

SMD CMOS PROGRAMMABLE CRYSTAL OSCILLATOR

AP3S

Moisture Sensitivity Level (MSL) –
This product is Hermetically Sealed and
not Moisture Sensitive -MSL = N/A: Not Applicable



RoHS
Compliant



3.2 x 2.5 x 1.2mm

FEATURES:

- Performance comparable to fixed frequency oscillator
- Lowest peak-to-peak jitter
- Low supply current
- Short lead time
- Suitable for mass production
- Alternative to long lead-time XO's

For Small
Quantities,
Delivery Time
is 1-5 days

ELECTRICAL SPECIFICATIONS:

Parameters		Minimum	Typical	Maximum	Units	Notes
Frequency Range	V _{dd} = 3.3V	1	-----	200	MHz	
	V _{dd} = 2.5V	1	-----	166		
	V _{dd} = 1.8V	11	-----	110		
	V _{dd} = 1.8V	1	-----	10.999		In-house programming small quantity only ($< 1,000$ pcs) Contact Abracon for mass production quantity
Operating Temperature		-10	-----	+60	°C	See options
Storage Temperature		-55	-----	+150	°C	
Overall Frequency Stability*		-100	-----	+100	ppm	See options
Supply Voltage (Vdd)	V _{dd} = 3.3V	2.97	3.30	3.63	V	Standard
	V _{dd} = 2.5V	2.25	2.50	2.75		Vdd option 1
	V _{dd} = 1.8V	1.62	1.80	1.98		Vdd option 2
Input Current	V _{dd} = 3.3V	-----	-----	10	mA	1MHz $\leq$ F $<$ 30MHz
		-----	-----	15		30MHz $\leq$ F $<$ 75MHz
		-----	-----	20		75MHz $\leq$ F $<$ 133MHz
		-----	-----	22		133MHz $\leq$ F $<$ 166MHz
		-----	-----	25		166MHz $\leq$ F $<$ 200MHz
	V _{dd} = 2.5V	-----	-----	8		1MHz $\leq$ F $<$ 30MHz
		-----	-----	10		30MHz $\leq$ F $<$ 75MHz
		-----	-----	15		75MHz $\leq$ F $<$ 133MHz
		-----	-----	15		133MHz $\leq$ F $<$ 166MHz
	V _{dd} = 1.8V	-----	-----	6		1MHz $\leq$ F $<$ 30MHz
		-----	-----	8		30MHz $\leq$ F $<$ 75MHz
		-----	-----	2		75MHz $\leq$ F $<$ 133MHz
		Symmetry****		45		50
Rise and Fall Time (Tr/Tf)**	V _{dd} = 3.3V	-----	-----	3	ns	1MHz $\leq$ F $<$ 10MHz
		-----	-----	2		10MHz $\leq$ F
	V _{dd} = 2.5V	-----	-----	4		1MHz $\leq$ F $<$ 10MHz
		-----	-----	3		10MHz $\leq$ F
	V _{dd} = 1.8V	-----	-----	5		1MHz $\leq$ F $<$ 10MHz
		-----	-----	4		10MHz $\leq$ F
Output Load:		-----	-----	15	pF	CMOS



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ELECTRICAL SPECIFICATIONS:

Parameters		Minimum	Typical	Maximum	Units	Notes
Output Voltage	V_{OL}	-----	-----	0.33	V	$V_{dd} = 3.3V$
	V_{OH}	2.97	-----	-----		
	V_{OL}	-----	-----	0.25		$V_{dd} = 2.5V$
	V_{OH}	2.25	-----	-----		
	V_{OL}	-----	-----	0.18		$V_{dd} = 1.8V$
	V_{OH}	1.62	-----	-----		
Start-up Time		-----	-----	2.0	ms	
Tri-state function (Stand-by)		"1" ($V_{IH} > 0.7 \cdot V_{dd}$) or Open: Oscillation "0" ($V_{IH} < 0.3 \cdot V_{dd}$) : Disable			-----	
Standby current		-----	-----	15	μA	
Period jitter Peak to Peak (Reference only. Please contact Abracon for each frequencies.):		-----	-----	40	ps	Standard frequencies***
		-----	-----	200	ps	Other frequencies Reference only Please contact Abracon
Aging:		-3.0	-----	+3.0	ppm	@+25°C First year

* Inclusive of calibration @25°C, operating temperature range, input voltage variation, load variation, aging, shock, and vibration.

