SaRonix™
A PERICOM® COMPANY

S1569 Series

3.3V PECL Ultra Low Jitter with True SMT pads
Voltage Controlled Crystal Oscillator (VCXO)

Actual Size = 9 x 14mm

Product Features

- Frequencies available between 65 and 168 MHz
- High frequency fundamental-mode crystal
- No internal PLL or frequency multiplication
- Less than 0.5 ps RMS jitter
- LVPECL compatible output
- Commercial and industrial operation
- ±20 ppM stability (or as specified)
- ±50 ppM absolute (net) pull range
- 9x14mm true SMT design

Product Description

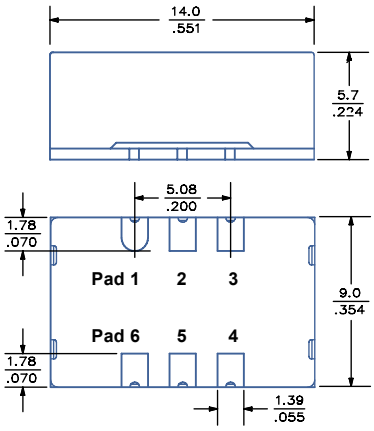
The S1569 is a voltage controlled crystal oscillator that achieves superb jitter and temperature stability over a broad range of operating conditions and frequencies. The device is constructed with a hermetically sealed, fundamental-mode quartz crystal resonator exhibiting a high-Q for exceptional phase noise performance. The device, available on tape and reel, is contained in a 9x14mm FR4 package.

Applications

The S1569 Series VCXO is an ideal component in phase locked loop circuits that perform clock smoothing, clock/data recovery, or frequency translation and card synchronization functions, supporting jitter-sensitive applications such as:

- SMPTE-compliant Video networking
- SONET/SDH/DWDM/E4 timing control & line cards
- 1 & 10 Gigabit Ethernet and FibreChannel
- Satellite, microwave and cellular base stations
- Server & Storage platforms

Package Outline



Pin Functions

Pad	Function
1	Control voltage
2	Output Enable/Disable
3	Ground
4	Q Output
5	$\overline{Q}$ Output
6	Supply voltage

Full Mechanical Drawings page 7.
Dimensions are in mm/inches.

Common Frequencies

65.0000	65.5360	70.6560
74.1758	74.2500	75.0000
77.7600	106.2500	108.0000
125.0000	139.2640	155.5200
156.2500	161.1328	167.3316

Contact SaRonix for additional frequencies

Ordering Information

S 1569 E A B - 155.5200 (T)

SaRonix

Model

Stability Tolerance
AA = ±20ppm, 0 to +70°C
A = ±25ppm, 0 to +70°C
B = ±50 ppm, 0 to +70°C
E = ±50 ppm, -40 to +85°C
G = ±50 ppm, 0 to +85°C

Pullability (minimum APR)
A = ±50 ppm

Linearity
B = 10%

Frequency (MHz)

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

Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output frequency (F_N)	65		168	MHz	As specified
Supply voltage	2.97	3.3	3.63	V	
Supply current			70	mA	
Frequency stability	±20		±50	ppM	See Note 1 below
Operating temperature	-40		+85	°C	As specified
Output logic 0, V_{OL}			V_{CC} - 1.645	V	0 to +70˚C
Output logic 0, V_{OL}			V_{CC} - 1.590	V	-40 to +85˚C
Output logic 1, V_{OH}	V_{CC} - 0.995			V	0 to +70˚C
Output logic 1, V_{OH}	V_{CC} - 1.045			V	-40 to +85˚C
Output load	50Ω to V_{CC} - 2V				output requires termination
Duty cycle	45		55	%	measured 50% of waveform
Rise and fall time		0.18	0.55	ns	measured 20/80% of waveform
Jitter, phase			1	ps RMS (1-σ)	12kHz to 40MHz frequency band
Jitter, accumulated			3	ps RMS (1-σ)	20,000 adjacent periods
Jitter, total			20	ps pk-pk	100,000 random periods

Notes:
1. As specified. Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, aging (5 years at 40°C average effective ambient temperature), shock and vibration.

