

**Description**

With output frequencies in the range of 9.5MHz to 52MHz, the Abracon ATX-14 series is offered in a small compact package, perfect for reducing board space. The series comes with a wide continuous supply voltage range option spanning from 1.68 V to 3.456 V, with the most commonly used voltages being 1.8V, 2.5V, 2.8V, 3.0V, and 3.3V. In addition, the ATX-14 provides a clipped sinewave output that can maintain a frequency stability of  $\pm 0.5$  ppm over an operating temperature range of  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .



**Features**

- Output waveform clipped sinewave
- Both continuous & fixed Vdd options available
- Hermetically seam-sealed ceramic package
- Tight frequency stability options available
- Low current consumption
- [REACH/RoHS II Compliant | MSL Level 1](#)
- [ESD Sensitive](#)

**Typical Applications**

- Wireless communication
- Test and measurement equipment
- Industrial control and automation
- GPS receivers

Parameters	Min.	Typ.	Max.	Unit	Notes
Frequency Range	9.5		52	MHz	
Standard Frequencies	10, 26, 32, 38.4, 40, 48, 52			MHz	
Operating Temperature Range	-40		+85	$^{\circ}\text{C}$	See options (Table 1)
Storage Temperature Range	-40		+85	$^{\circ}\text{C}$	
<b>Frequency Stability <math>\Delta f/f_0</math> vs:</b>					
<b>Tolerance</b>	-1.0		+1.0	ppm	Reference to $f_0$ , at $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , Pre-
	-2.0		+2.0		Reference to $f_0$ , at $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 24
<b>Temperature</b>	-2.5		+2.5		hours after reflow, two times
<b>Supply Voltage Change</b>	-0.2		+0.2		See options (Table 1)
	-0.2		+0.2		Reference to $f_0$ , at $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
<b>Load Change</b>					Vdd $\pm 5\%$
Aging	-1.0		+1.0	CL $\pm 1\text{k}\Omega / \pm 1\text{pF}$	
Supply Voltage (Vdd)	+3.135	+3.3	+3.465	V	First year @ $+25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
	+2.85	+3.0	+3.15		Option E
	+2.66	+2.8	+2.94		Option A
	+2.375	+2.5	+2.625		Option B
	+1.71	+1.8	+1.89		Option C
	+1.68		+3.63		Option D
Supply Current (Idd)			2.0	mA	Option F
			2.5		9.50MHz to 26.00MHz
Start-up Time			2.0	ms	26.01MHz to 52.00MHz
Output Voltage	0.8			Vp-p	
Output Load	9	10	11	k $\Omega$	
	9	10	11		pF
Output Waveform	Clipped Sine Wave, External DC-Cut Capacitor required				1000 pF recommended

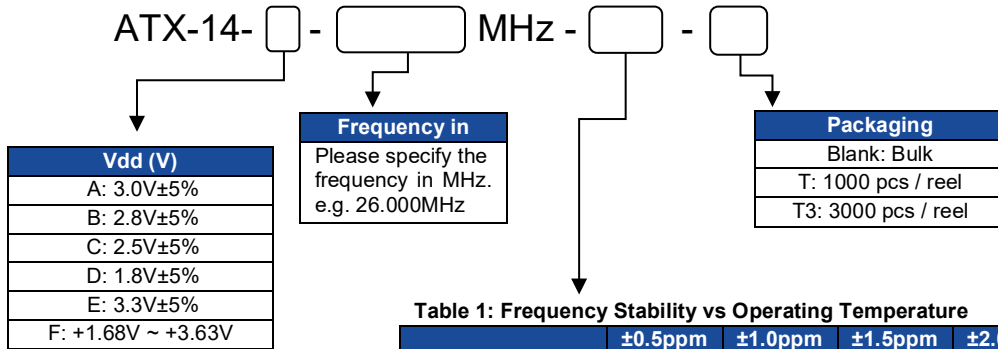
## Electrical Specifications Continued

Parameters	Min.	Typ.	Max.	Units	Notes
<b>Phase Noise (@ 10 MHz Carrier, @ 25°C ±2°C)</b>					
@10Hz offset		-95	-92	dBc/Hz	Applicable to all standard available frequencies with Vdd = +1.8V, +2.5, +2.8, +3.0V, +3.3V
@100Hz offset		-120	-117		
@1kHz offset		-138	-134		
@10kHz offset		-149	-146		
@100kHz offset		-158	-155		
@1MHz offset		-159	-156		
@5MHz offset		-159	-156		
<b>Phase Noise (@ 52 MHz Carrier, @ 25°C ±2°C)</b>					
@10Hz offset		-79	-73	dBc/Hz	Applicable to all standard available frequencies with Vdd = +1.8V, +2.5, +2.8, +3.0V, +3.3V
@100Hz offset		-106	-101		
@1kHz offset		-132	-128		
@10kHz offset		-149	-146		
@100kHz offset		-156	-153		
@1MHz offset		-157	-154		
@10MHz offset		-157	-154		
@20MHz offset		-158	-155		

