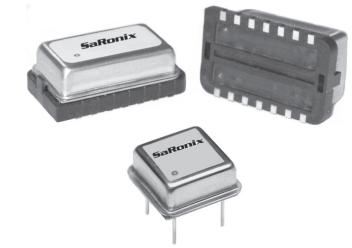
SaRonix

Crystal Clock Oscillator

5V, HCMOS

Technical Data

NTH / NCH Series



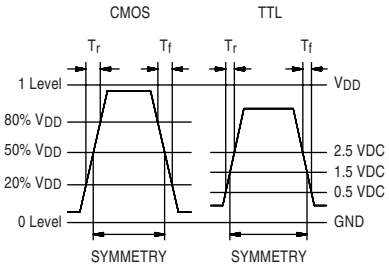
Description

A 5V crystal controlled, low current, low jitter and high frequency oscillator with precise rise and fall times demanded in networking applications, such as Gigabit Ethernet and Fibre Channel. The tri-state function on the NTH enables the output to go high impedance. Device is packaged in a 14 or an 8-pin DIP compatible resistance welded, all metal grounded case, to reduce EMI. True SMD DIL 14 version also available, utilizing new adaptor technology (see separate data sheet for package dimensions)

Applications & Features

- ADSL, DSL
- DS3, ES3, E1, STS-1, T1
- Ethernet Switch, Gigabit Ethernet
- Fibre Channel Controller
- MPEG
- Network Processors
- Voice Over Packet
- 32 Bit Microprocessors
- Tri-State output on NTH
- True SMD version available, see part number builder for package option

Output Waveform



Frequency Range:		500 kHz to 106.25 MHz
Frequency Stability:		±20*, ±25, ±50 or ±100 ppm over all conditions: calibration tolerance, operating temperature, input voltage change, load change, 30 day aging, shock and vibration.
*See Part Numbering Guide		
Temperature Range:		
	Operating:	0 to +70°C or -40 to +85°C
	Storage:	-55 to +125°C
Supply Voltage:		
	Recommended Operating:	+5VDC ±10%
Supply Current:	0.5 to 8 MHz:	12mA
	8+ to 24 MHz:	20mA
	24+ to 50 MHz:	35mA
	50+ to 80 MHz	50mA
	80+ to 106.25 MHz:	65mA
Output Drive:		
HCMOS	Symmetry:	measured @ 50%V_{DD}, See Part Numbering Guide
	Rise & Fall Times:	8ns max, 0.5 to 24 MHz, 20% to 80% V_{DD}
		5ns max, 24+ to 80 MHz
		2ns max, 80+ to 106.25 MHz
	Logic 0:	10% V_{DD} max
	Logic 1:	90% V_{DD} min
	Load:	50pF to 50MHz, 30pF 50+ to 70 MHz, 15pF 70+ to 106.25 MHz
	RMS Period Jitter:	8ps max
TTL	Symmetry:	measured @ 1.5V level, See Part Numbering Guide
	Rise & Fall Times:	6ns max, 0.5 to 24 MHz, 0.5 to 2.5V
		3ns max, 24+ to 80 MHz
		1.5ns max, 80+ to 106.25 MHz
	Logic 0:	0.5 V max
	Logic 1:	V_{CC} -0.6V min
	Load:	10TTL to 50MHz, 5TTL 50+ to 106.25 MHz
	RMS Period Jitter:	8ps max
Mechanical:		
	Shock:	MIL-STD-883, Method 2002, Condition B
	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 A, B or C
		(I or J for Gull Wing and SMD)
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

Tri-State Logic Table (NTH only)

Pin 1 Input	Pin 8 (5) Output
Logic 1 or NC	Oscillation
Logic 0 or GND	High Impedance

Required Input Levels on Pin 1:
Logic 1 = 3.0 V min
Logic 0 = 0.5V max

Output:	Oscillation @ V_{IN}, 2.2V min
Output:	High Impedance @ V_{IN}, 0.8V max
Internal Pullup Resistance	50KΩ min
Control Input:	Disable Output Delay: 100ns max

