

PLASTIC PACKAGE INDUSTRIAL GRADE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASEMB



Life Size 
3.2 x 2.5 x 0.85mm

ASEMB

Moisture Sensitivity Level – MSL 1



RoHS/RoHS II Compliant

FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- 2nd Generation MEMS Technology with reduced jitter by Discera
- Low Power Consumption <10mA
- Exceptional Stability +/- 10ppm Over Temp. at -40 to +105°C
- Compact QFN Plastic Packaging

APPLICATIONS:

- CCD Clock for VTR Camera
- Equipment Connected to PCs
- Low Profile Equipment
- Computers and Peripherals
- Lower Cost Crystal Oscillator Replacement
- Portable Electronics (MP3 Players, Games)
- Consumer Electronics such as TV's, DVR's, etc.
- Vibrant, Shock-Prone & Humid Environments for Industrial Equipment
- Demanding Military & Automotive Electronics

STANDARD SPECIFICATIONS:

Common Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range:	1.0		150	MHz	
Operating Temperature:	0		+70	°C	See options
Storage Temperature:	-55		+150	°C	
Overall Frequency Stability*:	-50		+50	ppm	See options
Supply Voltage (Vdd):	+1.8 ~ +3.3			V	
Output Load:			15, 25, or 40	pF	See options
	10			kΩ	
Symmetry:	45		55	%	@1/2Vdd
Startup Time:		1.5	3.0	ms	
Disable Time:		20	100	ns	
Disable Stand-by Current:			15	uA	
Tri-state Function (Stand-by) :	"1" (VIH ≥ 0.7 * Vdd) or Open: Oscillation "0" (VIL < 0.25 * Vdd) : Hi Z			V	
Aging:	-5.0		+5.0	ppm	First year

Key Electrical Specifications – Vdd = 1.8V

Parameters	Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz	5	15	mA	CL=0pF RL=∞ T=25°C (Standard CL: 15pF)
	40.0 to 79.9999MHz	6	15	mA	
	80.0 to 124.9999MHz	7	15	mA	
	125.0 to 150MHz	8	15	mA	
	1.0 to 39.9999MHz	6	15	mA	CL=0pF RL=∞ T=25°C (CL option: 25pF)
	40.0 to 79.9999MHz	7	15	mA	
	80.0 to 124.9999MHz	8	15	mA	
	125.0 to 150MHz	9	15	mA	
	1.0 to 39.9999MHz	7	15	mA	CL=0pF RL=∞ T=25°C (CL option: 40pF)
	40.0 to 79.9999MHz	8	15	mA	
	80.0 to 124.9999MHz	9	15	mA	
	125.0 to 150MHz	10	15	mA	
Output Voltage:	V _{OH}	0.8*V _{dd}		V	CL=15, 25, 40pF
	V _{OL}		0.2*V _{dd}	V	
Rise Time: Fall Time:	Tr	1.8	3.0	ns	CL=15pF; T=25°C
	Tf	1.0	3.0	ns	20%/80%*VDD
	Tr	1.5	3.0	ns	CL=25pF; T=25°C
	Tf	1.2	3.0	ns	20%/80%*VDD
	Tr	1.4	3.0	ns	CL=40pF; T=25°C
	Tf	1.1	3.0	ns	20%/80%*VDD
Cycle to Cycle Jitter:		60		ps	F=100MHz
Period Jitter RMS:		10		ps	F=100MHz

REVISED: 12.6.2017

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Key Electrical Specifications – $V_{dd} = 2.5V$

Parameters		Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz		6	15	mA	CL=0pF RL=∞ T=25°C (Standard CL: 15pF)
	40.0 to 79.9999MHz		7	15	mA	
	80.0 to 124.9999MHz		8	15	mA	
	125.0 to 150MHz		9	15	mA	
	1.0 to 39.9999MHz		7	15	mA	CL=0pF RL=∞ T=25°C (CL option: 25pF)
	40.0 to 79.9999MHz		8	15	mA	
	80.0 to 124.9999MHz		9	15	mA	
	125.0 to 150MHz		10	15	mA	
	1.0 to 39.9999MHz		8	16	mA	CL=0pF RL=∞ T=25°C (CL option: 40pF)
	40.0 to 79.9999MHz		9	16	mA	
	80.0 to 124.9999MHz		10	16	mA	
	125.0 to 150MHz		11	16	mA	
Output Voltage:	V_{OH}	$0.8 \cdot V_{dd}$			V	CL=15, 25pF
	V_{OL}			$0.2 \cdot V_{dd}$	V	
	V_{OH}	$0.9 \cdot V_{dd}$			V	CL=40pF
	V_{OL}			$0.1 \cdot V_{dd}$	V	
Rise Time: Fall Time:	T_r		1.0	2.0	ns	CL=15pF; T=25°C 20%/80%*VDD
	T_f		0.9	2.0	ns	
	T_r		1.1	2.0	ns	CL=25pF; T=25°C 20%/80%*VDD
	T_f		0.9	2.0	ns	
	T_r		1.0	2.0	ns	CL=40pF; T=25°C 20%/80%*VDD
	T_f		0.9	2.0	ns	
Cycle to Cycle Jitter:			50		ps	F=100MHz
Period Jitter RMS:			5		ps	F=100MHz