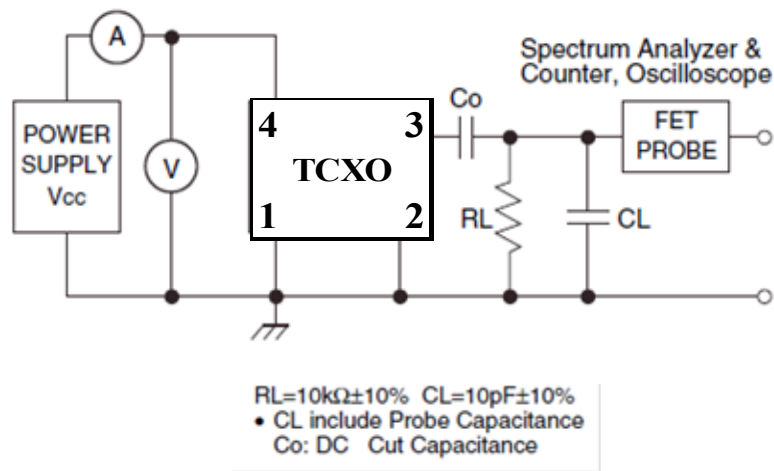
## Note 1:

All measurements made at 25°C± 2°C, nominal Vdd, unless otherwise specified

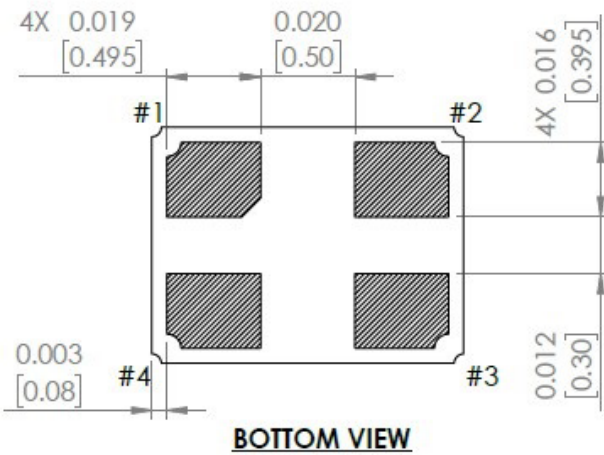
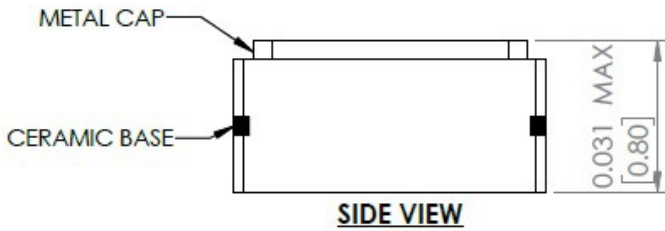
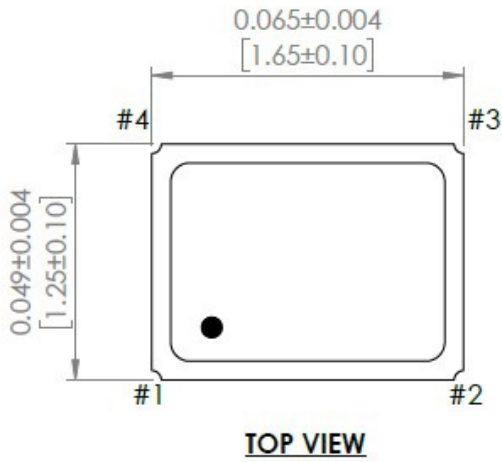
**Part Identification**



