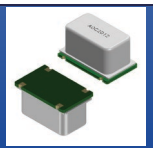
High-Stability & Ultra-Low Phase Noise SMD OCXO/ VCOCXO



AOC2012 Series

ESD Sensitive

20.32 x 12.7 x 11.0mm
RoHS/RoHS II Compliant
MSL = 1

Features

- Extremely low long-term aging: ±1ppm over 20 years
- Stability over temperature: ±10ppb over -20°C to +70°C
- Excellent phase noise:

(-135dBc/Hz typ. @ 100Hz offset, -148dBc/Hz typ. @ 1kHz offset)

- 10.0MHz, 12.8MHz, 19.44MHz, & 25MHz carrier frequency options
- 20.32 x 12.7mm, 4-pin SMD reflow-solderable package
- 3.3 V_{dd} supply
- SC-Cut, High "Q" resonator-based design

Applications

- Stratum 3 & Stratum 3E compliant
- Cellular infrastructure; Base stations
- Test & measurement equipment
- Switches & routers
- Time & frequency references
- Precision GPS

Part Identification

AOC2012 [ ] [ ] [ ] [ ] - [ ] [ ]

(1): Fixed Clock or Voltage Controlled	(2): V_{dd}	(3): Stability over OTR	(4): RF Output	(5): Output Frequency in MHz	(6): Packaging
X: Fixed Clock	A: 3.3V	J: ±10ppb over -20°C to +70°C	C: CMOS	Please specify the Frequency in units of MHz out to **4 digit** accuracy after the decimal. Example: "10.0000"=10MHz "12.8000"=12.8MHz "19.4400"=19.44MHz "25.0000"=25MHz	Blank: Bulk
V: Voltage Controlled					C: Cut/Tape 50 units
					T1: Tape/Reel 100 units

Part Number Example:
AOC2012VAJC-12.8000C

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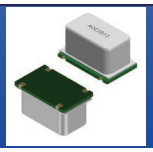

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Electrical Specifications

Parameters		Min.	Typical	Max.	Unit	Notes
Frequency Range (Fc)		10.0000		25.0000	MHz	
Standard Available Frequencies		10.0000, 12.8000, 19.4400, 25.0000			MHz	
Operating Temperature Range		-20		+70	°C	
Storage Temperature Range		-40		+100	°C	
Supply Voltage (V_{dd})		+3.135	+3.3	+3.465	V	
Power Consumption (warm-up)				2.5	W	
Current Consumption (warm-up)				722	mA	@ Max V_{dd} =+3.465V
Power Consumption (steady-state @+25°C)				1.0	W	
Current Consumption (steady-state @+25°C)				289	mA	@ Max V_{dd} =+3.465V
Frequency Accuracy (calibration)			≤±300	±500	ppb	*See Note 1*
Frequency Stability over Operating Temperature Range				±10.0	ppb	*See Note 2*
Frequency Stability vs. Supply Voltage Change				±3.0	ppb	V_{dd}±5%; (Vc=constant)
Frequency Stability vs. Load Change				±1.0	ppb	Load=15pF±10%
Aging Daily				±1.0	ppb	
Aging 1st Year				±100	ppb	
Aging 20 Years				±500	ppb	
All-Inclusive Frequency Tolerance over 20 Year Product Life				±1.0	ppm	*See Note 3*
Warm-Up Time				3	min.	*See Note 4*
Output Signal			LVCMOS			
Output Load		13.5	15	16.5	pF	
Duty Cycle		45	50	55	%	@ 50% V_{dd}
Output High Voltage (V_{OH}) Output Low Voltage (V_{OL})	V_{OH}	0.9*(V_{dd})			V	Load=15pF±10%; V_{dd}=+3.3V
	V_{OL}			0.1*(V_{dd})		
Rise (Tr) / Fall (Tf) Time				6	ns	
Center Control Voltage (Vc)			+1.65		V	Voltage-Controlled Option (VCOCXO)
Control Voltage Range		+0.0		+3.3	V	
Frequency Pullability		±0.7			ppm	
Control Port Input Impedance		50			kΩ	
EFC Linearity				±10	%	
Tuning Slope			Positive Monotonic			
Phase Noise (@ +25°C)			-115		dBc/Hz	Offset @10Hz
			-135			Offset @100Hz
			-148			Offset @1kHz
			-152			Offset @10kHz

Note 1: @ +25°C; initial set-tolerance frequency (relative to carrier) at time of shipment, pre-reflow
Note 2: Over -40°C to +85°C; relative to stabilized frequency after 1 hour of continuous operation, post-reflow
Note 3: Over -40°C to +85°C; includes stability over temperature, initial frequency accuracy (calibration), load pulling, power supply variation, and 20 years aging
Note 4: @ +25°C; within ±100ppb of F where F is the stabilized frequency reached after 1 hour of continuous operation

