

# SMD VC/TCXO

## ASVTX-12/ASTX-12 Series

Request Samples



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ESD Sensitive



2.5 x 2.0 x 0.8 mm

RoHS/RoHS II Compliant

MSL Level = 1

### Features

- Ultra miniature and low height 0.8mm
- Low current consumption 2.5mA
- Vc function corresponds to PLL circuits
- Suitable for RoHS reflow profile
- Low phase noise

### Applications

- Cellular phones
- Standard OSC for exact equipment
- Mobile communication equipment
- Portable radio equipment
- Personal Digital Assistants (PDAs)
- Portable music players

### Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Unite	Notes
Frequency Range	10		52	MHz	
Standard Frequencies	10, 13, 16.368, 16.369, 19.2, 26, 38.4, 40, 52			MHz	
Operating Temperature	-30		+85	°C	See option (Table 1)
Storage Temperature	-40		+85	°C	
Frequency Stability $\Delta f/f_0$ vs Tolerance (@+25°C)	-2.0		+2.0	ppm	+25°C, Vcon=1.4V After 2 time reflow
Temperature (ref. to +25°C)	-2.0		+2.0		See option (Table 1)
Supply Voltage Change (Vcc±5%)	-2.0		+2.0		
Load Change (ZL±10%)	-2.0		+2.0		
Control Voltage (V con) (ASVTX-12 only)	+0.4		+2.4	V	Option A
	+0.4		+2.4		Option B
	+0.4		+2.4		Option C
	+0.3		+1.5		Option D
	+0.4		+2.4		Option E
Supply Voltage (Vcc)	+2.85	+3.0	+3.15	V	Option A
	+2.66	+2.8	+2.94		Option B
	+2.375	+2.5	+2.625		Option C
	+1.71	+1.8	+1.89		Option D
	+3.135	+3.3	+3.465		Option E
Aging (first year @+25±2°C)	-1.0		+1.0	ppm	
Supply Current (Icc)			2.0	mA	10MHz ≤ Fo < 26MHz
			2.5	mA	26MHz ≤ Fo ≤ 52MHz
Startup Time			2.0	ms	
Frequency Tuning Range (ASVTX-12 only)	±5.0		±9.5	ppm	
Vcon Input Impedance (ASVTX-12 only)	500			kΩ	

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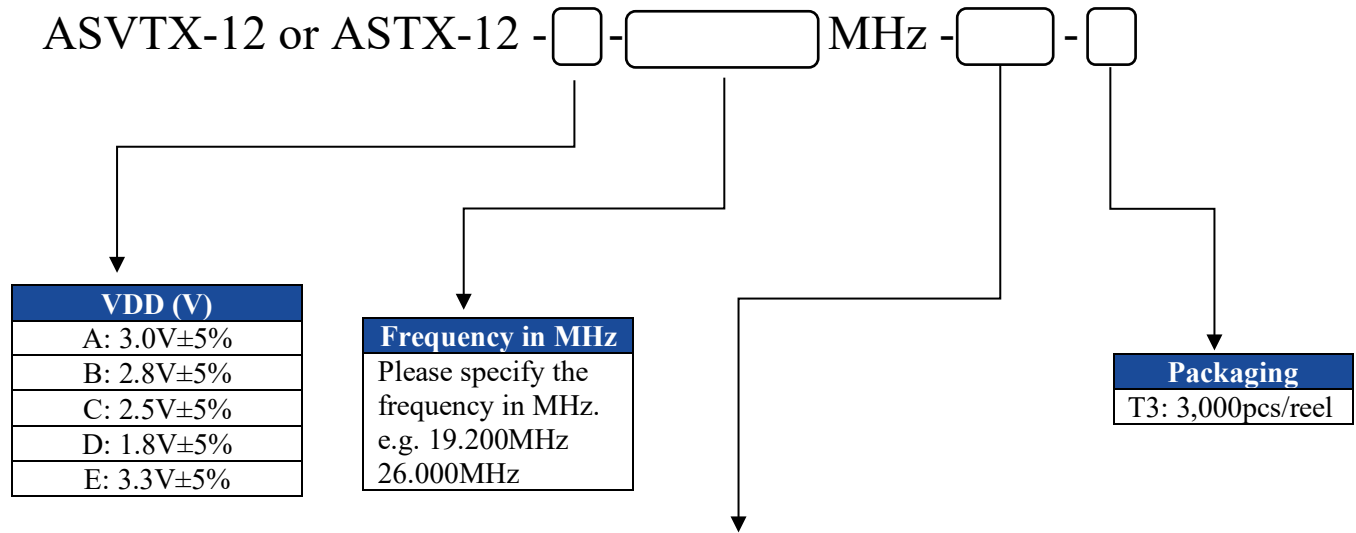
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Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Tuning Transition	Positive				
Output Voltage	0.8			Vp-p	
Harmonics			-5.0	dBc	
Load	10kΩ/10pF				
Waveform	Clipped Sine Wave				
Phase Noise @ 19.2MHz					
100Hz offset from the carrier		-115	-100	dB/Hz	
1kHz offset from the carrier		-135	-125		
10kHz offset from the carrier		-150	-140		