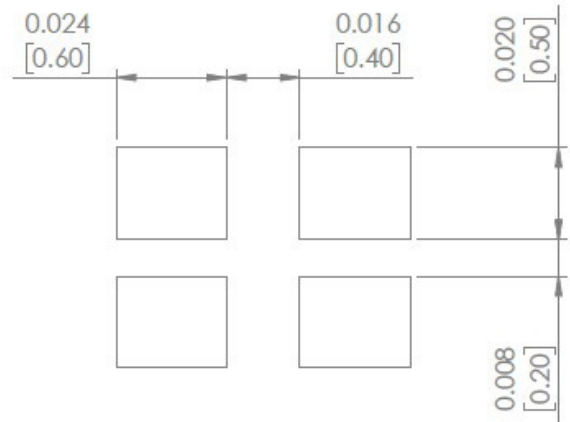
**Recommended Test Circuit**



**Mechanical Dimensions**



**Recommended Land Pattern**



Pin #	Function
1	GND
2	GND
3	Output
4	Vdd

Dimensions: inches (mm)

Reflow Profile [JEDEC J-STD-020]

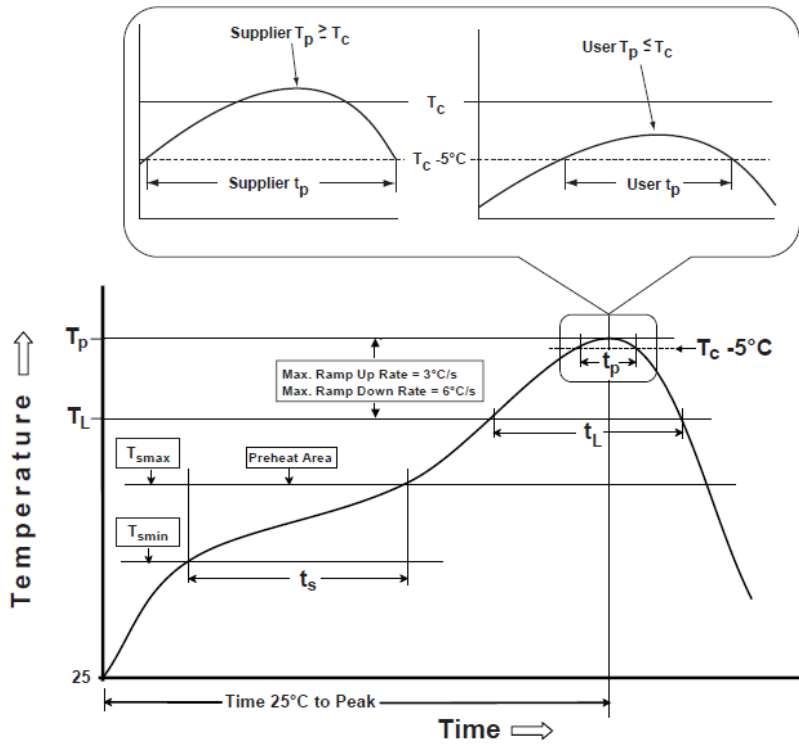


Table 1

SnPb Eutectic Process Classification Temperatures (T <sub>c</sub> )		
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process Classification Temperatures (T <sub>c</sub> )			
Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

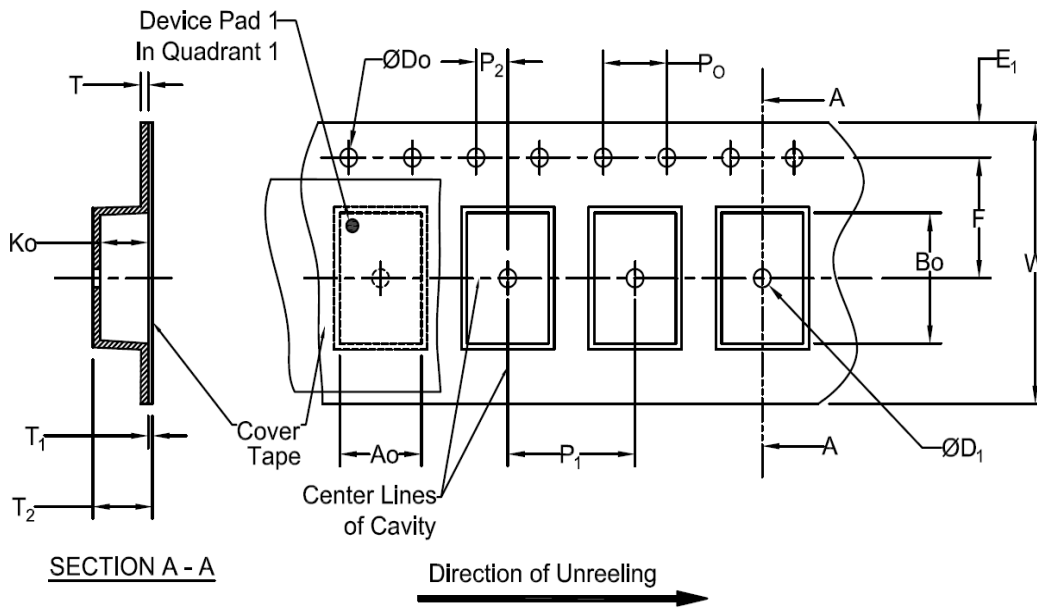
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T <sub>smin</sub> )	100°C	150°C
Temperature maximum (T <sub>smax</sub> )	150°C	200°C
Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/sec. max	3°C/sec. max
Liquidous temperature (T <sub>L</sub> )	183°C	217°C
Time at liquidous (t <sub>L</sub> )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T <sub>p</sub> )*	see Table 1	see Table 2
Time (t <sub>p</sub> )** within 5°C of the specified classification temperature (T <sub>c</sub> )	20 sec.	30 sec.
Ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

