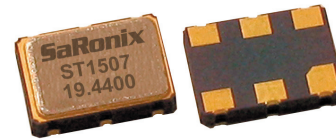


5V CMOS/TTL Ultra Low Jitter Voltage Controlled Crystal Oscillator (VCXO)



Actual Size = 5 x 7mm



Product Features

- High Q fundamental-mode crystal
- No internal PLL or frequency multiplication
- Very low phase noise
- TTL/HCMOS compatible output
- Commercial and industrial operation
- ±50 ppM stability (or as specified)
- ±50 to ±100 ppM absolute (net) pull range
- RoHS Compliant

Product Description

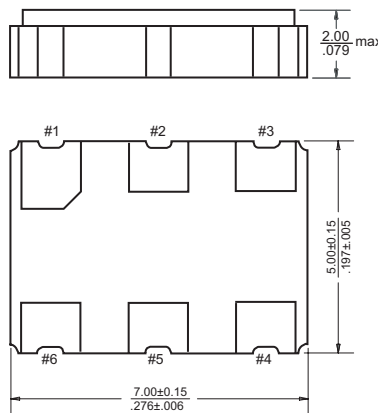
The ST1507 is a voltage controlled crystal oscillator that achieves superb jitter and pullability over a broad range of operating conditions and frequencies. The device is constructed with a hermetically sealed, fundamental-mode quartz crystal resonator exhibiting a high-Q for exceptional phase noise performance. The device, available on tape and reel, is contained in a 5x7mm ceramic package.

Applications

The ST1507 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 timing control and line cards
- T1/E1 Platforms
- Satellite and microwave communications

Package Outline



Pin Functions

Pad	Function
1	Control voltage
2	Output Enable/Disable
3	Ground
4	Output
5	No Connect
6	Supply voltage

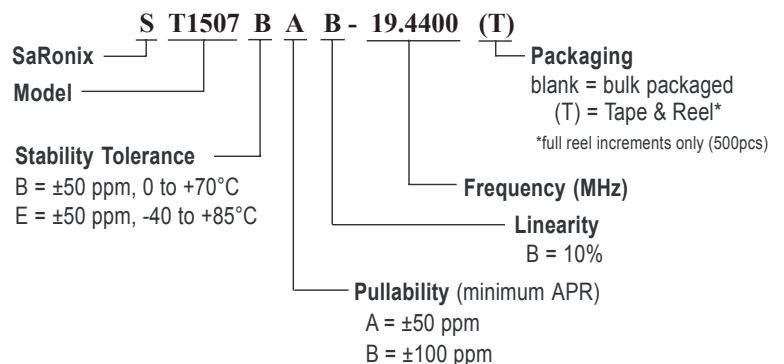
Full Mechanical Drawings page 6. Dimensions are in mm/inches.

Common Frequencies

Contact SaRonix for additional frequencies

1.5440	14.7456	20.4800
2.0480	15.0000	24.5760
6.1760	16.3840	25.0000
8.1920	18.4320	27.0000
12.2880	19.4400	
12.3520	20.0000	

Ordering Information



Electrical Performance

Parameter	Min.	Typ.	Max.	Units	Notes
Output frequency (F _N)	1.0		32.0	MHz	As specified
Supply voltage	+4.75	+5.0	+5.25	V	
Supply current			30	mA	
Frequency stability			±50	ppM	See #1 and #2 below
Operating temperature	-40		+85	°C	As specified
Output logic 0, V _{OL}			10% V _{DD}	V	HCMOS load
Output logic 0, V _{OL}			0.5	V	TTL load
Output logic 1, V _{OH}	90% V _{DD}			V	HCMOS load
Output logic 1, V _{OH}	2.5			V	TTL load
Output load			50	pF	
Output load			10	TTL	
Duty cycle	45		55	%	measured 50% V _{DD}
Duty cycle	40		60	%	measured 1.4V
Rise and fall time			8	ns	measured 20/80% V _{DD}
Rise and fall time			4	ns	measured TTL
Jitter, total			20	ps pk-pk	

Notes:

- As specified. Stability includes all combinations of operating temperature, calibration tolerance, load changes, rated input (supply) voltage changes, shock and vibration, with control voltage held at center.
- ±12 ppM max due to aging (10 years at 40°C average ambient operating temperature).

