

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	2.048	-----	200	MHz				
	V _{dd} = 2.5V	2.048	-----	166					
	V _{dd} = 1.8V	11	-----	110					
	V _{dd} = 1.8V	2.048	-----	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 (V _{dd})	V _{dd} = 3.3V	2.97	3.30	3.63	V	Standard			
	V _{dd} = 2.5V	2.25	2.50	2.75		V _{dd} option 1			
	V _{dd} = 1.8V	1.62	1.80	1.98		V _{dd} option 2			
Input Current	V _{dd} = 3.3V	-----	-----	10	mA	2.048 MHz $\leq$ 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		2.048 MHz $\leq$ F $<$ 30MHz			
		-----	-----	10		30MHz $\leq$ F $<$ 75MHz			
		-----	-----	15		75MHz $\leq$ F $<$ 133MHz			
		-----	-----	15		133MHz $\leq$ F $<$ 166MHz			
		-----	-----	15		166MHz $\leq$ F $<$ 200MHz			
	V _{dd} = 1.8V	-----	-----	6		2.048 MHz $\leq$ F $<$ 30MHz			
		-----	-----	8		30MHz $\leq$ F $<$ 75MHz			
		-----	-----	2		75MHz $\leq$ F $<$ 133MHz			
		Symmetry****		45		50	55	%	@ 1/2 V _{dd}
		Rise and Fall Time (Tr/Tf)**	V _{dd} = 3.3V	-----		-----	3	ns	2.048 MHz $\leq$ F $<$ 10 MHz
	-----			-----		2	10 MHz $\leq$ F		
V _{dd} = 2.5V	-----		-----	4	2.048 MHz $\leq$ F $<$ 10MHz				
	-----		-----	3	10 MHz $\leq$ F				
V _{dd} = 1.8V	-----		-----	5	2.048 MHz $\leq$ F $<$ 10MHz				
	-----		-----	4	10 MHz $\leq$ F				
Output Load:		-----	-----	15	pF	CMOS			

SMD CMOS PROGRAMMABLE CRYSTAL OSCILLATOR

AP3S



RoHS
Compliant



3.2 x 2.5 x 1.2mm

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		-----	-----	8.0	ms	
Tri-state function (Stand-by)		"1" (V _{IH} > 0.7*V _{dd}) or Open: Oscillation "0" (V _{IH} < 0.3*V _{dd}) : Disable			-----	
Standby current		-----	-----	15	uA	
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.

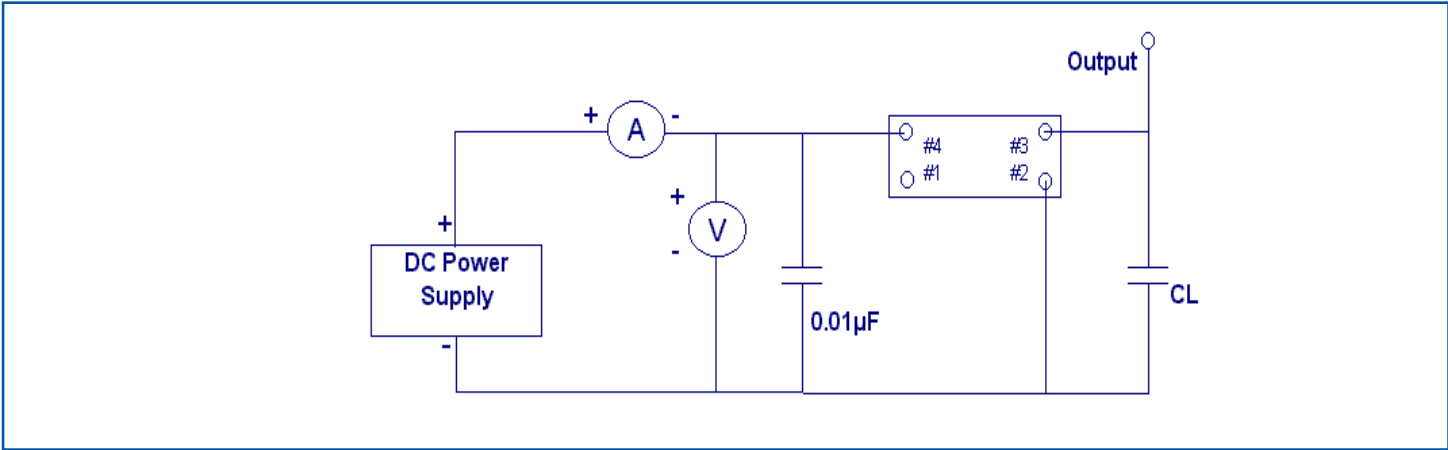
For ±20ppm, inclusive of calibration @25°C, operating temperature range, load variation, shock, and vibration.