### Options and Part Identification (left blank if standard)



**Table 1: Frequency Stability vs Operating Temperature**

	±0.5ppm	±1.0ppm	±1.5ppm	±2.0ppm	±2.5ppm
0°C ~ +55°C	D05	D10	D15	D20	D25
-10°C ~ +60°C	E05	E10	E15	E20	E25
0°C ~ +70°C	F05	F10	F15	F20	F25
-20°C ~ +70°C	G05	G10	G15	G20	G25
-30°C ~ +85°C	H05*	H10	H15	STD (Blank)	H25
-40°C ~ +85°C	I05*	I10*	I15	I20	I25

\*Please contact Abracon for availability

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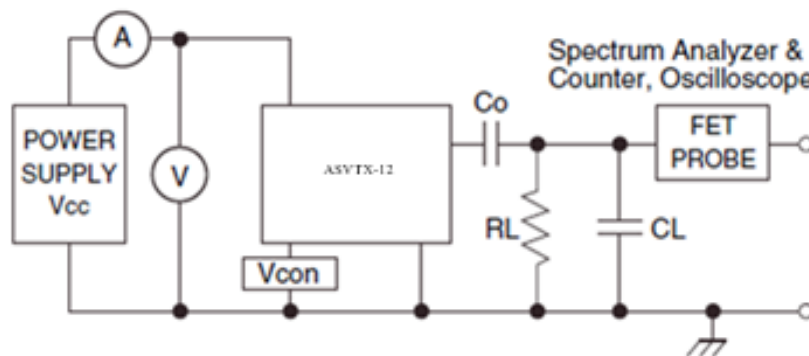
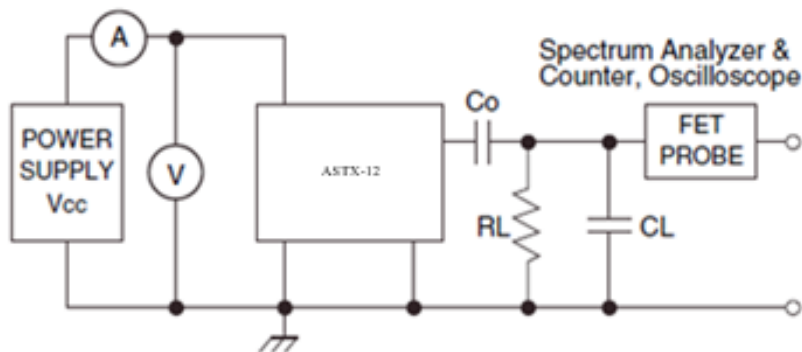


