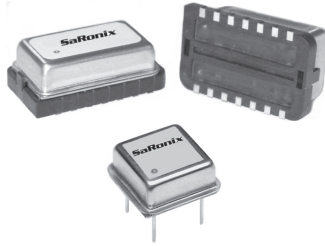


Technical Data

S150x / ST150x Series



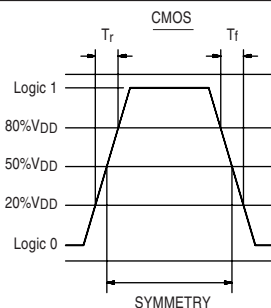
Description

A voltage controlled crystal oscillator designed with excellent Jitter characteristics - ideal for telecom applications. The HCMOS output can drive high speed CMOS & TTL loads. Devices are in standard 14-pin DIP metal packages. Pin 7(4 on 1/2 size) is grounded to reduce EMI. SMD DIL 14 version is available utilizing adaptor technology (see separate data sheet for dimensions).

Applications & Features

- Phase Locked Loop (PLL) Clock & Data Recovery, Frequency Translation, Frequency Synthesis in Video, Video Compression, Telephony, and LAN/WAN Data Communication and other Telecommunication applications.
- HCMOS / TTL compatible
- 3.5ps max RMS period jitter
- $\pm 50, 100$ or 200 ppm APR*
- $\pm 20, 25$ or 50 ppm Stability
- Tri-State option available
- SMD versions for IR reflow available

Output Waveform



Frequency Range: 1.5 MHz to 100 MHz (Full Size)
1.5 MHz to 28.6363 MHz (Half Size)

Frequency Stability: $\pm 20, \pm 25$ or ± 50 ppm over all conditions: operating temperature, voltage change, load change, calibration tolerance, shock and vibration, with $V_C = 2.5V$

Aging @ 25°C: ± 3 ppm max per year, ± 10 ppm max for 10 years

Temperature Range:
Operating: 0 to +70°C or -40 to +85°C
Storage: -55 to +125°C

Supply Voltage:
Recommended Operating: 5V $\pm 10\%$

Supply Current:

Full Size Package:	1.5 to 11.9MHz:	20mA max with 30pF load
	12 to 70MHz:	65mA max with 30pF load
	70+ to 100MHz:	60mA max with 15pF load
Half Size Package:	1.5 to 28.6363MHz:	25mA max with 30pF load

Output Drive:

Symmetry: 45/55% max @ 50% VDD 1.5 to 70 MHz
40/60% max @ 50% VDD 70+ to 100 MHz

Rise & Fall Times:
20% to 80% VDD
1.5 to 25 MHz: 8ns max rise, 6ns max fall, full size package
25+ to 70 MHz: 5ns max rise & fall, full size package
70+ to 100 MHz: 3ns max rise & fall, full size package
1.5 to 28.6363 MHz: 6ns max rise & fall, half size package

Logic 0: 10% VDD max
Logic 1: 90% VDD min
Load: 30pF to 70 MHz, 15pF from 70+ to 100 MHz
Period Jitter RMS: 3.5ps max

Pull Characteristics:

Input Impedance (pin 1): 50K Ω min
Frequency Response (-3dB): 10 kHz min
Pullability: $\pm 50, \pm 100, \pm 200$ ppm APR* min, See Part Numbering Guide
Control Voltage: 0.5 to 4.5V
Transfer Function: Frequency increases when Control Voltage increases
Linearity: 5 or 10% max
Center Control Voltage: 2.5V

Mechanical:

Shock: MIL-STD-883, Method 2002, Condition B
Solderability: MIL-STD-883, Method 2003
Terminal Strength: MIL-STD-883, Method 2004, Conditions B2
Vibration: MIL-STD-883, Method 2007, Condition A
Solvent Resistance: MIL-STD-202, Method 215
Resistance to Soldering Heat: MIL-STD-202, Method 210, Conditions A, B or C (I or J for Gull Wing or SMD)

Environmental:

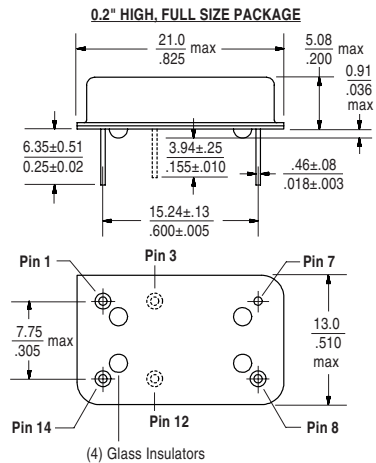
Gross Leak Test: MIL-STD-883C, Method 1014, Condition C
Fine Leak Test: MIL-STD-883C, Method 1014, Condition A2
Thermal Shock: MIL-STD-883C, Method 1011, Condition A
Moisture Resistance: MIL-STD-883C, Method 1004

* APR = (VCXO Pull relative to specified Output Frequency) - (VCXO Frequency Stability) - (Aging)
10 years aging is inclusive on 1/2 size version

Technical Data

S150x / ST150x Series

Package Details

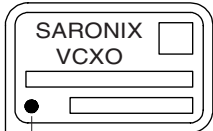


Pin Function:

Pin 1: Control Voltage
 Pin 3: Tri-State Control (optional)
 Pin 7: GND/Case (VSS)
 Pin 8: OUTPUT
 Pin 12: N/C (optional)
 Pin 14: VDC (VDD)

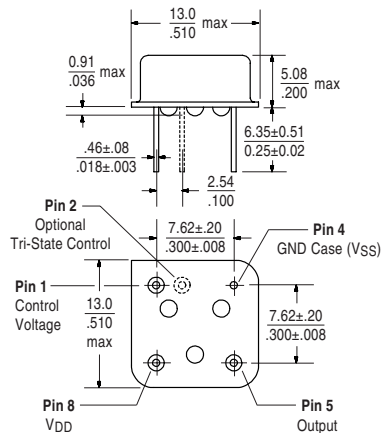
Marking Format**

Includes Date Code, Frequency, Part Number



Denotes Pin 1

HALF SIZE PACKAGE



Marking Format**

Includes Date Code, Frequency, Part Number

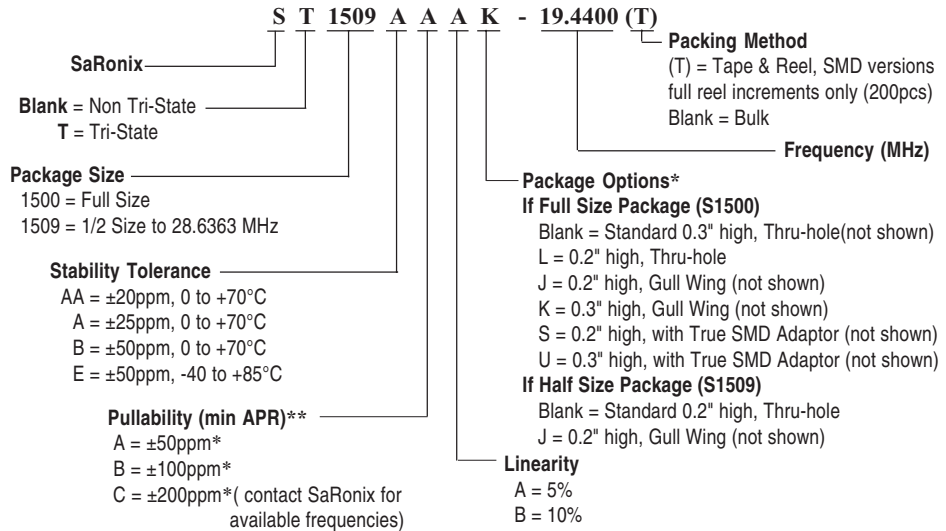


Denotes Pin 1

**Exact location of items may vary

Scale: None (Dimensions in $\frac{mm}{inches}$)

Part Numbering Guide



*Products are available with the following combination of Frequency, Pull and Package

Frequency	Pullability	Full Size (\$1500)	Half Size (\$1509)
1.5 to 28.6363MHz	A, B, C	L, J, S	Standard, J
28.6363+ to 100MHz	A, B, C	Standard, K, U	Standard, K, U

** APR = (VCXO Pull relative to specified Output Frequency) – (VCXO Frequency Stability) – (Aging)
10 years aging is inclusive on 1/2 size version