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RoHS
Compliant

Key Electrical Specifications – $V_{dd} = 3.3V$

Parameter		Minimum	Typical	Maximum	Units	Notes
Supply Current (no load):	1.0 to 39.9999MHz		7	15	mA	CL=0pF
	40.0 to 79.9999MHz		8	15	mA	RL=∞
	80.0 to 124.9999MHz		9	15	mA	T=25°C
	125.0 to 150MHz		10	15	mA	(Standard CL: 15pF)
	1.0 to 39.9999MHz		8	16	mA	CL=0pF
	40.0 to 79.9999MHz		9	16	mA	RL=∞
	80.0 to 124.9999MHz		10	16	mA	T=25°C
	125.0 to 150MHz		11	16	mA	(CL option: 25pF)
	1.0 to 39.9999MHz		8	16	mA	CL=0pF
	40.0 to 79.9999MHz		9	16	mA	RL=∞
	80.0 to 124.9999MHz		10	16	mA	T=25°C
	125.0 to 150MHz		11	16	mA	(CL option: 40pF)
Output Voltage:	V_{OH}	$0.8 * V_{dd}$			V	
	V_{OL}			$0.2 * V_{dd}$	V	CL=15pF
	V_{OH}	$0.9 * V_{dd}$			V	
	V_{OL}			$0.1 * V_{dd}$	V	CL=25, 40pF
Rise Time: Fall Time:	Tr		1.0	2.0	ns	CL=15pF; T=25°C
	Tf		0.9	2.0	ns	20%/80%*VDD
	Tr		1.0	2.0	ns	CL=25pF; T=25°C
	Tf		0.9	2.0	ns	20%/80%*VDD
	Tr		0.8	2.0	ns	CL=40pF; T=25°C
	Tf		0.8	2.0	ns	20%/80%*VDD
Cycle to Cycle Jitter:			50		ps	F=100MHz
Period Jitter RMS:			5		ps	F=100MHz

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Absolute Maximum Ratings

Item	Minimum	Maximum	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	V _{dd} +0.3	V	
Junction Temp.		+150	°C	
Storage Temp.	-55	+150	°C	
Soldering Temp.		+260	°C	40sec max
ESD			V	
HBM		4,000		
MM		200		
CDM		1,500		

OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

Programmed Orders (Quantity > 1,000pcs)

ASEMB - MHz - - -

Frequency in MHz
e.g. 14.3181 MHz (Maximum 4 digits after decimal)

Operating Temp.
Blank: 0°C ~ +70°C
E: -20°C ~ +70°C
L: -40°C ~ +85°C
X: -40°C ~ +105°C

Overall Freq. Stability
C: ±50ppm (STD)
Y: ±10ppm
R: ±25 ppm

Output Load
Blank: 15pF
25: 25pF
40: 40pF

Packaging
Blank*: 110pcs / Tube
T: 1,000pcs / reel
T3: 3,000pcs / reel
T5: 5,000pcs / reel

* For Quick turn-around programmable orders < 1000pcs: Due to the immediate availability of stock and the qty of the order, the parts may be delivered as BULK: Cut Tape, Loose parts in Antistatic Bag or in Tube(s). The MOQ per the series will still apply for Tube packaging.

Un-Programmed Orders

Blank unprogrammed oscillators are available for quick turn engineering requirements. Please call ABRACON for more information.

ASEMB - BLANK - - - -

Operating Temp.
Blank: 0°C ~ +70°C
E: -20°C ~ +70°C
L: -40°C ~ +85°C
X: -40°C ~ +105°C

Overall Freq. Stability
C: ±50ppm (STD)
Y: ±10ppm
R: ±25 ppm

Output Load
Blank: 15pF
25: 25pF
40: 40pF

Packaging
Blank: 110pcs / Tube
T: 1,000pcs / reel
T3: 3,000pcs / reel
T5: 5,000pcs / reel