Frequency Modulation Function

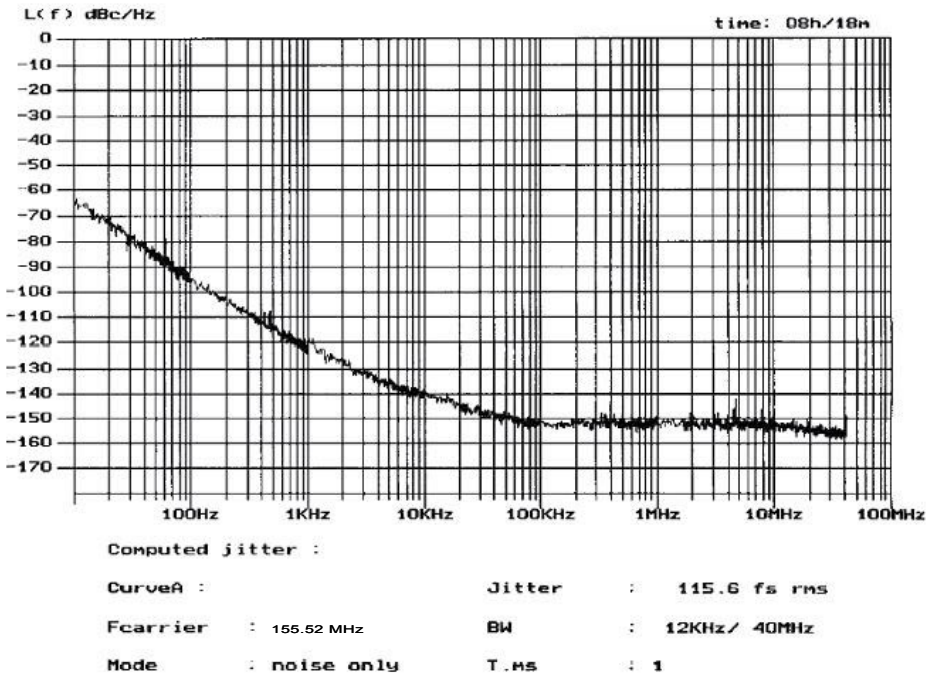
Parameter	Min.	Typ.	Max.	Units	Notes
Absolute pull range (APR)	±50			ppM	See #1 below
Control voltage range	0.3		3.0	V_{DC}	As rated
Center control voltage	1.32	1.65	1.98	V	For RMT center frequency
Monotonic linearity			10	%	Positive transfer slope
Input impedance	50			kΩ	Control voltage pin
Modulation bandwidth	10			kHz	-3dB

Notes:
1. APR is relative to the nominal output frequency F_N (as specified); APR is inclusive (net) of frequency deviation due to stability.

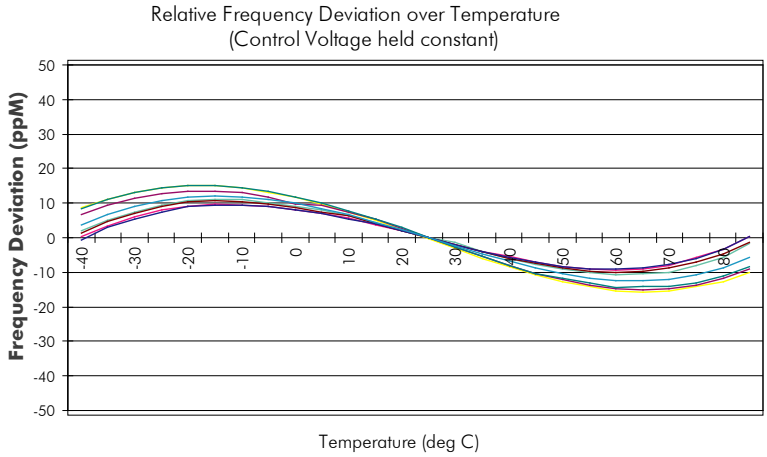
Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input voltage, Output Enable (pin 2)			V_{OL}	V	or Open
Input voltage, Output Disable (pin2)	V_{CC} - 1.165V			V	Q Output fixed to V_{OL}