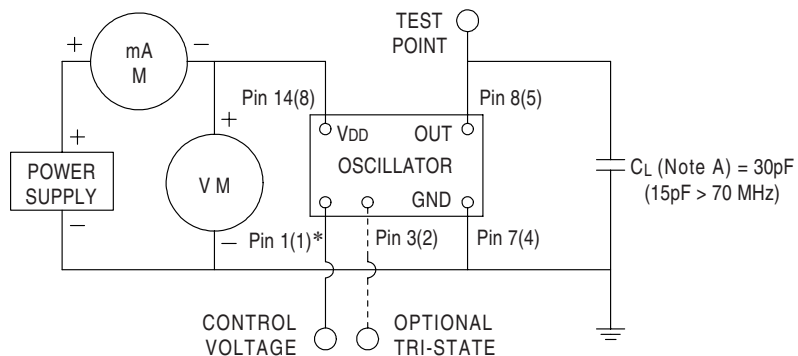
Tri-State Logic Table

Pin 3(2) Input	Pin 8(5) Output
Logic 1 or NC	Oscillation
Logic 0 or GND	High Impedance

Required Input Levels on Pin 3(2):

Logic 1 = 3.0V min
 Logic 0 = 0.5V max

Test Circuit

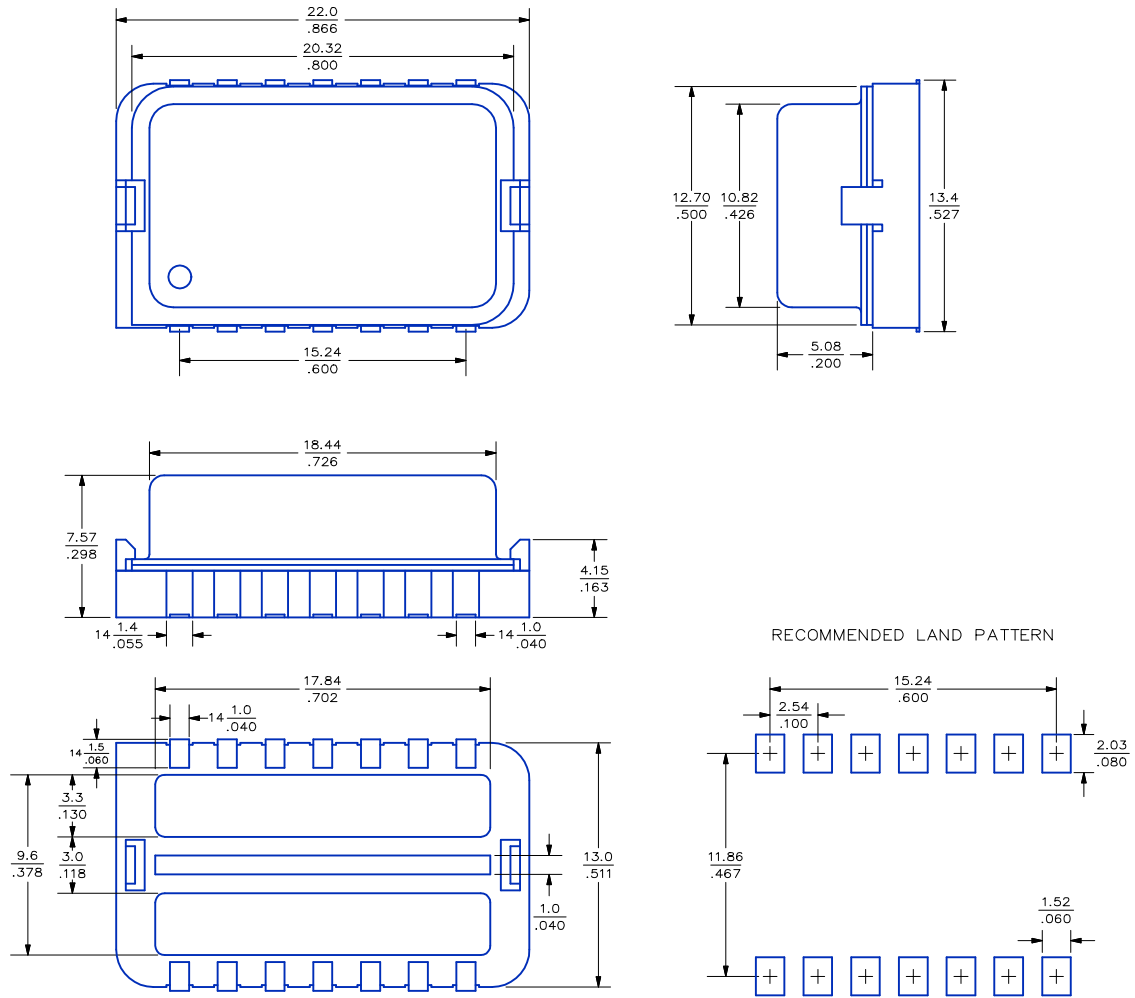


NOTE A: C_L includes probe and fixture capacitance. *Items in brackets () represent Half Size model

All specifications are subject to change without notice.