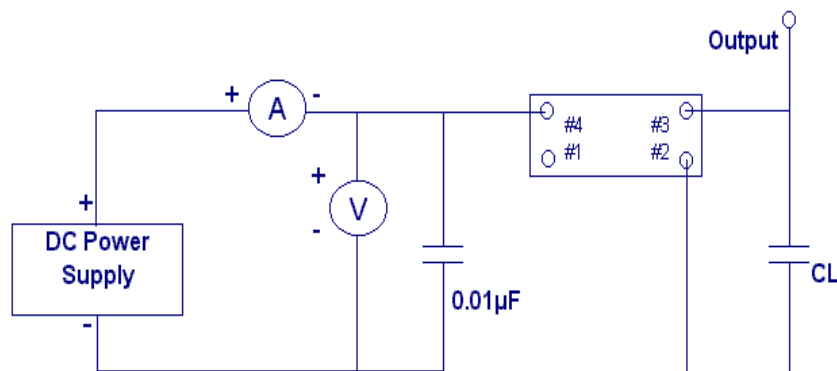
For ± 20 ppm, inclusive of calibration @25°C, operating temperature range, load variation, shock, and vibration.

** Transition times are measured between 10% and 90% of V_{dd} with an output load of 15 pF.

*** 4.0, 6.0, 8.0, 12.0, 13.0, 16.0 19.2, 20.0, 24.0, 26.0, 32.0, 38.4, and 40.0MHz

**** Only 40/60% is available for certain frequencies. Please contact Abracon when ordering.

TEST CIRCUIT:



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OPTIONS & PART IDENTIFICATION:

AP3S - MHz - -

Supply Voltage

*Blank: 3.3V

1: 2.5V

2: 1.8V

Frequency in MHz

Please specify the frequency in MHz.
e.g. 14.31818MHz

Operating Temp.

I: 0°C ~ +50°C

E: -20°C ~ +70°C

F: -30°C ~ +70°C

N: -30°C ~ +85°C

L: -40°C ~ +85°C

Overall Freq. Stability

J(****): ±20ppm

R: ±25ppm

K: ±30ppm

C: ±50ppm

Tri-state pin

**Blank: OE

***B: Power Down

Packaging

Blank: Bulk

T: Tape & Reel
(1k/reel)

T3: Tape & Reel
(3k/reel)

* 3.3V is standard

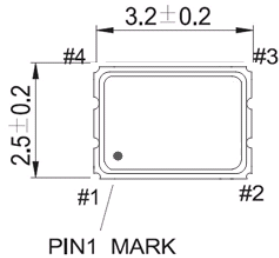
** OE: Tri-state the output buffer

*** PDB: Tri-state the output buffer and shut off the oscillator, <10µA when PDB enabled.

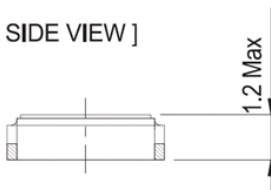
**** Available for -10 to +60°C, I, or E temp options only. Contact ABRACON for EJ or LR options. (Availability limited)

OUTLINE DRAWING:

[TOP VIEW]

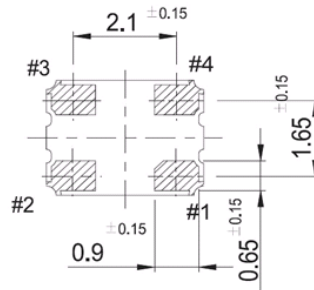


[SIDE VIEW]



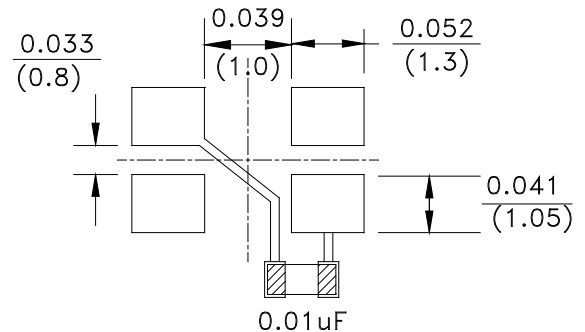
UNIT : mm

[BOTTOM VIEW]