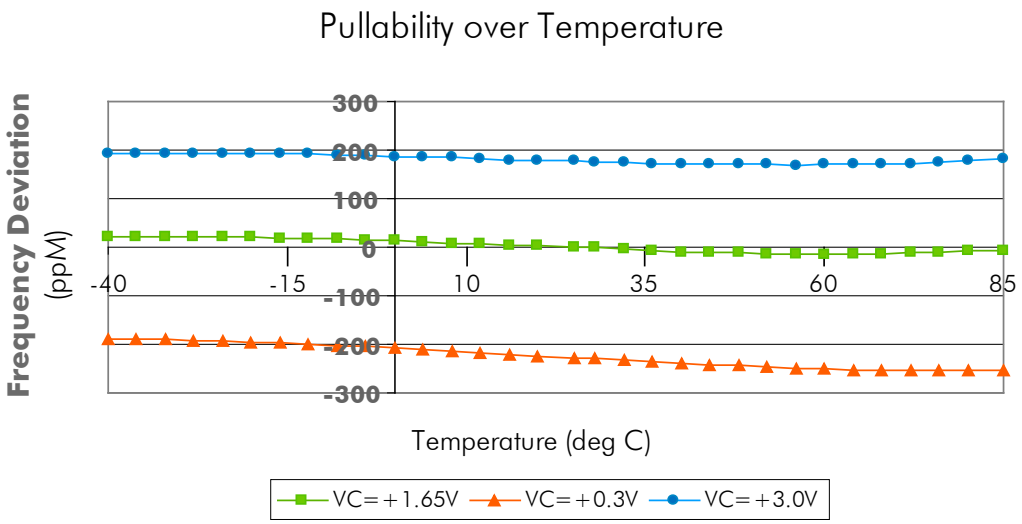
Typical Phase Noise



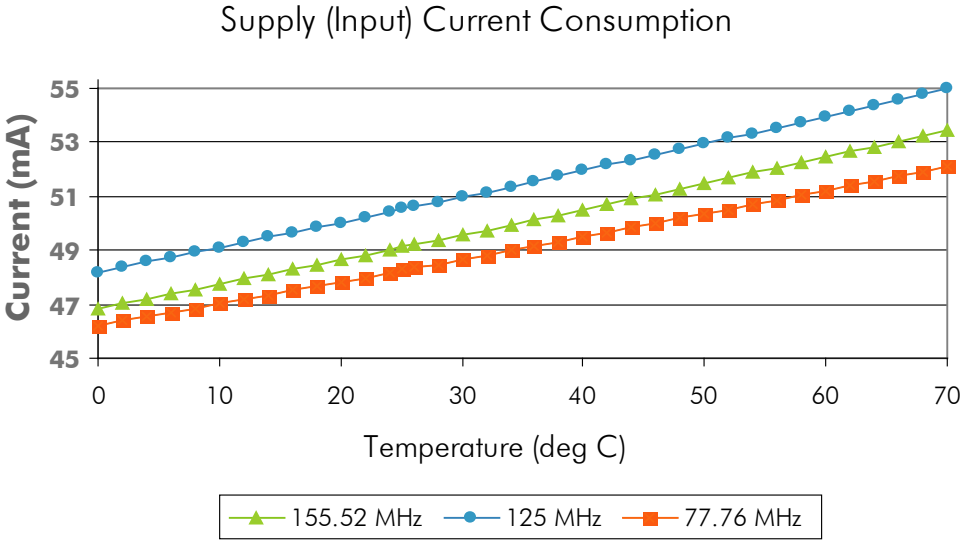
Typical Stability Characteristics



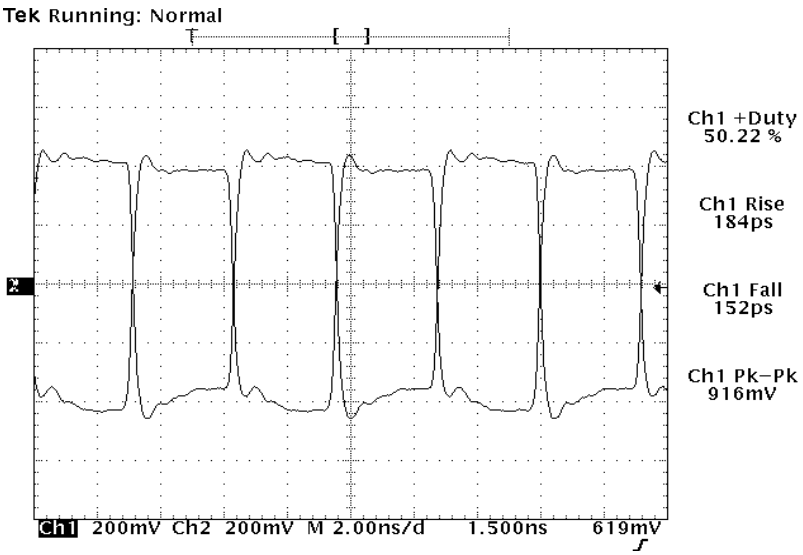
Typical Pull Characteristics



Typical Supply Current



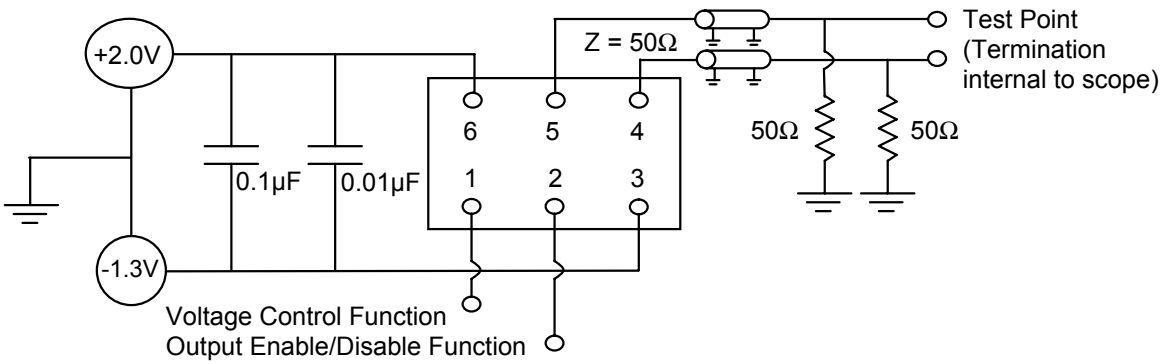
Typical Output Waveform



