SaRonix

Voltage Controlled Crystal Oscillator 3.3 & 5V, HCMOS, SMD

Technical Data

ST1317 / ST1517 Series

ACTUAL SIZE

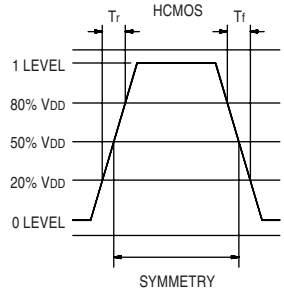
Description

The ST1317 / 1517 Series are voltage controlled crystal oscillators, with output logic levels compatible with HCMOS and TTL logic families. The device is contained in a sub-miniature, very low profile, leadless ceramic SMD package with 6 gold-plated contact pads. This miniature VCXO is ideal for today's automated assembly environments.

Applications

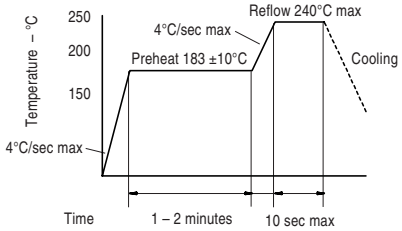
- For use in Phase-Locked Loop (PLL) Clock and Data Recovery, Frequency Translation, or Frequency Synthesis applications in Video, Video Compression, Telephony, and LAN/WAN Data Communication environments.
- High and wide frequency range from 32 to 125 MHz, see ST1307 / 1507 for frequencies from 1 to 31.999 MHz
- 3.3 or 5 Volt operation
- HCMOS and TTL compatible
- Tri-state output standard
- Miniature Ceramic SMD package
- Available on tape & reel; 16mm tape, 500pcs per reel

Output Waveform



Frequency Range:		32 MHz to 125 MHz
Frequency Stability:		±50 ppm over all conditions: operating temperature, rated input (supply) voltage changes, load change, calibration tolerance, shock and vibration (with control voltage held at center value)
Aging:		±12ppm max for 10 years @ +40°C average ambient op. temp.
Temperature Range:		
	Operating:	0 to +70°C or -40 to +85°C
	Storage:	-55 to +125°C
Supply Voltage:		
	Recommended Operating:	3.3V ±10% or 5V ±5%
Supply Current:		35mA max (3.3V) 50mA max (32 to 70MHz), 65mA max (70+ to 125MHz) (5V)
Output Drive:	Symmetry:	5V: 45/55% @ 50% V_{DD}, 40/60% @ 1.4V level 3.3V: 45/55% @50% V_{DD} (0 to +70°C), 40/60% (-40 to +85°C)
	Rise & Fall Times:	4ns max, 20 to 80% V_{DD} (3.3V CMOS and 5V ACMOS) 1.5ns max, 0.5V to 2.5V (5V TTL)
	Logic 0:	5V: 20% V_{DD} max for ACMOS or 0.5V max for TTL 3.3V: 10% V_{DD} max for capacitive load, 20% V_{DD} max for 95Ω AC
	Logic 1:	5V: 80% V_{DD} min for ACMOS or 2.5V min for TTL 3.3V: 90% V_{DD} min for capacitive load, 80% V_{DD} min for 95Ω AC
	Load:	5V: 5TTL or 50Ω AC or 50pF 32 to 50MHz, 30pF 50+ to 125MHz 3.3V: 30pF 32 to 80MHz, 95Ω AC 80+ to 125MHz
	Period Jitter RMS:	20ps max
	Phase Noise:	-95dBc / Hz @100Hz, -110dBc / Hz @1kHz, -100dBc / Hz @10kHz
Pull Characteristics:		
	Input Impedance (pin 1):	50KΩ min
	Frequency Response (-3dB):	50 kHz min
	Pullability:	±32, ±50, ±80, ±100 ppm APR* (over rated control voltage)
	Rated Control Voltage:	0.5 to 4.5V (5V supply), 0.3 to 3.0V (3.3V supply)
	Operable Control Voltage:	(-0.5V) to (V_{DD} +0.5V)
	Transfer Function:	Frequency increases when Control Voltage increases
	Monotonic Linearity:	10% max
	Center Control Voltage:	2.5V (5V supply), 1.65V (3.3V supply)
Mechanical:		
	Shock:	MIL-STD-883, Method 2002, Condition B
	Solderability:	MIL-STD-883, Method 2003
	Terminal Strength:	MIL-STD-883, Method 2004, Condition D
	Vibration:	MIL-STD-883, Method 2007, Condition A
	Solvent Resistance:	MIL-STD-202, Method 215
	Resistance to Soldering Heat:	MIL-STD-202, Method 210, Condition I or J
Environmental:		
	Thermal Shock:	MIL-STD-883, Method 1011, Condition A
	Moisture Resistance:	MIL-STD-883, Method 1004

Solder Reflow Guide



* APR = (VCXO Pull relative to specified Output Frequency) - (VCXO Frequency Stability)
Total VCXO Pull from specified nominal output frequency under all operating conditions for the life of the unit

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SaRonix 141 Jefferson Drive • Menlo Park, CA 94025 • USA • 650-470-7700 • 800-227-8974 • Fax 650-462-9894
www.saronix.com