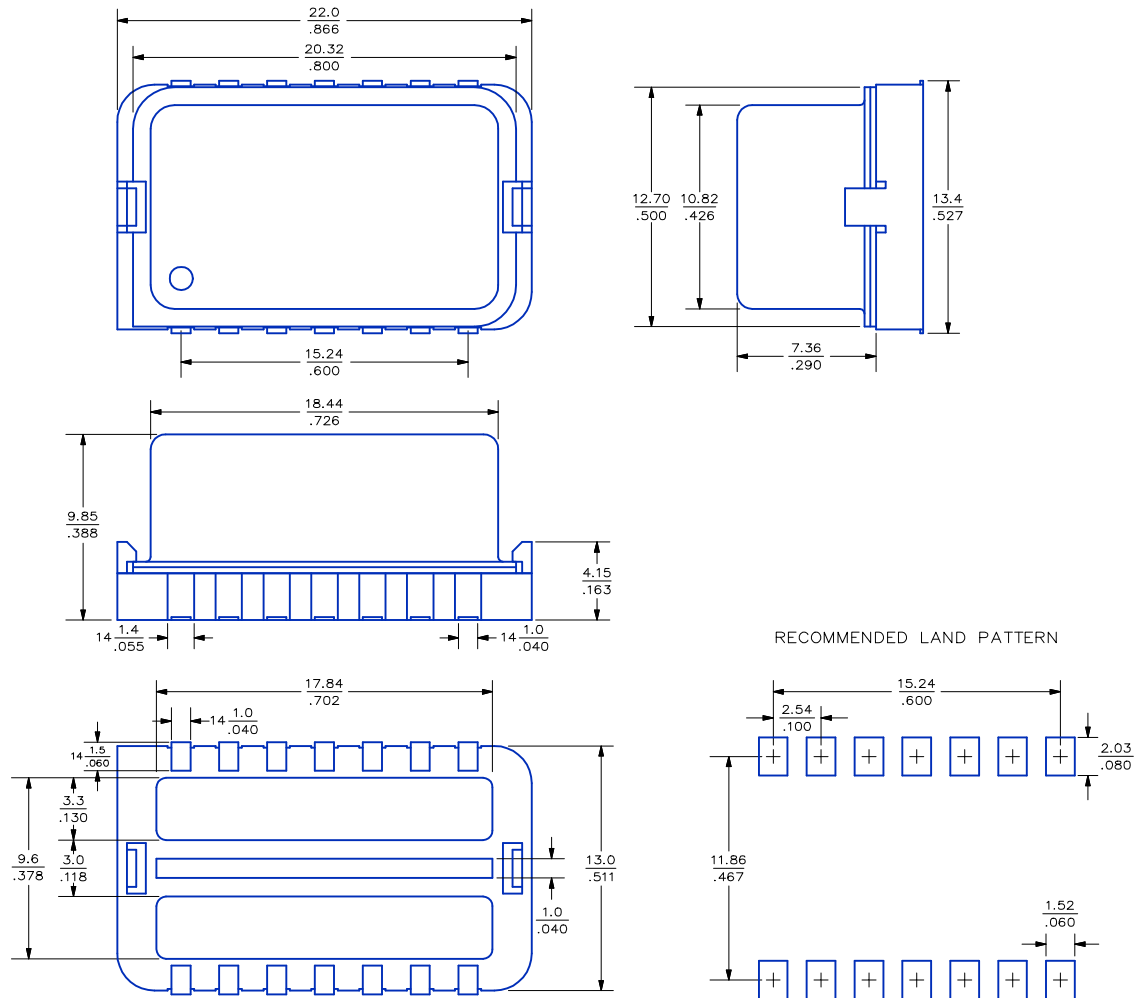
True SMD Adaptor - 7.57mm High

Technical Data



True SMD Adaptor - 9.85mm High

Technical Data



REV A