

# Oven Controlled Crystal Oscillator

**AOCJY**

Request Samples



Check Inventory



ESD Sensitive



25.4 x 22.1 x 12.7 mm  
**RoHS/RoHS II Compliant**  
 MSL Level = 1

## Features

- 25.4 x 22.1 x 12.7 mm True SMT- RoHS Compliant Reflowable 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 over 10-Year Product Life
- Excellent close-in phase noise ( $-135$  dBc/Hz Typical @100 Hz offset from 10MHz carrier)

## Applications

- Cellular Infrastructure
- Radar Systems
- Test & Measurement Equipment
- GPS Tracking with precision hold-over accuracy
- WiMax / WLAN

## Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
<b>RF Output</b>					
Frequency	10.00		100.00	MHz	CMOS output
	10.00		100.00	MHz	Sinewave output
Standard Available Frequencies	10.00, 12.80, 13.00, 16.384, 20.00, 26.00, 38.40, 38.88, 40.00, 100.00 MHz				
<b>Operable Temperature Range</b>	<b>0</b>		<b>50</b>	$^{\circ}\text{C}$	<b>See Stability Options</b>
<b>Frequency Stability Options</b>					
$0^{\circ}\text{C}$ to $+50^{\circ}\text{C}$			$\pm 5.00$	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”
<b>Frequency Stability vs. Supply Voltage (Vdd <math>\pm 5\%</math>)</b>			$\pm 20.00$	ppb	
<b>Warm-Up @ <math>25^{\circ}\text{C}</math></b>			$\pm 100.00$	ppb	In < 3-minutes
Power Consumption @ turn on			3.60	Watts	
Power Consumption Steady State			1.40	Watt	
Supply Voltage (Vdd)	3.135	3.30	3.465	Volts	See Options
Reference Voltage (Vref) (available as an output to facilitate oscillator tuning)	2.60	2.80	3.00	Volts	For Vdd= $+3.3\text{V}$ version
	4.30	4.50	4.70	Volts	For Vdd= $+5.0\text{V}$ version
<b>Aging</b>					
Daily aging (after 30 days)			$\pm 1.0$	ppb	
Yearly			$\pm 100$	ppb	
10-Years			$\pm 500$	ppb	

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Parameters	Minimum	Typical	Maximum	Units	Notes
<b>Waveform</b>	<b>LVC MOS</b>				
Level "1" (Logic High)	0.9*Vdd			Volts	
Level "0" (Logic Low)			0.1*Vdd	Volts	
Load		15		pf	
Rise & Fall Time			5.0	ns	
Duty Cycle	45		55	%	
<b>Waveform</b>	<b>Sinewave</b>				
Peak Power	2.00			dBm	
Output Load		50		$\Omega$	
<b>Spectral Content</b>					
Spurious Response			-70	dBc	
Phase Noise @ 10MHz Carrier (Vdd=3.3V)					
@ 1 Hz offset			-90	dBc / Hz	
@ 10 Hz offset			-120	dBc / Hz	
@ 100 Hz offset			-135	dBc / Hz	
@ 1,000 Hz offset			-145	dBc / Hz	
@ 10,000 Hz offset			-150	dBc / Hz	
@ 100,000 Hz offset			-150	dBc / Hz	
@ 1,000,000 Hz offset			-150	dBc / Hz	
<b>Electrical Frequency Adjustment</b>					
Control Voltage Range (Vc)	0.0		Vdd	Volts	
Frequency Pull Range	$\pm 0.7$			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	

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## Options and Part Identification (left blank if standard):

AOCJY -  -  MHz -  -

Supply Voltage Option
Blank: 3.30V±5%
A: 5.00V±5%

Frequency in MHz
Such as; 10.000 MHz
26.000 MHz
100.000 MHz

Temperature Options
Blank: ±5.0ppb/0°C to +50°C
E: ±10.0ppb/-20°C to +70°C
F: ±30.0ppb/-40°C to +75°C

