

SMD CMOS PROGRAMMABLE CRYSTAL OSCILLATOR

AP3S



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:

Characteristics	Unit	Minimum	Typical	Maximum
Frequency Range (3.3V)	MHz	1	--	200
(2.5V)	MHz	1	--	166
(1.8V)	MHz	1	--	133
Operating Temp. Range (See Options)	°C	-10	--	60
Freq. stability over operating temp.* (See Options)	ppm	-100	--	100
Input Voltage (Operating Vdd)	V	2.97	3.3	3.63
	V	2.25	2.5	2.75
	V	1.62	1.8	1.98
Input Current	mA	See Table 1		
Output Type	CMOS			
Output Load	pF	--	15	--
Output "0" level (3.3V)	V	--	--	0.33
(2.5V)	V	--	--	0.25
(1.8V)	V	--	--	0.18
Output "1" level (3.3V)	V	2.97	--	--
(2.5V)	V	2.25	--	--
(1.8V)	V	1.62	--	--
Symmetry	%	45	50	55
Standby Current	uA	--	--	10
Rise Time (10%→90% Vdd)	nSec	See Table 2		
Fall Time (90%→10% Vdd)	nSec	See Table 2		
Tri-state Function (Input to pin 1)		pin 1 : High or Open , pin 3 : Enable		
		pin 1 : Low , pin 3 : Disable		
Jitter peak-to-peak**	psec	--	40 to 200	--

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

** Jitter performance depends on programing parameter and output frequency. Please contact ABRACON for additional info.

Table 1: Input Current

Frequency MHz	Input current (mA)		
	3.3V	2.5V	1.8V
1MHz ≤ F < 30MHz	10	8	6
30MHz ≤ F < 75MHz	15	10	8
75MHz ≤ F < 133MHz	20	15	12
133MHz ≤ F < 166MHz	22	15	-
166MHz ≤ F < 200MHz	25	-	-

Table 2: Rise and Fall Time

Frequency MHz	Rise / Fall Time (ns)		
	3.3V	2.5V	1.8V
1MHz ≤ F < 10MHz	6	8	10
10MHz ≤ F	5	5	6

OPTIONS & PART IDENTIFICATION: (Left blank if standard)

AP3S□-Frequency-□-□-□

Supply Voltage		Operating Temp.		Freq. Stability		PIN 1(Optional)		Packaging	
Blank*	3.3 V	I	0°C to +50°C	J (***)	±20ppm	**Blank	OE	Blank	Bulk
1	2.5 V	E	-20°C to +70°C	R	±25ppm	**B	PDB	T	Tape and Reel
2	1.8 V	F	-30°C to +70°C	K	±30ppm				
*3.3V : Standard		N	-30°C to +85°C	C	±50ppm				
		L	-40°C to +85°C						

(***) Available for I, or E temp.
Contact ABRACON for

*3.3V : Standard

Ask for Tube Package

(***) Available for I, or E temp options only
Contact ABRACON for EJ or LR options (Availability is limited)

** OE: Tri-state the output buffer

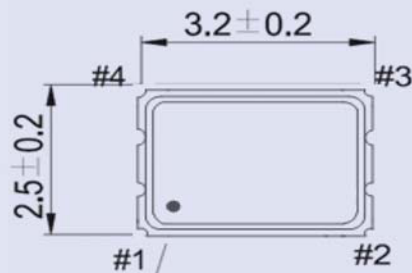
** PDB: Tri-state the output buffer & shut-off the oscillator,
<10uA when PDB enabled





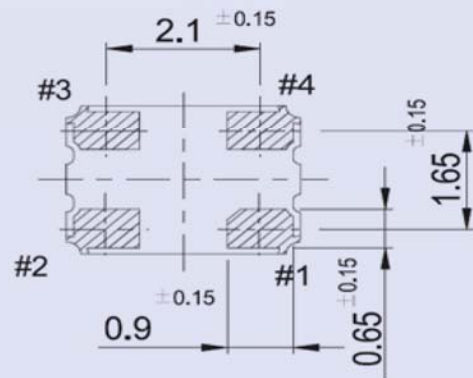
3.2 x 2.5 x 1.2mm

TEST CIRCUIT:



VIEW J

1.2 Max



The schematic shows a four-quadrant multiplier circuit. It consists of two input amplifiers at the top, each receiving a signal from a common-mode source labeled $\frac{0.033}{(0.8)}$. The outputs of these amplifiers are connected to the inputs of two op-amp stages. The first stage has a feedback resistor of 0.039 and a gain factor of (1.0) . The second stage has a feedback resistor of 0.052 and a gain factor of (1.3) . The output of the second stage is connected to a load resistor of 0.041 with a gain factor of (1.05) . A central vertical dashed line indicates symmetry. At the bottom, there are two shaded rectangular components connected by a horizontal line, with a label $0.01 \mu F$ below them.

PIN	CONNECTION
# 1	STAND-BY / OE
# 2	GND/CASE
# 3	OUTPUT
# 4	VDD

Technical drawing of a PCB layout for a 4-pin connector. The drawing shows a top view of the connector with dimensions in millimeters. Key dimensions include: overall width 8.0±0.2, overall height 4.0±0.1, pin pitch 2.0±0.5, pin diameter 0.25±0.005, and pin spacing 1.75±0.1. The drawing also shows a side view of the connector with dimensions 1.40±0.1, 2.7±0.1, and 5° MAX. The drawing is labeled 'FEEDING (PULL) DIRECTION' with an arrow pointing right. The drawing includes a 'PIN1' label and a 'Ø1.5' dimension for the mounting holes.



ABRACON CORPORATION

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