

Technical Data

S1562 / S1564 Series



Description

A voltage controlled crystal oscillator designed primarily for use in phase locked loops, SONET/ATM/SDH/DWDM transport & switch applications. Output is 10KE LVPECL. Device is packaged in a 14-pin DIP compatible, resistance welded package. Case is grounded to Pin 7 to reduce EMI. True SMD DIL versions for IR reflow available; select option "S" or "U" in part builder.

Applications & Features

- High-frequency, fundamental-mode crystal design for ultra low jitter and superb frequency stability over all conditions
- Excellent frequency reference for OC-12 (STM-4), OC-48 (STM-16), and OC-192(STM-64) clock generation or synchronization
- Forward error correction frequencies are available
- Enable/Disable standard
Positive supply voltage 3.3V ECL (PECL), LVDS compatible
- Complementary outputs on S1564
- Single output on S1562
- Wide frequency range from 65 MHz to 168.00 MHz
- ±50 ppm minimum APR**
- Gull Wing & True SMD option available for IR reflow
- See S1569 Series for comparable performance in true SMD 9x14mm package
- See S1566 Series for comparable performance with output frequencies 622 ~ 670 MHz

Frequency Range: 65.00 MHz to 168.00 MHz (S1564)
77.76 MHz to 155.52 MHz (S1562)

Frequency Stability: ±20, ±25, or ±50 ppm over all conditions: operating temperature, supply voltage change within rating, load change, aging* shock and vibration.

*** Aging:** 5 years @ 40°C average ambient operating temperature

Temperature Range:
Operating: 0 to +70°C, 0 to +85°C, -40 to +85°C
Storage: -55°C to +105°C

Supply Voltage (V_{CC}): +3.3V ±10%

Supply Current: 65mA typ, 100mA max (S1562)
65mA typ, 70mA max (S1564)

Output Drive:
Symmetry: 45/55% max @ 50% waveform
Rise & Fall Times: 550 ps max, 20% to 80% of output waveform
Logic 0: ≤ V_{CC} -1.620V
Logic 1: ≥ V_{CC} -1.025V
Load: 50Ω to V_{CC} -2V (all outputs require termination)
Phase Jitter: 1ps RMS (1-sigma) max, in 12kHz ~ 40MHz frequency band
Total Jitter: 20ps max peak-to-peak, measured in 100,000 random samples

Pull Characteristics:

Input Impedance (Pin 1): 50KΩ min
Frequency Response (-3dB): 10 kHz min
Pullability: ±50 ppm min APR**
Control Voltage: 0.3V min to 3.0V max
Center Control Voltage: 1.65V
Transfer Function: Frequency increases when control voltage increases
Linearity: 10% max
RMT Center Frequency (f₀): 1.65 ±0.3V @25°C

Output Enable Characteristics:

Output Enable Voltage (Pin 3): ≤ V_{CC} - 1.475V or Open
Disable Voltage: ≥ V_{CC} - 1.165V (Q Output Disabled to a fixed level of Logic 0)

Mechanical:

Shock: MIL-STD-883, Method 213, Condition F
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, Condition B (for through-hole)
MIL-STD-202, Method 210, Condition I or J (for Gull Wing and SMD adapter)

Environmental:

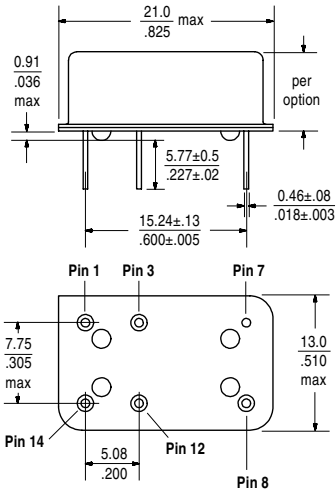
Gross Leak Test: MIL-STD-883, Method 1014, Condition C
Fine Leak Test: MIL-STD-883, Method 1014, Condition A2
Thermal Shock: MIL-STD-883, Method 1011, Condition A
Moisture Resistance: MIL-STD-883, Method 1004

** APR = (VCXO Pull relative to specified Output Frequency) – (VCXO Frequency Stability)
Absolute Pull Range relative to specified nominal frequency

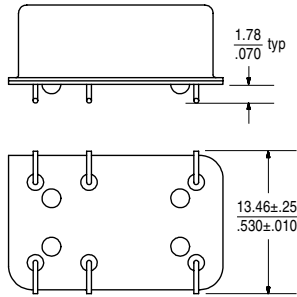
Technical Data

S1562 / S1564 Series

Package Details



Gull Wing Package



Pin Functions:

S1562

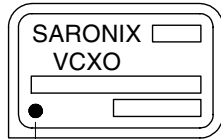
- Pin 1: Control Voltage
- Pin 3: Enable
- Pin 7: GND / Case
- Pin 8: Q Output
- Pin 12: N/C
- Pin 14: Supply Voltage

S1564

- Pin 1: Control Voltage
- Pin 3: Enable
- Pin 7: GND / Case
- Pin 8: Q Output
- Pin 12: Q Output
- Pin 14: Supply Voltage

Marking Format **

Includes Date Code, Frequency & Part Number

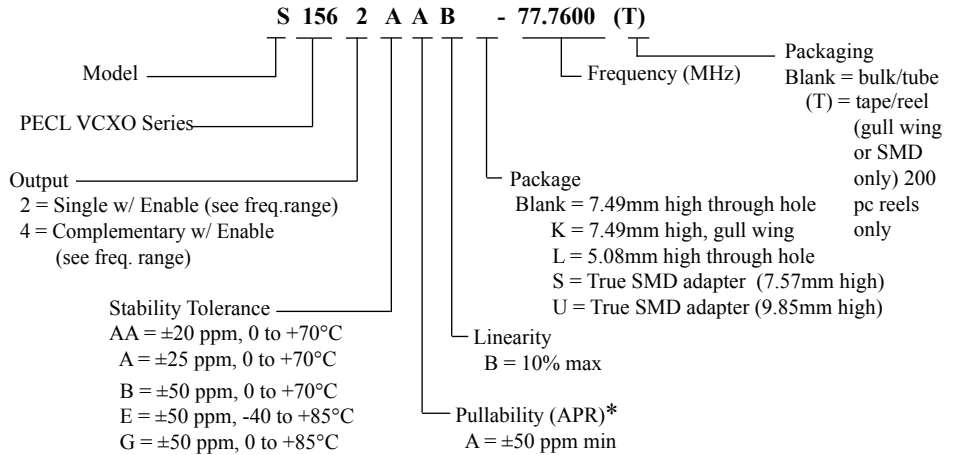


Denotes Pin 1

** Exact location of items may vary

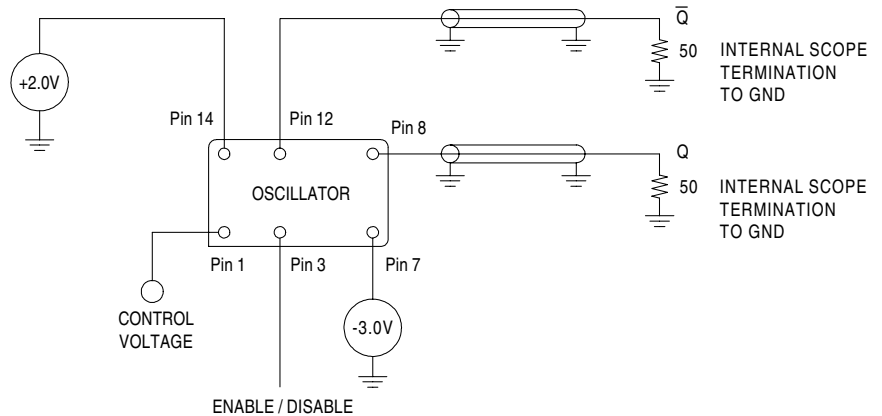
Scale: None (Dimensions in mm / inches)

Part Numbering Guide



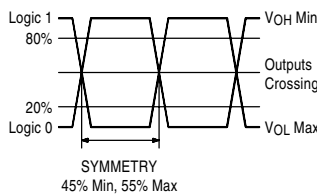
*APR = (VCXO Pull relative to specified Output Frequency) – (VCXO Frequency Stability)
Absolute Pull Range relative to specified nominal frequency

Test Circuit

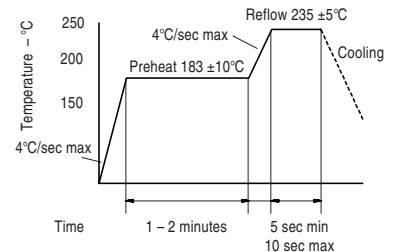


* Note: Test Configuration depicts S1564 Series. Pin 12 is not connected for S1562 Series.

Output Waveforms



Solder Reflow



* Note: Applicable to gull wing and SMD versions only

*All specifications subject to changes without notice