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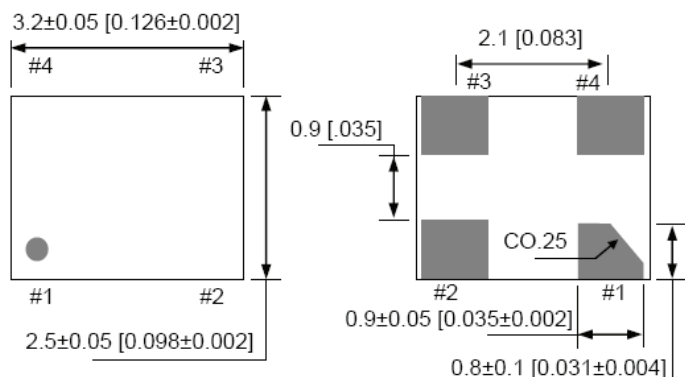
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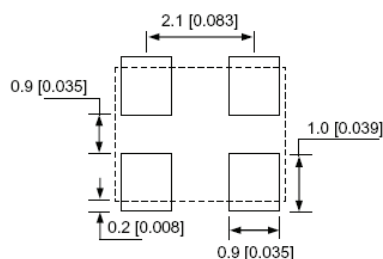
RoHS/RoHS II Compliant

OUTLINE DIMENSIONS:



No.	Pin Terminal
1	Standby
2	GND
3	Output
4	VDD

Recommended Land Pattern

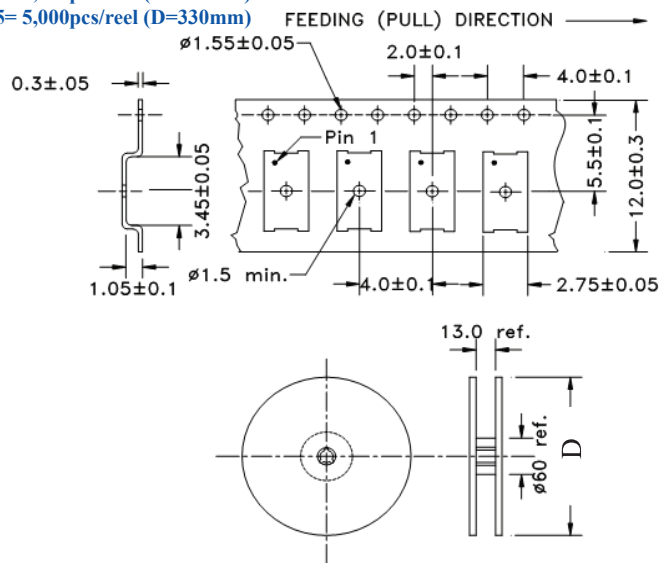


Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

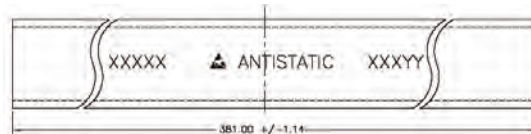
Dimensions: mm (inches)

TAPE AND REEL:

T= 1,000pcs/reel (D=180mm)
T3= 3,000pcs/reel (D=180mm)
T5= 5,000pcs/reel (D=330mm)



Tube: 110 pcs/tube

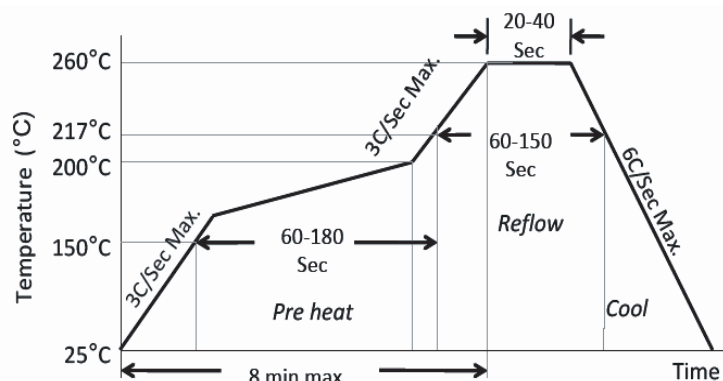


Unit orientation in tube:



Dimensions: mm

REFLOW PROFILE:



Ramp-Up Rate (200°C to Peak Temp)	3°C/Sec Max.
Preheat Time 150°C to 200°C	60-180 Sec
Time maintained above 217°C	60-150 Sec
Peak Temperature	255-260°C
Time within 5°C of actual Peak	20-40 Sec
Ramp-Down Rate	6°C/Sec Max.
Time 25°C to Peak Temperature	8 min Max.



Need a test socket for the ASEMB Series? To view compatible **PRECISION TEST SOCK** for these parts, [click here](#). PN: AXS-3225-04

ATTENTION: Abracon LLC products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life dependent Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon LLC is required. Please contact Abracon LLC for more information.