Frequency Modulation Function

Parameter	Min.	Typ.	Max.	Units	Notes
Absolute pull range (APR)	±50 to ±100			ppM	See #1 below
Control voltage range	+0.5		+4.5	V _{DC}	As rated
Center control voltage		+2.5		V	For RMT center frequency
Monotonic linearity			10	%	Positive transfer slope
Input impedance	50			kΩ	Control voltage pin
Modulation bandwidth	50			kHz	-3dB

Notes:

- As specified. APR is relative to the nominal output frequency F_N; APR is inclusive (net) of frequency deviation due to stability.

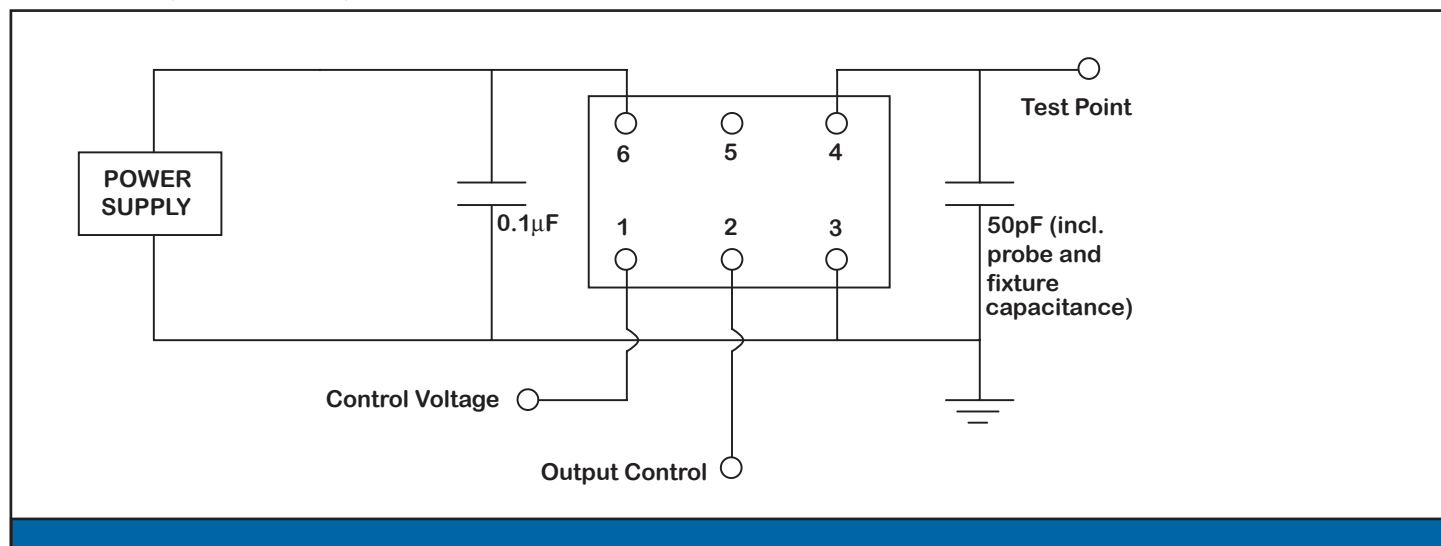
Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input voltage, output enable	3.0			V	or open
Input voltage, output high impedance			0.5	V	Output is high impedance

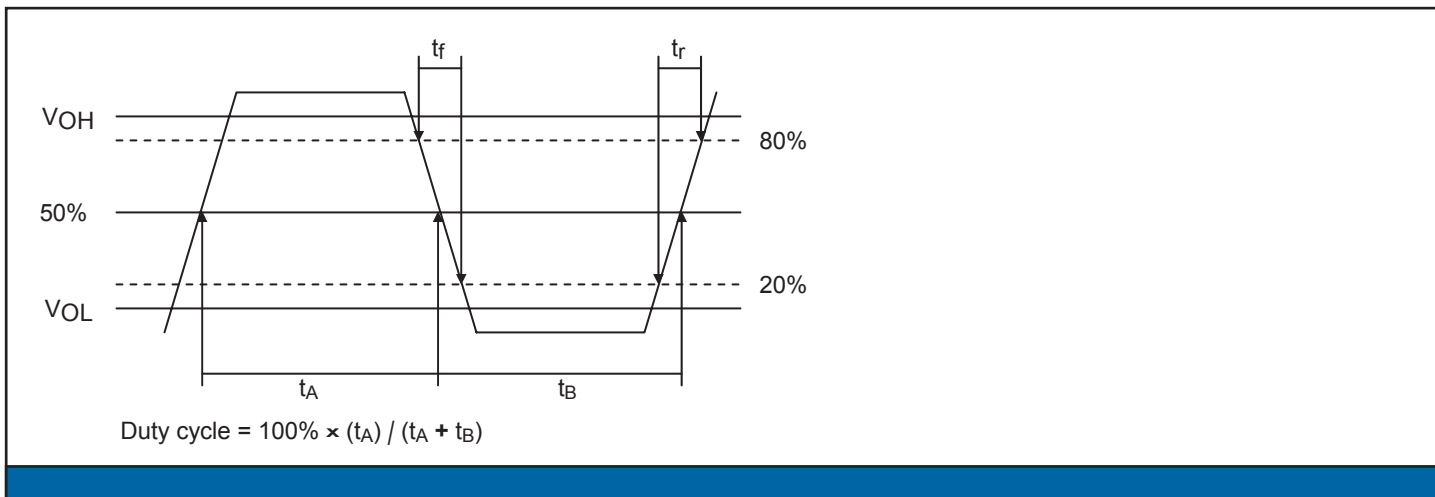
Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Units	Notes
Storage temperature	-55		+125	°C	
Control voltage range	-0.5		V _{DD} +0.5	V	