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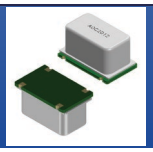

AOC2012 Series

ESD Sensitive

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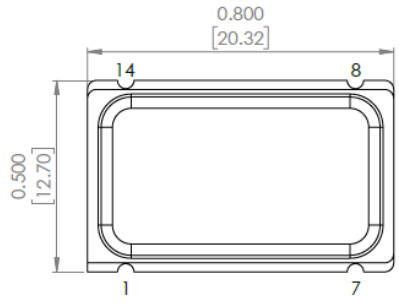
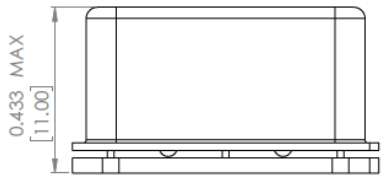
RoHS/RoHS II Compliant
MSL = 1

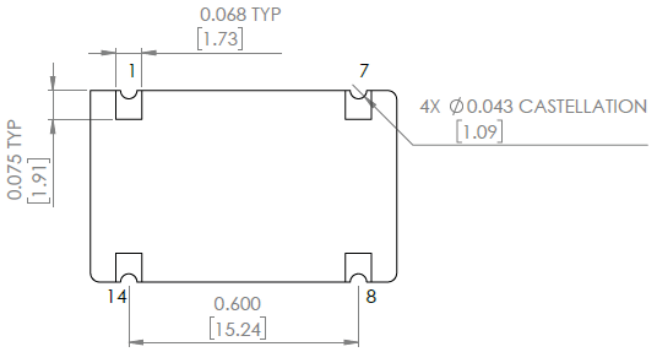
Mechanical Dimensions



TOP VIEW

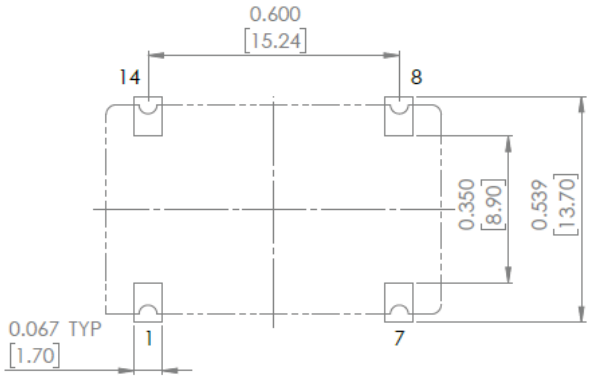


SIDE VIEW



BOTTOM VIEW

RECOMMENDED LAND PATTERN



Pin #	Function
#1	Option V: Voltage-Control (Vc) Option X: No Connect
#7	0V & CASE GROUND
#8	Output
#14	Supply Voltage (V_{dd})

Dimensions: inches [mm]

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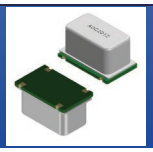

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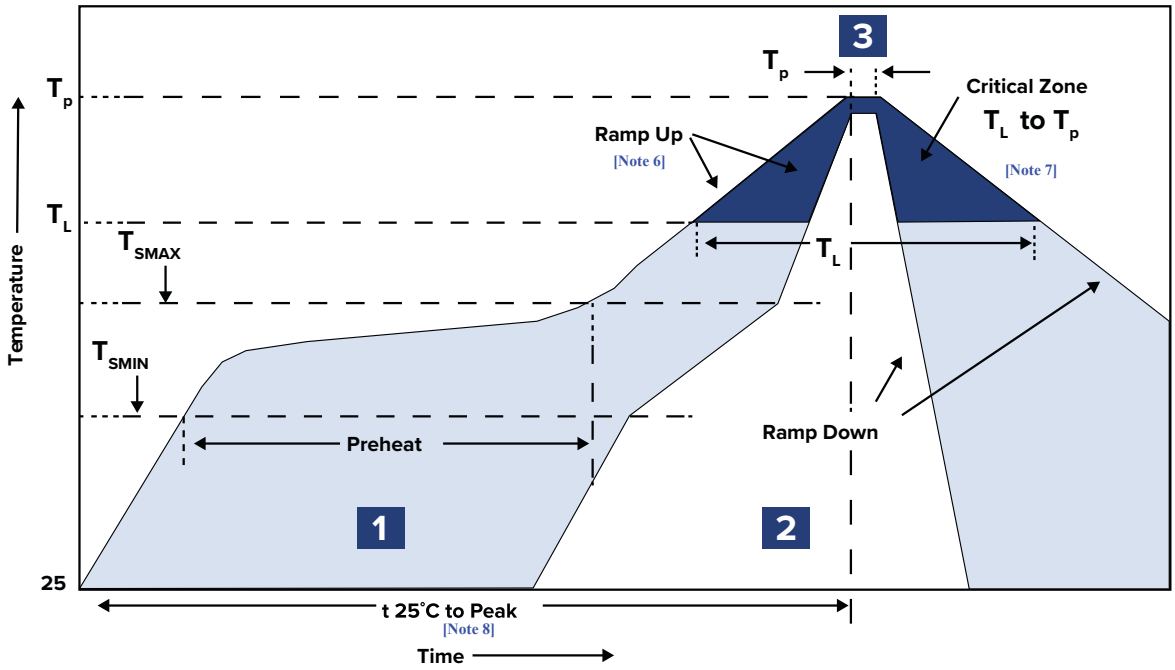
Recommended Reflow Profile [Note 5]