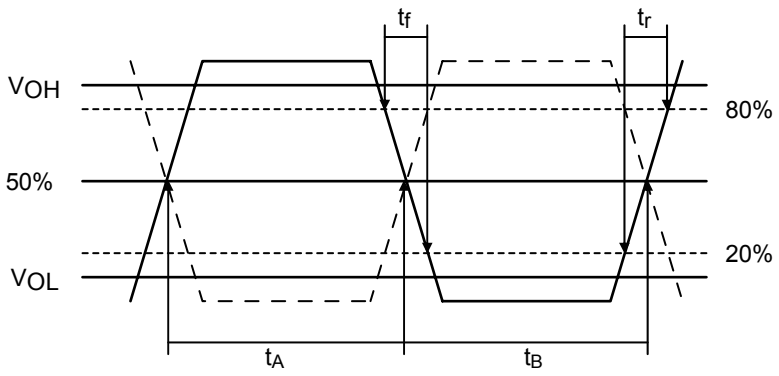
Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Units	Notes
Storage temperature	-55		+125	°C	
Control voltage range	0		V_{CC}	V	

Test Circuit

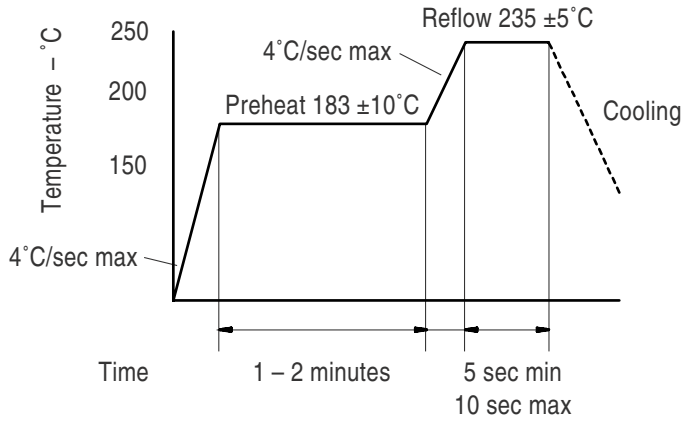


Output Waveform



Duty cycle = 100% × (t_A) / (t_A + t_B)