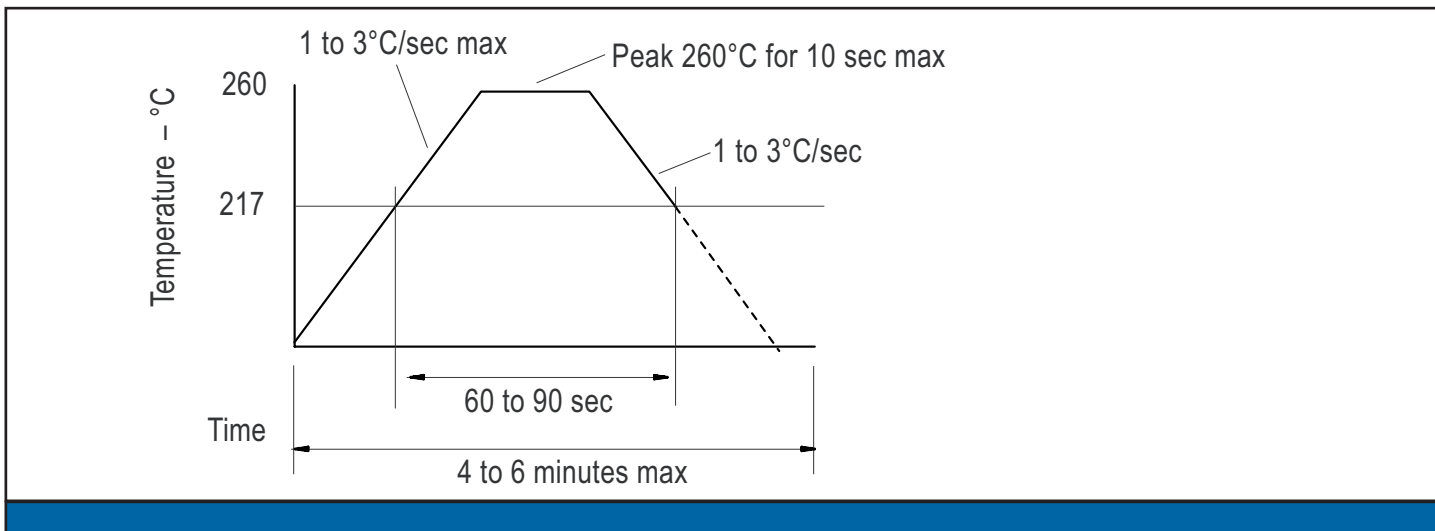
Test Circuit (HCMOS load)



