Vc)                     | 0        |      | 5    | Vdc    |  |
| Center Control Voltage (Vc)                    | 2.30     | 2.50 | 2.70 | Vdc    | To be with-in ±10 ppb from 10.000MHz (as received) |
| Frequency Pull Range                           | ±500     |      |      | ppb    |  |
| Frequency Pull Slope                           | Positive |      |      |        |  |

## Maximum Ratings

| Parameters           | Min.         | Typ. | Max. | Units | Notes |
|----------------------|--------------|------|------|-------|-------|
| Supply Voltage (Vdd) | -0.3         |      | 15   | V     |       |
| Control Voltage (Vc) | 0            |      | 5    | V     |       |
| ESD, HBM/CDM/MM      | 3kV/1kV/200V |      |      |       |       |

## PART IDENTIFICATION:

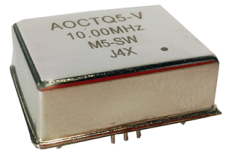
AOCTQ5 -  -10.000 MHz -  -

| Fixed or Voltage Controlled |
|-----------------------------|
| X = Fixed                   |
| V = Voltage Controlled      |

| Operating Temp. Range | Frequency Stability (ppb) |    |     |
|-----------------------|---------------------------|----|-----|
|                       | ±3                        | ±5 | ±10 |
| -40°C to +85°C        | I3                        | I5 |     |
| -55°C to +85°C        |                           | M5 | M10 |

| Output Type  |
|--------------|
| Blank: CMOS  |
| SW: Sinewave |

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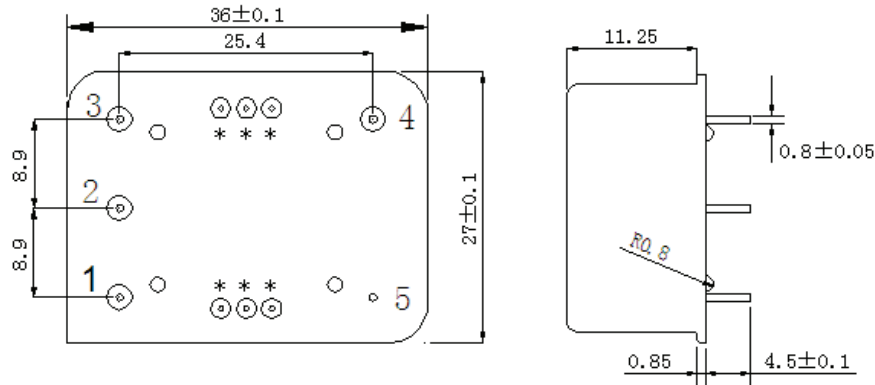
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## OUTLINE DIMENSION:

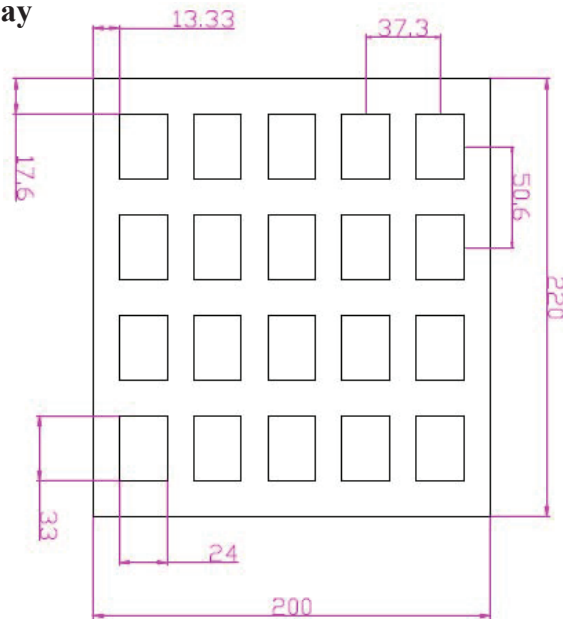


| Pin No. | Function              |                      |
|---------|-----------------------|----------------------|
|         | Fixed                 | Voltage Controlled   |
| 1       | NC                    | Control Voltage (Vc) |
| 2       | NC                    |                      |
| 3       | Power Supply (Vdd)    |                      |
| 4       | Output (Fout)         |                      |
| 5       | Ground, Case (GND)    |                      |
| *       | For factory test only |                      |

Dimensions: mm

## TAPE & REEL:

Packaging: 20pcs/tray



Dimensions: mm

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