

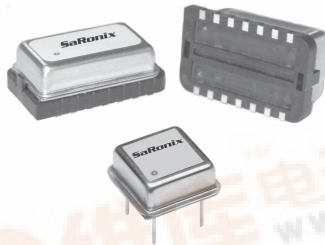
SaRonix

Voltage Controlled Crystal Oscillator

5V, HCMOS

Technical Data

S150x / ST150x Series



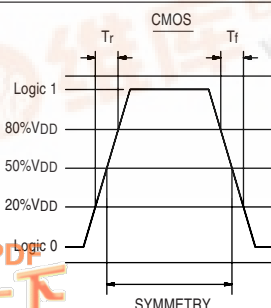
Description

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



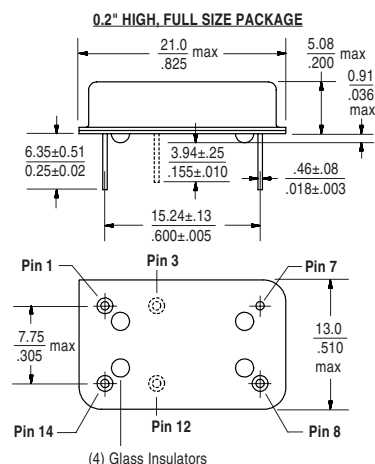
Frequency Range:	1.5 MHz to 100 MHz (Full Size) 1.5 MHz to 28.6363 MHz (Half Size)
Frequency Stability:	$\pm 20, \pm 25$ or ± 50 ppm over all conditions: operating temperature, voltage change, load change, calibration tolerance, shock and vibration, with $V_C = 2.5V$
Aging @ 25°C:	± 3 ppm max per year, ± 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

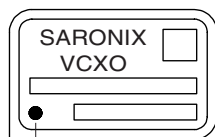


Pin Function:

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)

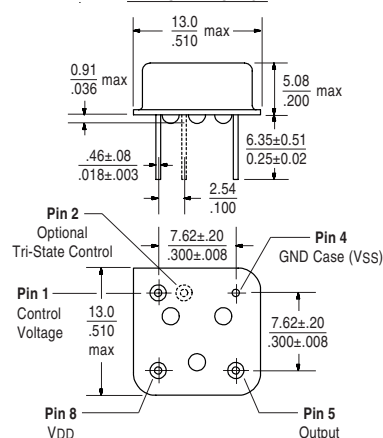
Marking Format**

Includes Date Code, Frequency, Part Number



Denotes Pin 1

HALF SIZE PACKAGE



Marking Format**

Includes Date Code, Frequency, Part Number

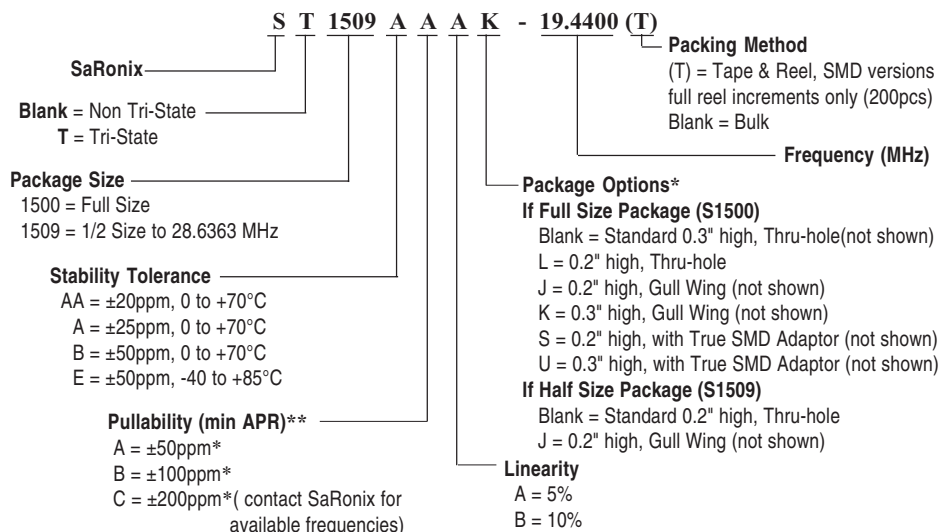


Denotes Pin 1

**Exact location of items may vary

Scale: None (Dimensions in mm / inches)

Part Numbering Guide



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

Frequency	Pullability	Full Size (S1500)	Half Size (S1509)
1.5 to 28.6363MHz	A, B	L, J, S	Standard, J
	C	Standard, K, U	
28.6363+ to 100MHz	A, B, C	Standard, K, U	