\*Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as supplier minimum and a user maximum.

**Packaging**

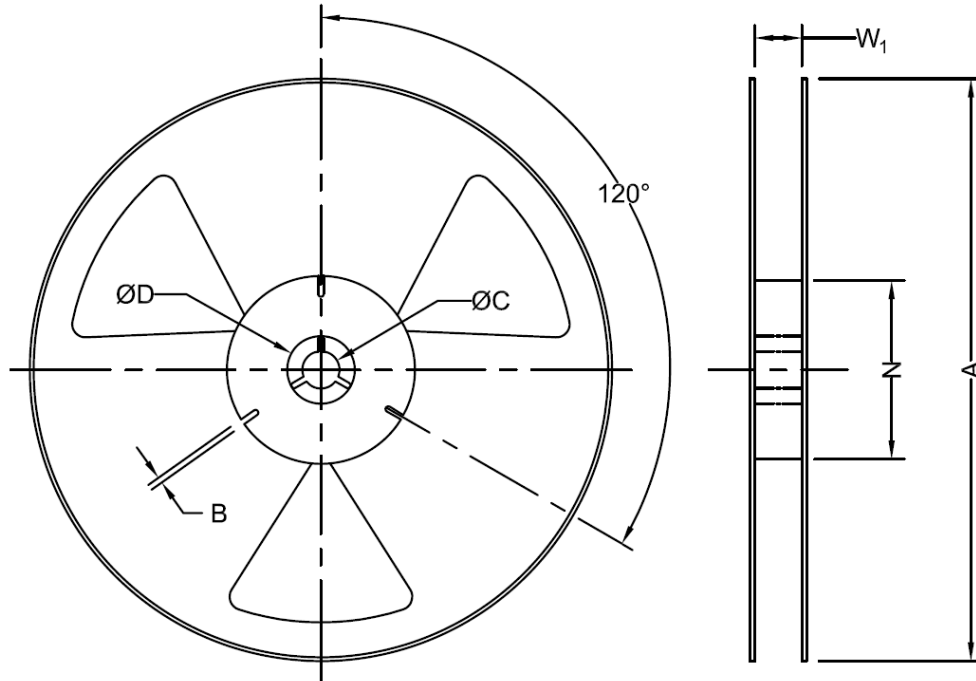
T: 1,000pcs/reel  
 T3: 3,000pcs/reel



Tape Specifications (mm)							
Width	Ao	Bo	Do	D1 (Min)	E1	F	Ko
8mm	*	*	1.5+0.1/-0.0	1.0	1.75±0.1	3.5±0.05	*
Width	P1	P2	P0	T (Max)	T1 (Max)	T2 (Max)	W (Max)
8mm	4.0±0.1	2.0±0.05	4.0±0.1	0.6	0.1	2.5	8.3

**\*Note: Compliant to EIA-481**

Dimensions: mm



Reel Specifications (mm)							
Width	Qty/Reel	A (Nom)	B (Min)	C (Min)	D (Min)	N (Min)	*W <sub>1</sub>
8mm	1000	178	1.5	13.0+0.5/-0.2	20.2	50	8.4+1.5/-0.0
	3000	178	1.5	13.0+0.5/-0.2	20.2	50	8.4+1.5/-0.0

**\*Note: Measured at Hub**

Dimensions: mm