Pin	Function
1	Tri-State
2	GND/Case
3	Output
4	Vdd

Recommended land pattern



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

Dimensions: inches (mm)

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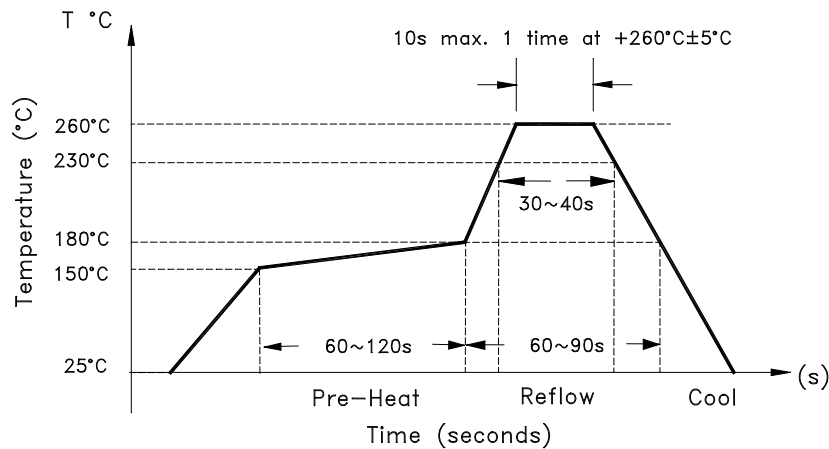


RoHS
Compliant



3.2 x 2.5 x 1.2mm

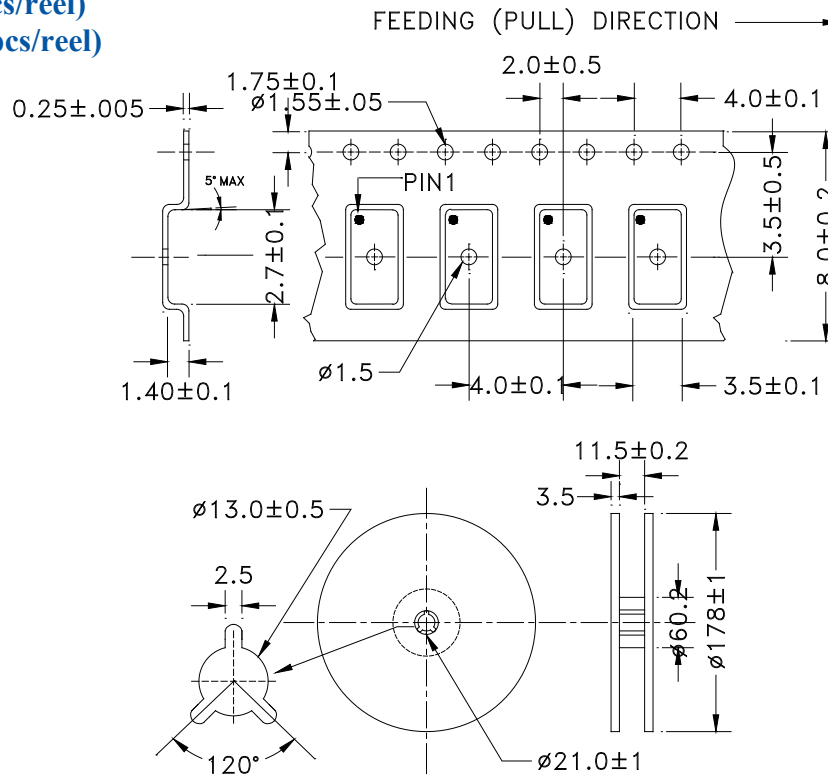
REFLOW PROFILE



TAPE & REEL:

T= Tape and reel (1,000pcs/reel)

T3= Tape and reel (3,000pcs/reel)



Dimensions: mm

ATTENTION: Abracon Corporation's 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-dependant 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 Corporation is required. Please contact Abracon Corporation for more information.

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