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Technical Data

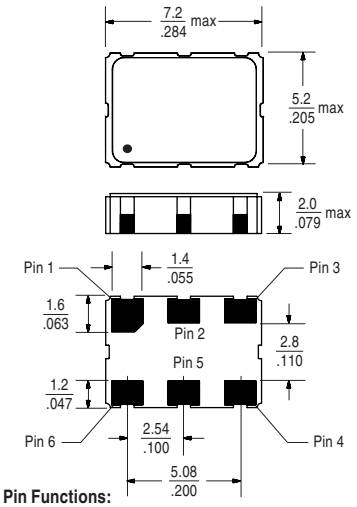
ST1317 / ST1517 Series

Tri-State Logic Table

Pin 2 Input	Pin 4 Output
Logic 1 or N/C	Oscillation
Logic 0	High Impedance

Required Input Levels on Pin 2:
Logic 1 = 3.0V min
Logic 0 = 0.5V max(5V), 0.3V max (3.3V)

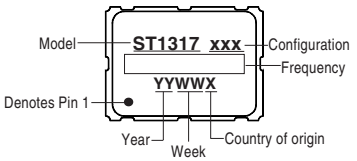
Package Details



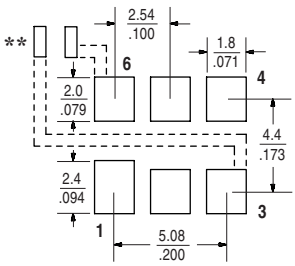
Pin Functions:

Pin 1: Control Voltage
Pin 2: Tri-State Control
Pin 3: GND
Pin 4: Output
Pin 5: N/C
Pin 6: Supply Voltage

Marking Format (exact location of items may vary)



Recommended Land Pattern



**External high frequency power supply decoupling required.

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

Part Numbering Guide

ST 1317 B B B - 125.0000 (T)

Model
SaRonix Tri-State

Series
1517 = 5V, Ceramic, HCMOS / TTL VCXO
1317 = 3.3V, Ceramic, HCMOS VCXO

Stability Tolerance
B = ±50 ppm 0 to +70°C
E = ±50 ppm -40 to +85°C

Pullability (minimum APR)*
B = ±100 ppm
N = ±80 ppm
A = ±50 ppm
F = ±32 ppm

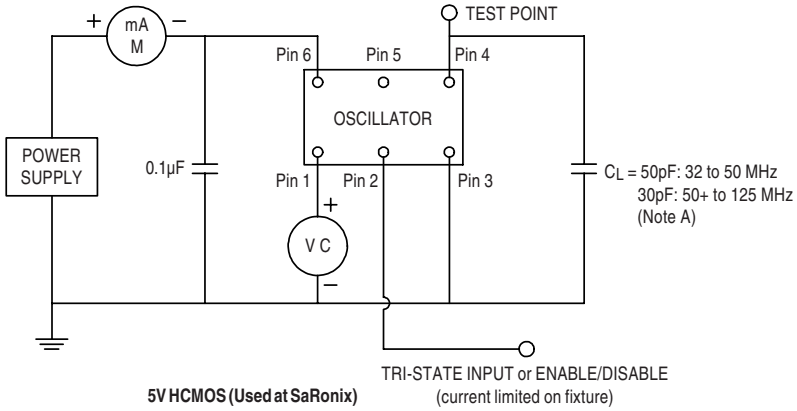
Linearity
B = 10%

Frequency (MHz)

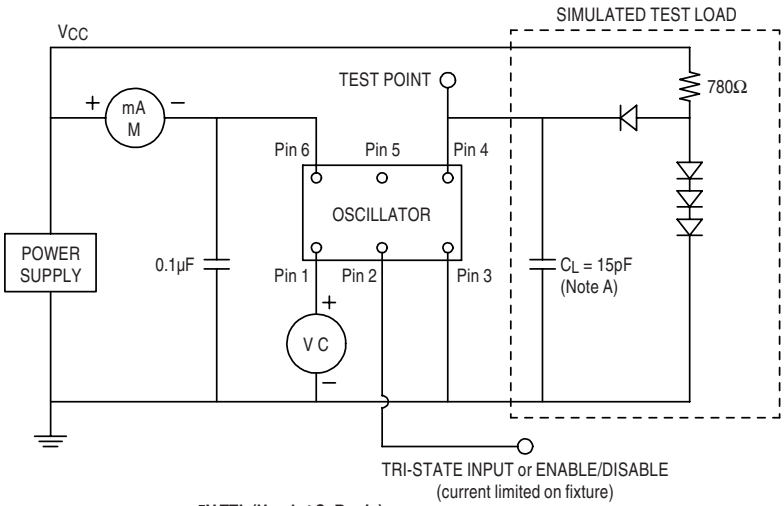
Packaging
blank = bulk packaged
(T) = Tape & Reel*
*full reel increments only (500pcs)

* APR = (VCXO Pull relative to specified Output Frequency) - (VCXO Frequency Stability)
Total VCXO Pull from specified nominal output frequency under all operating conditions for the life of the unit

Test Circuits:



5V HCMOS (Used at SaRonix)
NOTE A: C_L includes probe and jig capacitance.



5V TTL (Used at SaRonix)
NOTE A: C_L includes probe and jig capacitance.

All specifications are subject to change without notice.

DS-170 REV C