RF Output Options
Blank: CMOS
SW: Sinewave

Packaging
Blank: Bulk (Tray or Cut/Tape)
T: 50pcs/reel

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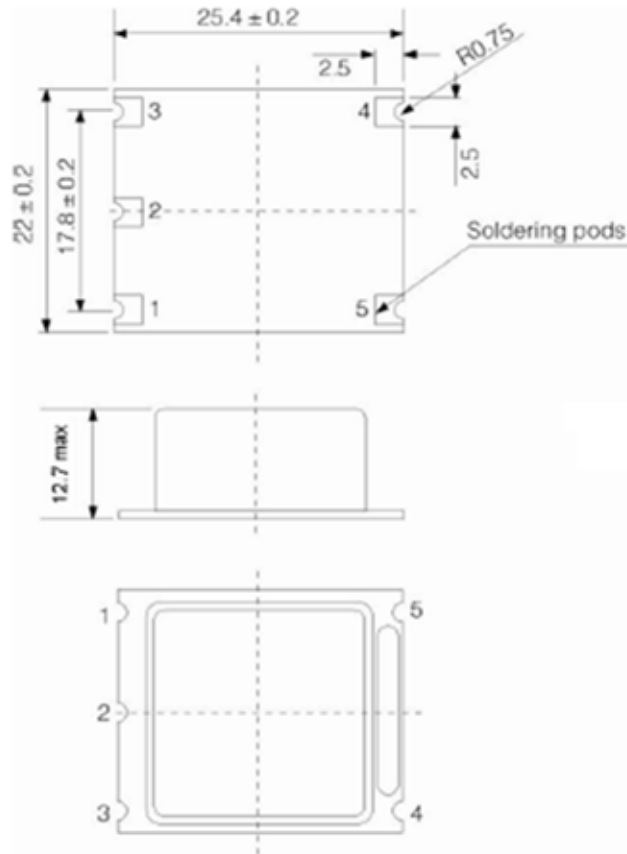


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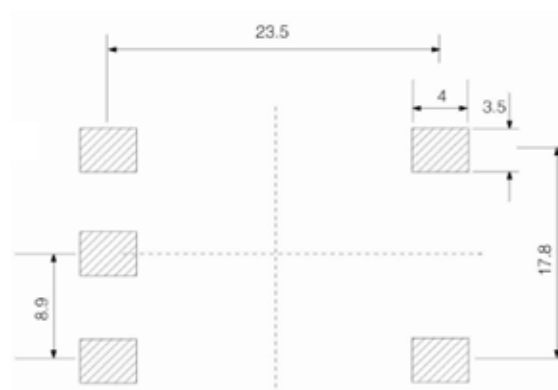
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## Mechanical Dimensions



PIN	Function
1	Control Voltage
2	VREF
3	Supply Voltage
4	RF-output
5	Ground, Case

## Recommended Land Pattern



Dimensions: mm



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## Reflow Profile [JEDEC J-STD-020]