** 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:



SMD CMOS PROGRAMMABLE CRYSTAL OSCILLATOR

AP3S



RoHS
Compliant



3.2 x 2.5 x 1.2mm

OPTIONS & PART IDENTIFICATION:

AP3S - MHz - -

Supply Voltage	Frequency in MHz	Operating Temp.	Overall Freq. Stability	Tri-state pin	Packaging
*Blank: 3.3V	Please specify the frequency in MHz. e.g. 14.31818MHz	I: 0°C ~ +50°C	J(****): ±20ppm	**Blank: OE	Blank: Bulk
1: 2.5V		E: -20°C ~ +70°C	R: ±25ppm	***B: Power Down	T: Tape & Reel (1k/reel)
2: 1.8V		F: -30°C ~ +70°C	K: ±30ppm		T3: Tape & Reel (3k/reel)
		N: -30°C ~ +85°C	C: ±50ppm		
		L: -40°C ~ +85°C			

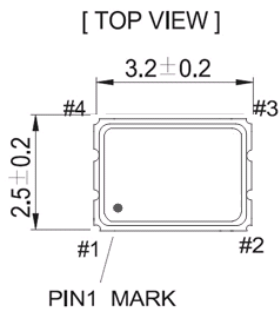
* 3.3V is standard

** OE: Tri-state the output buffer

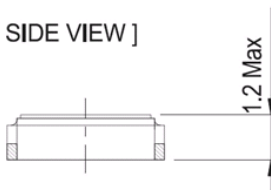
*** PDB: Tri-state the output buffer and shut off the oscillator, <10µA when PDB enabled.

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

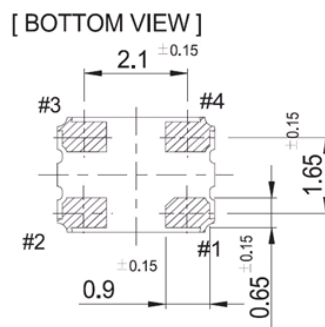
OUTLINE DRAWING:



[SIDE VIEW]



UNIT : mm

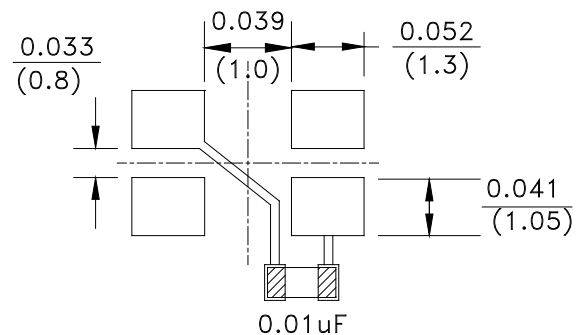


Pin	Function
1	Tri-State
2	GND/Case
3	Output
4	Vdd

*Note 1

- Do not leave Pin 1 (Tri-State) floating
- If Pin 1 (Tri-State) is not utilized for toggling, it must be tied to Vdd (logic 1)

Recommended land pattern



*Note 2

Recommend using an approximately 0.01µF bypass capacitor between PIN 2 and 4.

Dimensions: inches (mm)

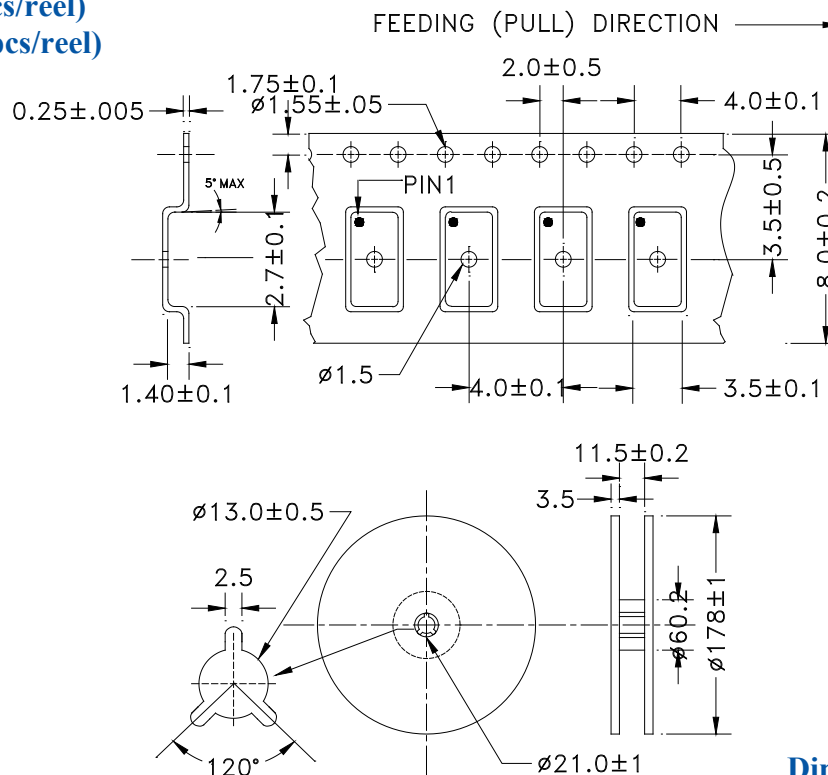


RoHS
Compliant

3.2 x 2.5 x 1.2mm

Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 180°C	60 ~ 120 sec.
2	Reflow	T_L 230°C	30 ~ 40 sec.
3	Peak Heat	T_P 260±5°C	10 sec. MAX