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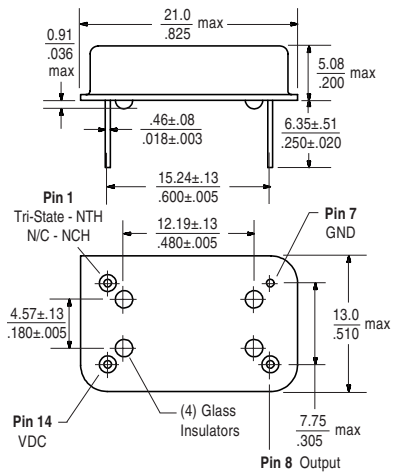
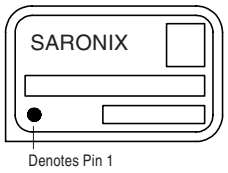
Package Details

FULL SIZE PACKAGE

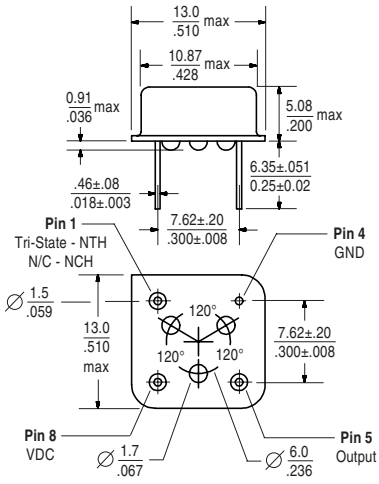


Marking Format **

Includes Date Code, Frequency, Part Number

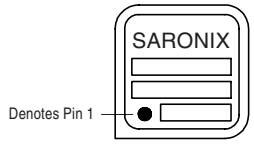


HALF SIZE PACKAGE



Marking Format **

Includes Date Code, Frequency, Part Number



** Exact location of items may vary

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

Part Numbering Guide

N T H 0 6 0 B – 24.0000 (T)

Series
NTH = Tri-State
NCH = Pin1 N/C

Symmetry / Temperature Range
0 = 40/60%, 0 to +70°C (CMOS / TTL)
2 = 40/60%, -40 to +85°C (CMOS / TTL)
A = 45/55%, 0 to +70°C, 0.5 to 70 MHz (CMOS)
6 = 45/55%, 0 to +70°C, 0.5 to 50 MHz (TTL)
C = 45/55%, -40 to +85°C, 0.5 to 50 MHz (CMOS)
4 = 45/55%, -40 to +85°C, 0.5 to 40 MHz (TTL)

Frequency Range
3 = 0.5 to 6 MHz
6 = 6+ to 24 MHz
8 = 24+ to 106.25 MHz

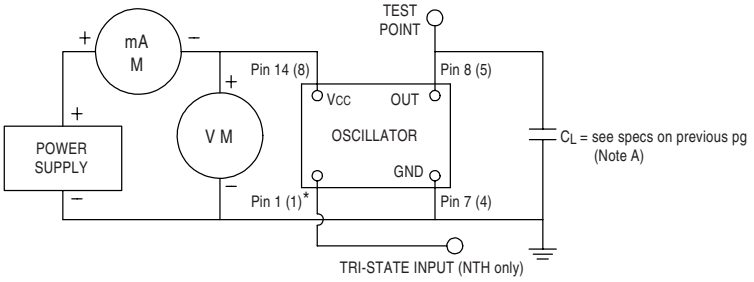
Package
0 = Full Size, Thru Hole
9 = Half Size, Thru Hole
S = Full Size, True SMD Adaptor (see product photo)
K = Full Size, Gull Wing
J = Half Size, Gull Wing
N = Half Size, Gull Wing, Spanked Leads

Stability Tolerance
C = ±100ppm
B = ±50ppm
A = ±25ppm, 0 to +70°C only
AA = ±20ppm, 0 to +70°C only

Frequency (MHz)