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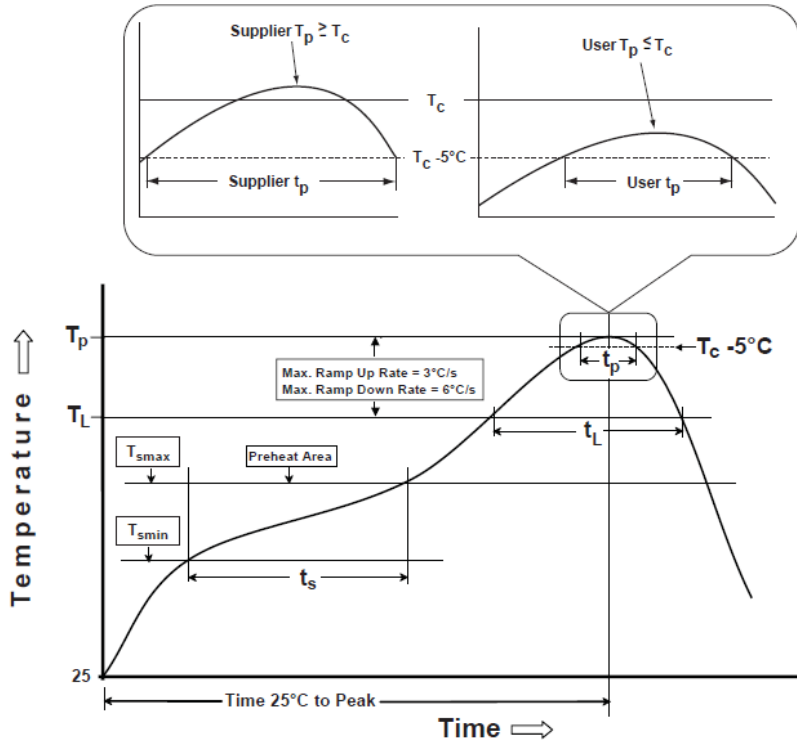
## Recommended Test Circuit



RL=10kΩ±10% CL=10pF±10%  
• CL include Probe Capacitance  
Co: DC Cut Capacitance



### Reflow Profile [JEDEC J-STD-020]



**Table 1**

**SnPb Eutectic Process  
Classification Temperatures ( $T_c$ )**

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 ( $T_c$ )**

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 ( $T_{smin}$ )	100°C	150°C
Temperature maximum ( $T_{smax}$ )	150°C	200°C
Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	3°C/sec. max	3°C/sec. max
Liquidous temperature ( $T_L$ )	183°C	217°C
Time at liquidous ( $t_L$ )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature ( $T_p$ )*	see Table 1	see Table 2
Time ( $t_p$ )** within 5°C of the specified classification temperature ( $T_C$ )	20 sec.	30 sec.
Ramp-down rate ( $T_p$ to $T_{smax}$ )	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 ( $T_p$ ) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature ( $t_p$ ) is defined as supplier minimum and a user maximum.

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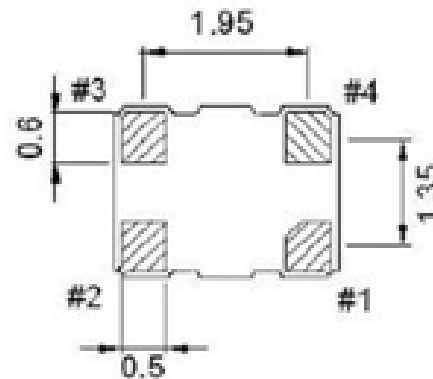
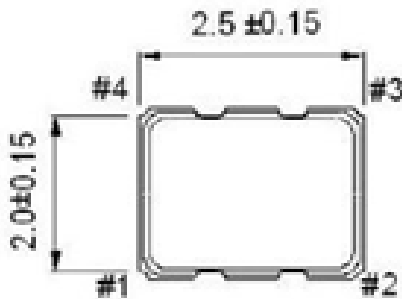


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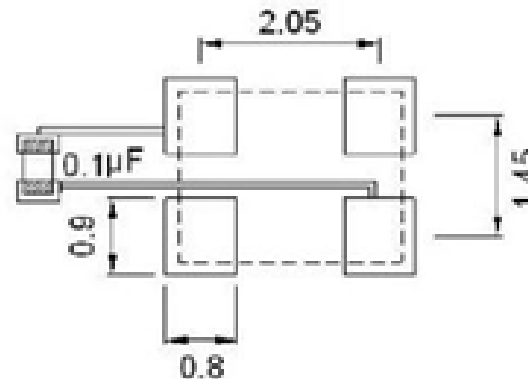
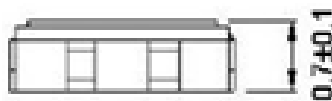