Output Waveform



Solder Reflow Guide

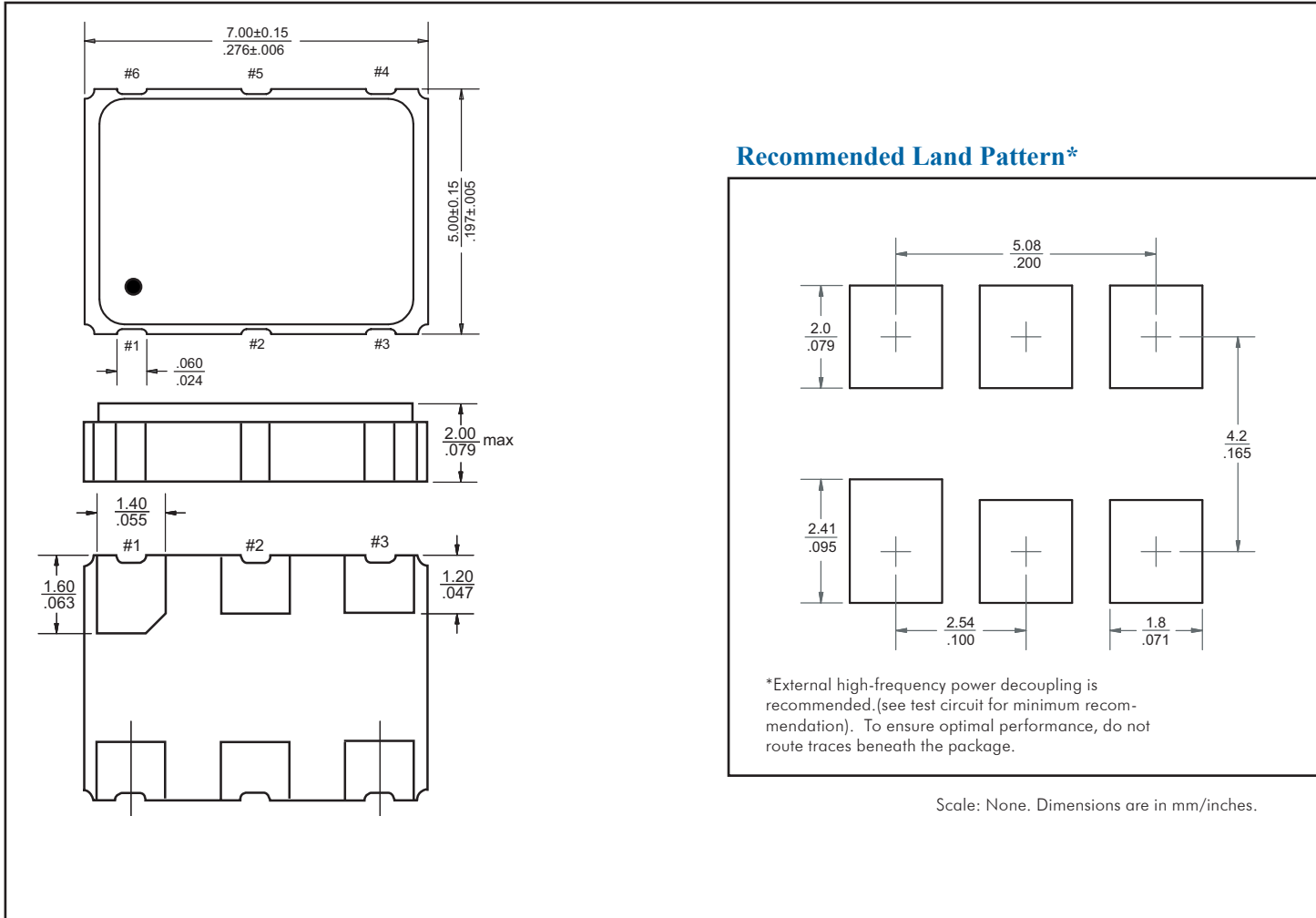


Reliability Test Ratings

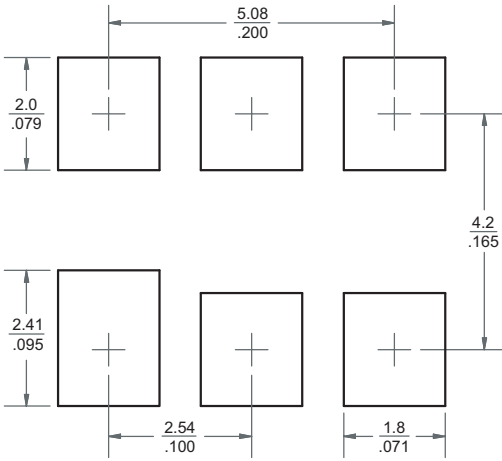
This product is rated under the following test conditions:

Type	Parameter	Test Condition
Mechanical	Shock	MIL-STD-883, Method 2002, Condition B
Mechanical	Solderability	JESD22-B102-D Method 2 (Preconditioning E)
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	J-STD-020C Table 5-2 Pb-free devices (2 cycles max)

Mechanical Drawings



Recommended Land Pattern*



*External high-frequency power decoupling is recommended. (see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

Scale: None. Dimensions are in mm/inches.

Marking LINE 1:	ST1507xxx	(SaRonix, Model, Option Codes)	
Marking LINE 2:	12.3456	(Frequency in MHz)	
Marking LINE 3:	• YYWWx	(Pin 1, Year, Week, Origin)	** Exact location of items may vary