Zone	Description	Temperature	Time
1	Preheat / Soak	T_{SMIN} ~ T_{SMAX} 150°C ~ 200°C	60 ~ 180 sec.
2	Reflow	T_L 217°C	60 ~ 150 sec.
3	Peak heat	T_P 260°C±5°C	20 ~ 40 sec.

Note 5: Can withstand 2 times reflow; all temperatures refer to topside of the package, measured on the package body surface
Note 6: Ramp Up Rate (T_L → T_P) = 3°C / sec. MAX
Note 7: Ramp Down Rate (T_P → T_L) = 6°C / sec. MAX
Note 8: Time 25°C to Peak Temperature (25°C → T_P) = 8 minutes MAX

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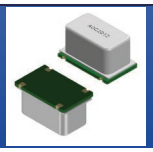

AOC2012 Series

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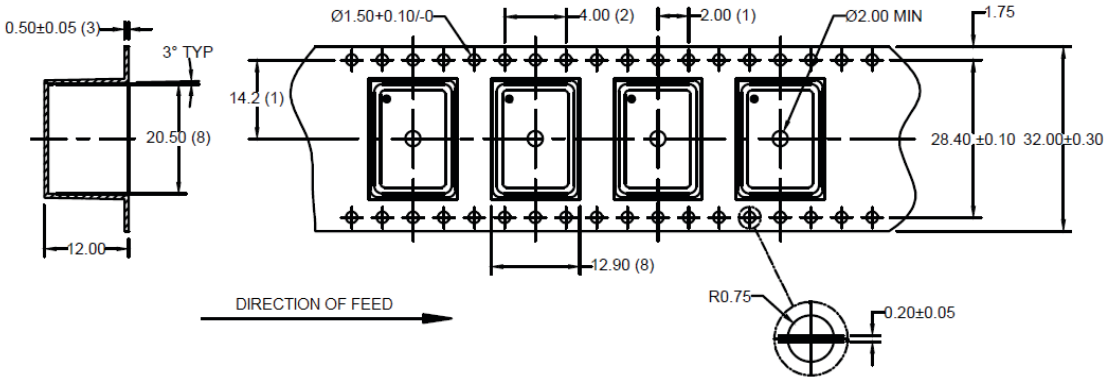
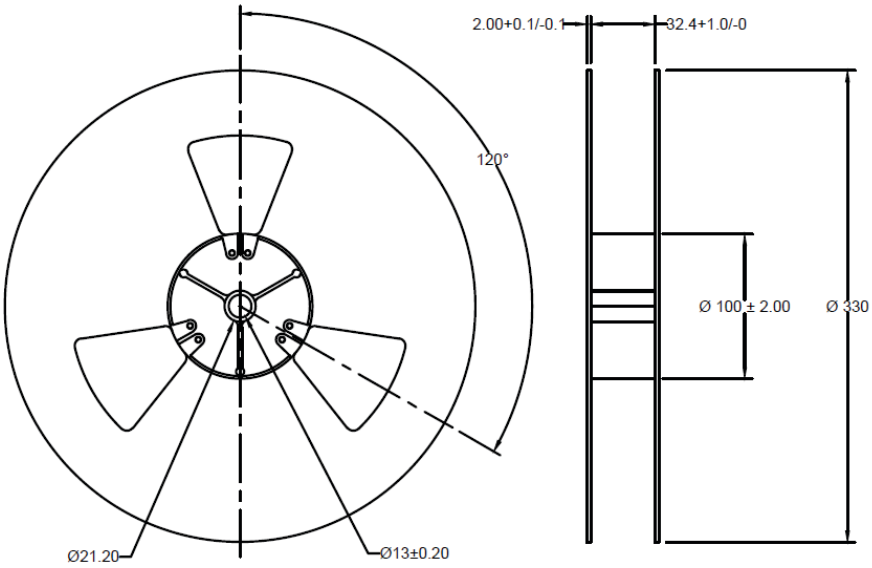
RoHS/RoHS II Compliant
MSL = 1

Packaging

C = Cut Tape 50 units
T1 = Tape & Reel 100 units/reel





Dimensions: mm

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