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Tri-State Logic Table

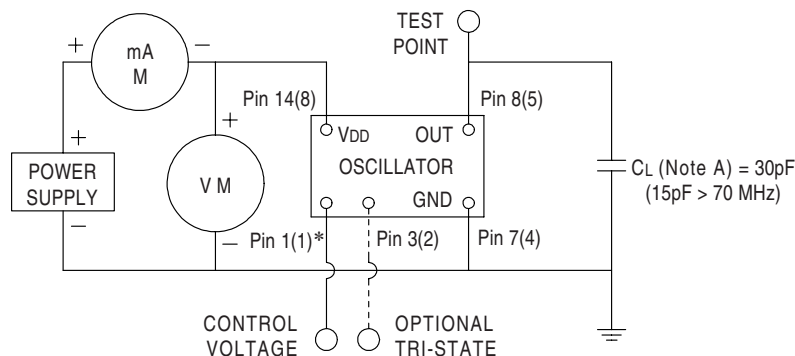
Pin 3(2) Input	Pin 8(5) Output
Logic 1 or NC	Oscillation
Logic 0 or GND	High Impedance

Required Input Levels on Pin 3(2):

Logic 1 = 3.0V min

Logic 0 = 0.5V max

Test Circuit



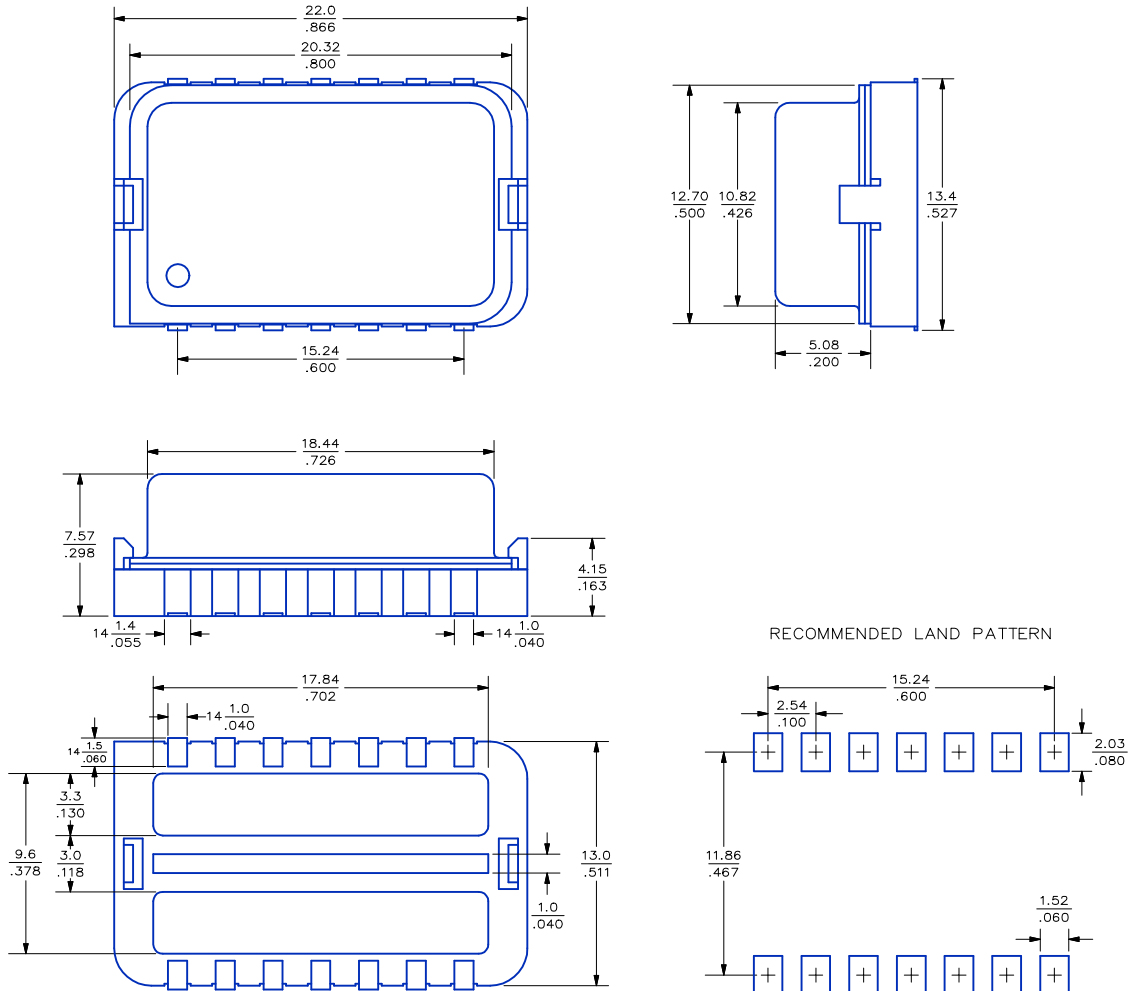
NOTE A: C_L includes probe and fixture capacitance.

*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

