

# OVEN CONTROLLED CRYSTAL OSCILLATOR

AOCJY2 Series



RoHS  
Compliant



21.0 x 21.0 x 11.0 mm

## FEATURES:

- 21.0 x 21.0 x 11.0 mm Leaded- 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 max. over 10-Year Product Life
- Excellent close-in phase noise ( $-140$  dBc/Hz Max. @100Hz 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>Waveform</b>					
<b>Sinewave</b>					
Peak Power	2.00			dBm	
Output Load		50		$\Omega$	
<b>Short Term Stability</b>		$2 \times 10^{-10}$		/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)			$\pm 5.00$	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”
Frequency Stability vs. Supply Voltage (Vdd $\pm 5\%$ )			$\pm 5.00$	ppb	
Frequency Stability vs. Load Variation ( $\pm 10\%$ )			$\pm 5.00$	ppb	
Warm-Up @ 25 $^{\circ}\text{C}$			$\pm 100.00$	ppb	In $\leq 3$ -minutes
Power Consumption @ turn on			3.00	Watts	
Power Consumption Steady State			1.00	Watts	
Supply Voltage (Vdd)	3.13	3.30	3.46	Volts	<i>See Options</i>

**Note #1:**  $\pm 5.00$  ppb stability is only available for  $F_0 \leq 40\text{MHz}$ . For frequencies above 40MHz, the best available frequency stability is  $\pm 10.00$  ppb over  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

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## 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		Vdd	Volts	
Frequency Pull Range	±0.70			ppm	
Frequency Pull Slope		Positive			
Control Voltage Port Impedance	10			kΩ	Control Voltage Port Impedance
Center Control Voltage	(Vdd/2) -0.5	Vdd/2	(Vdd/2) +0.5	Volts	Center Control Voltage
<b>Reference Voltage (Vdd=3.3V)</b>	2.70	2.80	2.90	Volts	Output @ Pin#5
<b>Reference Voltage (Vdd=5.0V)</b>	4.40	4.50	4.60	Volts	Output @ Pin#5
Storage Temperature	-40		+100	°C	

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

AOCJY2 -  -  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

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## OUTLINE DIMENSIONS



Bottom View



PIN	FUNCTION:
1	Power Supply
2	Output
3	GND
4	Control Voltage
5	Reference Voltage/NC

Unit:mm

## PACKAGING: (20) units per tray



## REFLOW PROFILE:



T <sub>S</sub> max to T <sub>L</sub> (Ramp-up Rate)	3°C/second max.
Preheat	
Temperature Min. (T <sub>S</sub> Min.)	150°C
Temperature Typical (T <sub>S</sub> Typ.)	175°C
Temperature Max. (T <sub>S</sub> Max.)	200°C
Time (t <sub>s</sub> )	60 ~ 180 seconds
Ramp-up rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/second max.
Time Maintained Above:	
--Temperature (T <sub>L</sub> )/Time (T <sub>L</sub> )	217°C/60 ~ 150 seconds
Peak Temperature (T <sub>P</sub> )	250°C max. for 10 seconds
Target Peak Temperature (T <sub>P</sub> Target)	250°C +0/-5°C
Time within 5°C of actual peak (t <sub>p</sub> )	20 ~ 40 seconds
Ramp-down Rate	6°C/second max.
Tune 25°C to Peak Temperature (t)	8 minutes max.

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