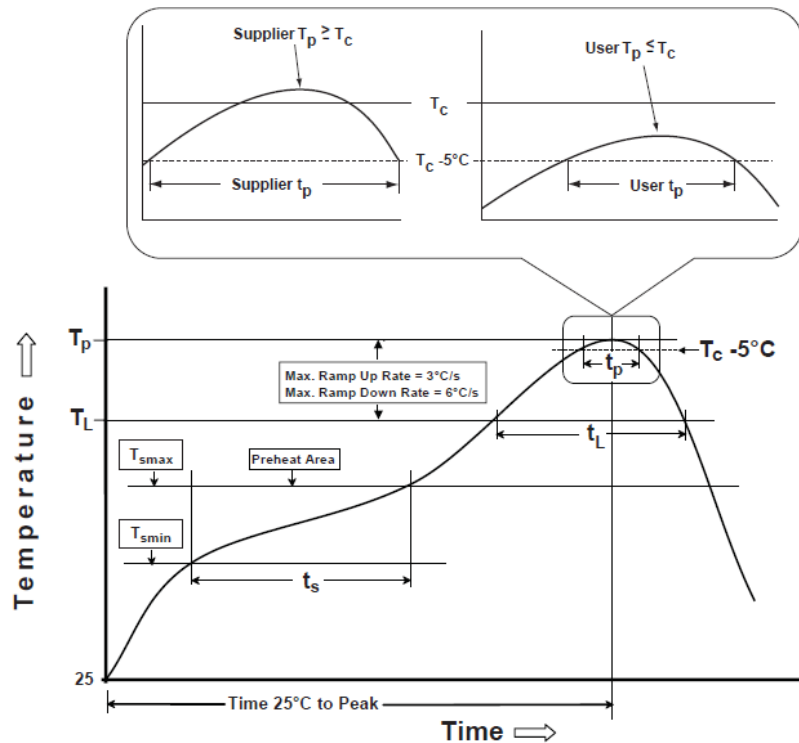


Table 1

SnPb Eutectic Process  
Classification Temperatures ( $T_c$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process  
Classification Temperatures ( $T_c$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum ( $T_{smin}$ )	100°C	150°C
Temperature maximum ( $T_{smax}$ )	150°C	200°C
Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	3°C/sec. max	3°C/sec. max
Liquidous temperature ( $T_L$ )	183°C	217°C
Time at liquidous ( $t_L$ )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature ( $T_p$ )*	see Table 1	see Table 2
Time ( $t_p$ )** within 5°C of the specified classification temperature ( $T_c$ )	20 sec.	30 sec.
Ramp-down rate ( $T_p$ to $T_{smax}$ )	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature ( $t_p$ ) is defined as supplier minimum and a user maximum.

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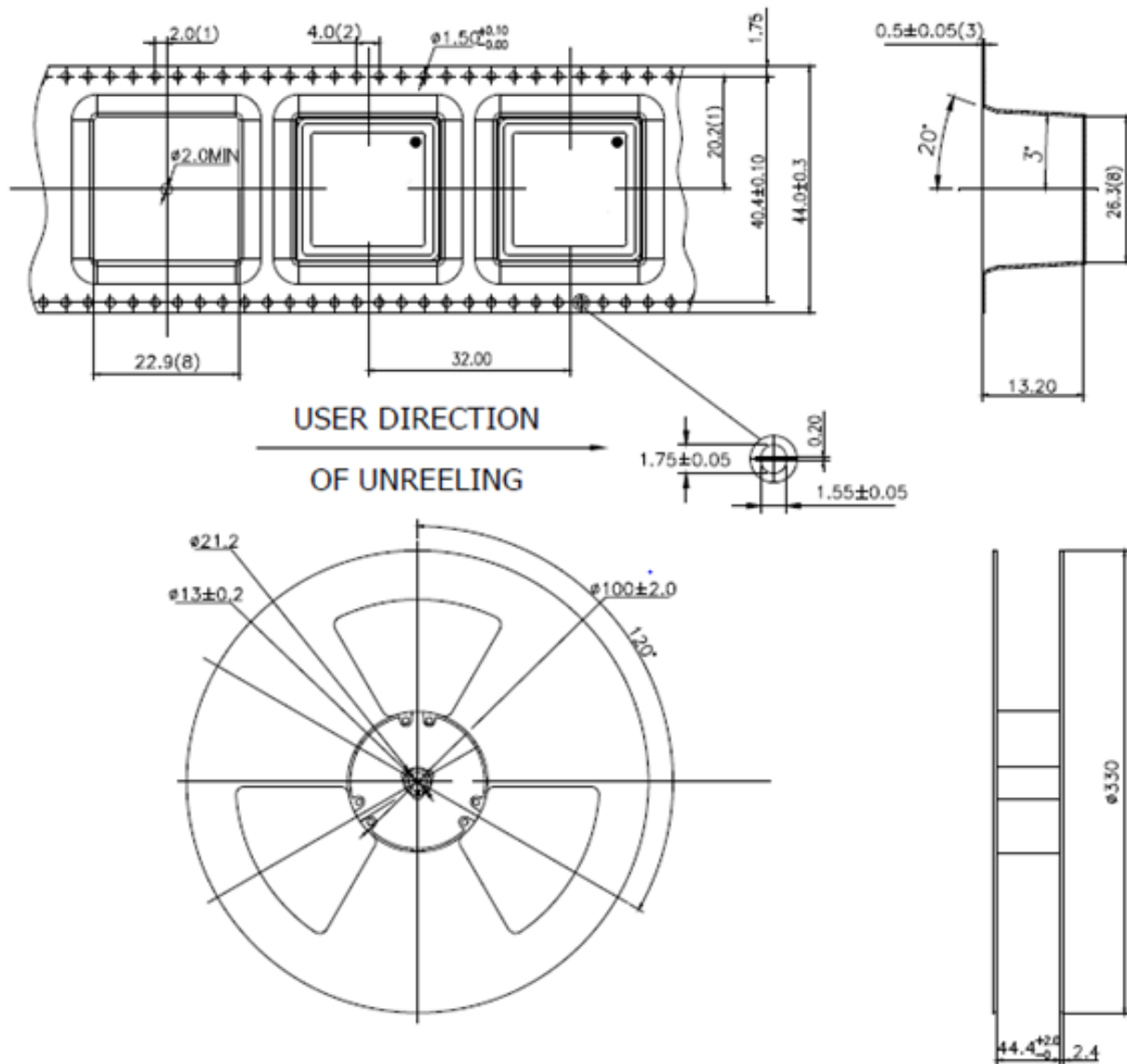
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## Packaging