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## Mechanical Dimensions



## Recommended Land Pattern



Dimensions: mm

PIN	FUNCTION	
	ASVTX	ASTX
1	Vcon	GND
2	GND	
3	OUTPUT	
4	Vcc	

### Note:

It is recommended that a by-pass capacitor of 0.1μF value be placed between pin #2 and pin #4 and an AC-coupling capacitor of the same value be placed in series with pin#3 for optimal performance.

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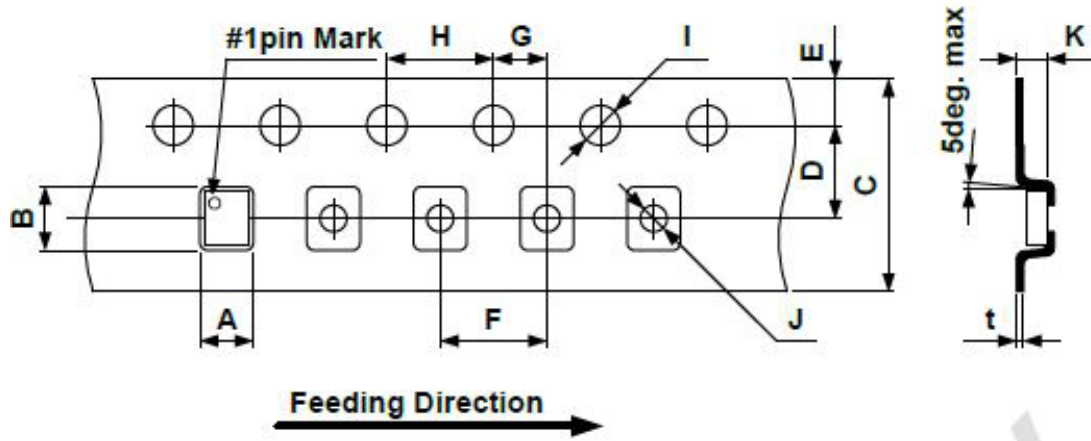
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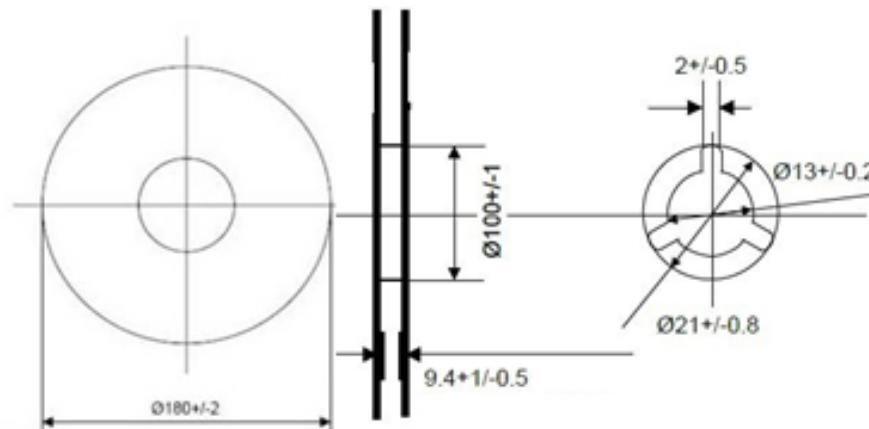
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## Packaging

T3: 3,000pcs/reel



<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
2.4±/-0.1	2.9±/-0.1	8.0+0.3/-0.2	3.5±/-0.05	1.75±/-0.1
<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
4.0±/-0.1	2.0±/-0.05	4.0±/-0.1	φ1.5+0.1/-0	φ1.1+0.1/-0
<b>K</b>	<b>t</b>			
1.15±/-0.05	0.25±/-0.05			



Dimensions: mm

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