Solder Reflow Guide

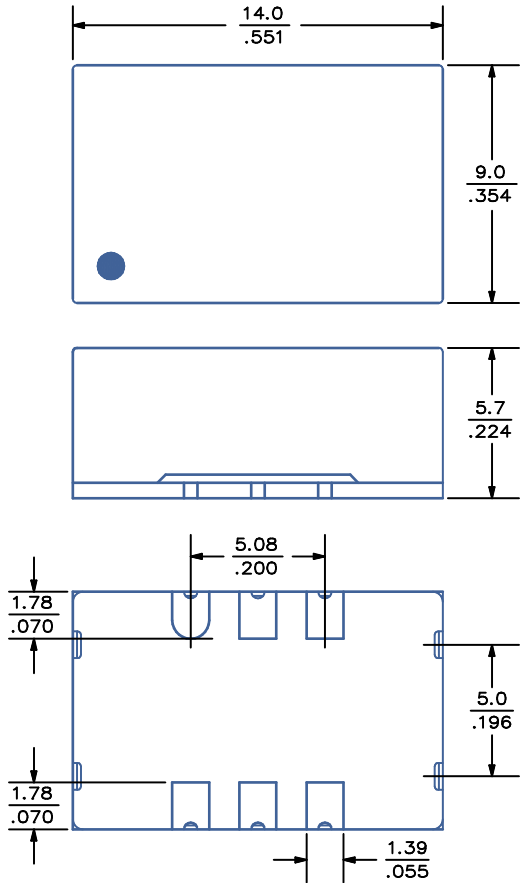


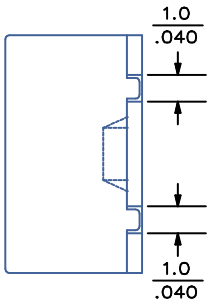
Reliability Test Ratings

This product is rated under the following test conditions:

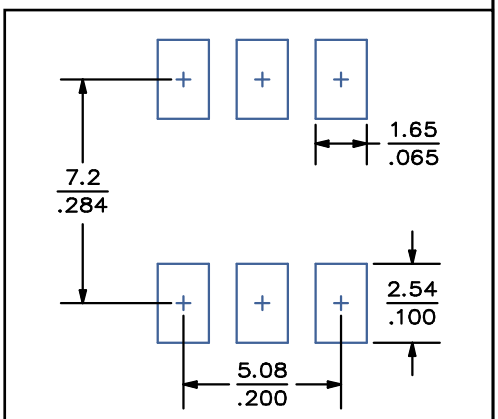
Type	Parameter	Test Condition
Mechanical	Shock	MIL-STD-883, Method 2002, Condition B
Mechanical	Solderability	MIL-STD-883, Method 2003
Mechanical	Terminal strength	MIL-STD-883, Method 2004, Condition D
Mechanical	Solvent resistance	MIL-STD-202, Method 215
Environmental	Thermal shock	MIL-STD-883, Method 1011, Condition A
Environmental	Moisture resistance	MIL-STD-883, Method 1004
Environmental	Vibration	MIL-STD-883, Method 2007, Condition A
Environmental	Resistance to soldering heat	MIL-STD-202, Method 210, Condition I or J

Mechanical Drawings





Recommended Land Pattern*



*External high frequency power decoupling is recommended

Scale: None. Dimensions are in mm/inches.

Marking LINE 1:	**SARONIX YY WW X**	**(Year, Week, Origin)**	
Marking LINE 2:	**Frequency**	**(Frequency)**	
Marking LINE 3:	**• S1569xxx**	**(Pin 1, Part Number)**	

**** Exact location of markings may vary**

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