

Voltage Controlled Crystal Oscillator

3.3V, HCMOS

Technical Data S1300 / S1309 Series





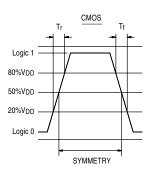
Description

A 3.3V, voltage controlled crystal oscillator designed primarily to be used in phase locked loops, phase shift keying, jitter reduction and other telecommunication applications. The HCMOS output can drive both high speed CMOS and TTL loads. Devices are packaged in standard 14-pin DIP compatible all metal, resistance welded packages. Pin 7(4 on 1/2 size) is grounded to reduce EMI.

Applications & Features

- 3.3 Volt operation
- HCMOS / TTL compatible
- 3.5ps max RMS period jitter
- Wide range of performance options available: ±50 to ±100ppm APR*; ±20 to ±50ppm frequency stability
- Tri-State version available
- Gull Wing for IR reflow available

Output Waveform



Frequency Range:	1.5 MHZ to 28.0303 MHZ
Frequency Stability:	± 20 , ± 25 or ± 50 ppm over all conditions: operating temperature, voltage change, load change, calibration tolerance, shock and vibration, with $V_C = 1.65V$
Aging @ 25°C:	± 3ppm max per year, ±10ppm 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:	$3.3V \pm 10\%$
Supply Current:	10mA typ, 15mA max

1.5 MHz to 29 6262 MHz

Output Drive:

Symmetry: 45/55% max @ 50% VDD 9ns max 20% to 80% VDD Rise & Fall Times: Logic 0: 10% V_{DD} max Logic 1: 90% V_{DD} min Load: 3.5ps max RMS period jitter Jitter:

Pull Characteristics:

Input Impedance (pin 1): $50K\Omega$ min Frequency Response (-3dB): 10 kHz min

Pullability: ±50, ±70, ±100ppm APR* min

0.3 to 3.0V Control Voltage:

Transfer Function: Frequency Increases when Control Voltage Increases

Linearity: 5 or 10% max

Center Control Voltage: 1.65V

Mechanical:

MIL-STD-883, Method 2002, Condition B Shock: Solderability: MIL-STD-883, Method 2003 Terminal Strength: MIL-STD-202, Method 211, Conditions A & C 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)

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)

DS-126 REV D 5.1

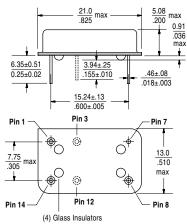


Voltage Controlled Crystal Oscillator

3.3V, HCMOS

Technical Data S1300 / S1309 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: +3.3VDC (VDD)

Marking Format**

Includes Date Code, Frequency & Model



HALF SIZE PACKAGE

Denotes Pin 1

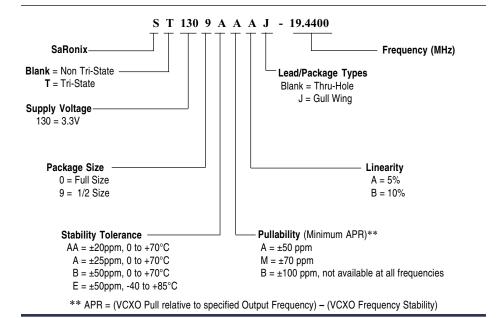
$\frac{0.91}{.036}$ max 5.08 .200 max 6 35+0 51 0.25±0.02 .018±.003 2.54 Pin 2 Optional 7.62±.20 Pin 4 Tri-State Control .300±.008 GND Case (VSS) ⊕`⊚ Pin 1 Control O 0 7.62±.20 Voltage .510 300+.008 max 0 Pin 5 Pin 8 VDD Output

Marking Format** Includes Date Code, Frequency & Model



**Exact location of items may vary Scale: None (Dimensions in $\frac{mm}{inches}$

Part Numbering Guide



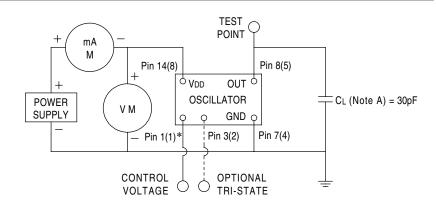
Tri-State Logic Table

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 = $70\% V_{DD}$ min Logic 0 = 30% V_{DD} 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.

DS-126 REV D 5.2