T= Tape and reel (1,000pcs/reel)
T3= Tape and reel (3,000pcs/reel)



Dimensions: mm



5101 Hidden Creek Lane Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sale please visit:
www.abracon.com

REVISÉ: 12.18.2018

ABRACON IS
ISO9001-2015
CERTIFIED

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ABRACON:

[AP3S-100.000MHZ-EC](#) [AP3S2-26.0000-ER](#) [AP3S-9.2160-LC](#) [AP3S-29.4912-L-C](#) [AP3S1-54.000-EJ](#) [AP3S-24.545452MHZ-EC-B](#) [AP3S2-FREQ-EC-B](#) [AP3S-FREQ-LR-B](#) [AP3S2-FREQ-EJ-B](#) [AP3S2-FREQ-ER-B](#) [AP3S1-FREQ-EC-B](#) [AP3S2-FREQ-LC-B](#) [AP3S-FREQ-ER-B](#) [AP3S1-FREQ-EJ-B](#) [AP3S1-FREQ-LC-B](#) [AP3S1-FREQ-ER-B](#) [AP3S1-FREQ-LR-B](#) [AP3S2-FREQ-LR-B](#) [AP3S-FREQ-EC-B](#) [AP3S-FREQ-LC-B](#) [AP3S-FREQ-EJ-B](#) [AP3S1-FREQ-EB-B](#) [AP3S1-FREQ-EI-B](#) [AP3S-FREQ-IJ-B](#) [AP3S1-FREQ-IK-B](#) [AP3S-FREQ-DC-B](#) [AP3S2-FREQ-FC-B](#) [AP3S1-FREQ-IB-B](#) [AP3S-FREQ-NC-B](#) [AP3S1-FREQ-FC-B](#) [AP3S1-FREQ-LB-B](#) [AP3S2-FREQ-DR-B](#) [AP3S2-FREQ-IC-B](#) [AP3S2-FREQ-NK-B](#) [AP3S1-FREQ-DC-B](#) [AP3S-FREQ-DK-B](#) [AP3S2-FREQ-LB-B](#) [AP3S2-FREQ-FB-B](#) [AP3S-FREQ-FR-B](#) [AP3S1-FREQ-DB-B](#) [AP3S-FREQ-EK-B](#) [AP3S-FREQ-IK-B](#) [AP3S1-FREQ-FR-B](#) [AP3S1-FREQ-IJ-B](#) [AP3S2-FREQ-EK-B](#) [AP3S1-FREQ-LK-B](#) [AP3S2-FREQ-DJ-B](#) [AP3S-FREQ-NR-B](#) [AP3S-FREQ-IC-B](#) [AP3S-FREQ-IB-B](#) [AP3S2-FREQ-IB-B](#) [AP3S1-FREQ-DR-B](#) [AP3S1-FREQ-IC-B](#) [AP3S2-FREQ-DK-B](#) [AP3S-FREQ-LK-B](#) [AP3S2-FREQ-EB-B](#) [AP3S-FREQ-NK-B](#) [AP3S1-FREQ-DJ-B](#) [AP3S-FREQ-NB-B](#) [AP3S-FREQ-FB-B](#) [AP3S-FREQ-EI-B](#) [AP3S1-FREQ-IR-B](#) [AP3S-FREQ-DR-B](#) [AP3S2-FREQ-LK-B](#) [AP3S-FREQ-DJ-B](#) [AP3S2-FREQ-DC-B](#) [AP3S1-FREQ-EK-B](#) [AP3S1-FREQ-NC-B](#) [AP3S2-FREQ-IK-B](#) [AP3S2-FREQ-NC-B](#) [AP3S2-FREQ-IR-B](#) [AP3S-FREQ-EB-B](#) [AP3S1-FREQ-NR-B](#) [AP3S2-FREQ-IJ-B](#) [AP3S2-FREQ-NR-B](#) [AP3S2-FREQ-NB-B](#) [AP3S2-FREQ-DB-B](#) [AP3S-FREQ-DB-B](#) [AP3S-FREQ-FC-B](#) [AP3S-FREQ-LB-B](#) [AP3S1-FREQ-DK-B](#) [AP3S2-FREQ-FK-B](#) [AP3S2-FREQ-FR-B](#) [AP3S1-FREQ-FB-B](#) [AP3S2-FREQ-EI-B](#) [AP3S1-FREQ-FK-B](#) [AP3S1-FREQ-NB-B](#) [AP3S-FREQ-FK-B](#) [AP3S-FREQ-IR-B](#) [AP3S1-FREQ-NK-B](#) [AP3S-42.500MHZ-L-C](#) [AP3S-1.000MHZ-LR-T](#) [AP3S-1.000MHZ-LR](#) [AP3S2-26.000MHz-ER-B](#) [AP3S1-48.000MHz-LC](#) [AP3S1-7.8396-FB-B](#) [AP3S-66.666MHZ-L-C](#) [AP3S-24.545452-DC-B](#) [AP3S1-2.8MHZ-LR](#) [AP3S-1.13586-NC-B](#)