Tape and Reel = 50 units (standard pack quantity)



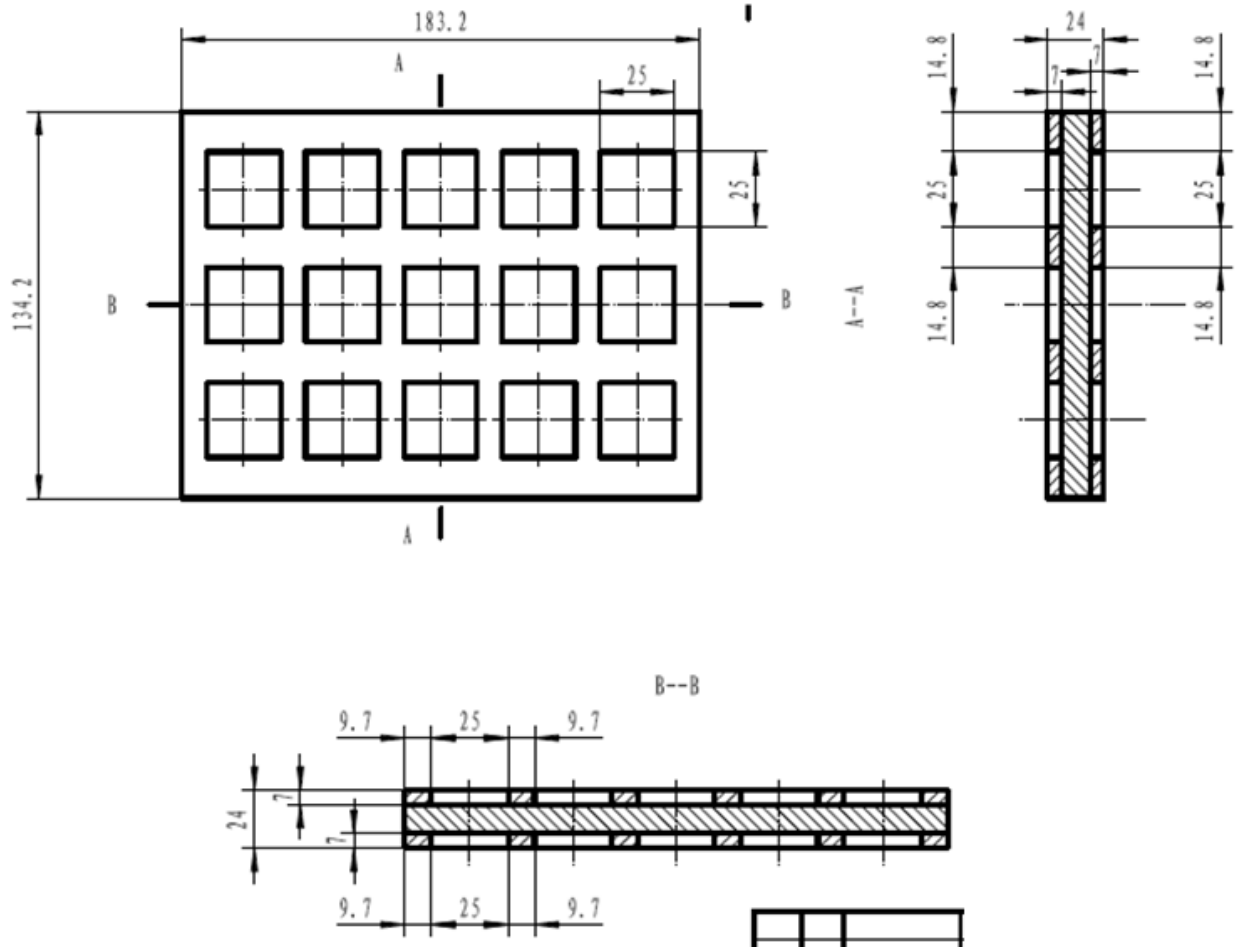
Dimensions: m m

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Packaging *continued*

Bulk packaging, 15 units per tray (standard pack quantity)



Dimensions: mm

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