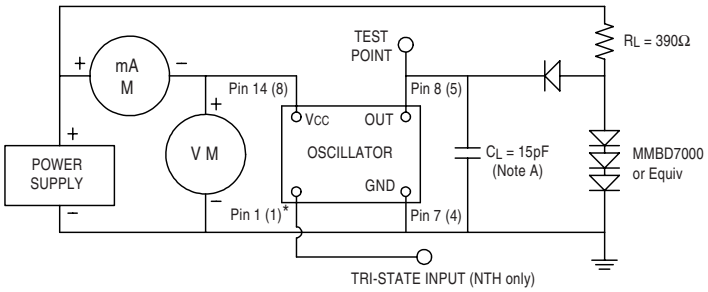
Packing Method
(T) = Tape & Reel, SMD versions full reel increments only (200pcs)
Blank = Bulk

Test Circuits



NOTE A: C_L includes probe and fixture capacitance
*( ) Indicates pin numbers for half-size package

HCMOS (Used at SaRonix)



NOTE A: C_L includes probe and fixture capacitance
*( ) Indicates pin numbers for half-size package

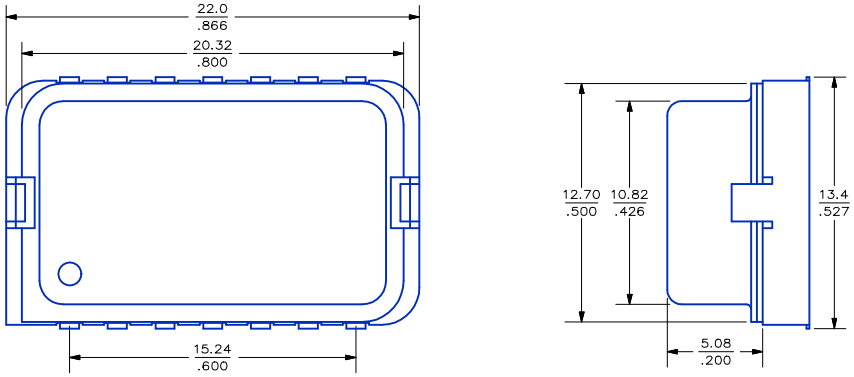
TTL (Optional load)

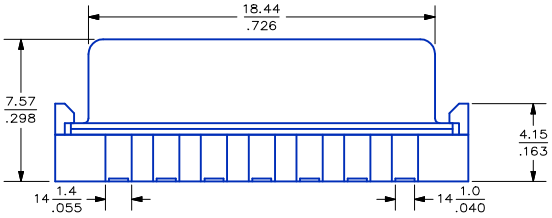
All specifications are subject to change without notice.

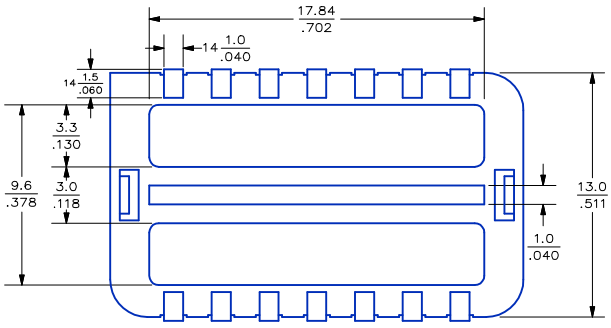
DS-104 REV F

True SMD Adaptor - 7.57mm High

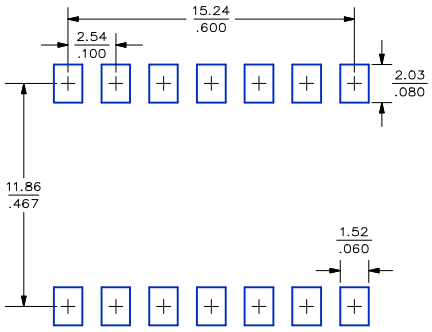
Technical Data







RECOMMENDED LAND PATTERN



REV A