

Crystal Clock Oscillator

5V, HCMOS

Technical Data **NTH / NCH Series**





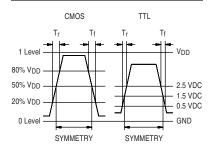
Description

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
*See Part Numbering Guide		change, 30 day aging, shock and vibration.
Temperatu	re Range:	
	Operating:	0 to +70°C or -40 to +85°C
	Storage:	-55 to +125°C
Supply Vol	Itage:	
Recommended Operating:		+5VDC ±10%
Supply	0.5 to 8 MHz:	12mA
Current:	8+ to 24 MHz:	20mA
	24+ to 50 MHz:	35mA
	50+ to 80 MHz	50mA
80+ to 106.25 MHz:		65mA

Output Drive:

measured @ 50%VDD, See Part Numbering Guide Symmetry: **HCMOS**

Rise & Fall Times: 8ns max, 0.5 to 24 MHz, 20% to 80% VDD

> 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:

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 0.5 V max Logic 0: Logic 1: VCC -0.6V min

Load: 10TTL to 50MHz, 5TTL 50+ to 106.25 MHz

RMS Period Jitter:

Mechanical:

MIL-STD-883, Method 2002, Condition B Shock:

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

MIL-STD-202, Method 210, Condition A, B or C Resistance to Soldering Heat:

(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

Oscillation @ VIN, 2.2V min Output: Output: High Impedance @ VIN, 0.8V max

Internal Pullup Resistance $50K\Omega$ min

Control Input: Disable Output Delay: 100ns max

> DS-104 REV F





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Technical Data NTH / NCH Series **Package Details** Part Numbering Guide **FULL SIZE PACKAGE** 24.0000 (T) 0 B NTH 0 6 Series **Packing Method** 0.91 NTH = Tri-State (T) = Tape & Reel, SMD versions .036 NCH = Pin1 N/C $\frac{5.08}{.200}$ max full reel increments only (200pcs) max Blank = Bulk Symmetry / Temperature Range .46±.08 .018±.003 0 = 40/60%, 0 to +70% (CMOS / TTL) .250±.020 Frequency (MHz) 2 = 40/60%, -40 to +85°C (CMOS / TTL) 15.24±.13 .600±.005 A = 45/55%, 0 to +70°C, 0.5 to 70 MHz (CMOS) Pin 1 Stability Tolerance Tri-State - NTH Pin 7 6 = 45/55%, 0 to +70%, 0.5 to 50 MHz (TTL) 12.19±.13 GND N/C - NCH C = 45/55%, -40 to +85°C, 0.5 to 50 MHz (CMOS) $C = \pm 100ppm$.480±.005 4 = 45/55%, -40 to +85°C, 0.5 to 40 MHz (TTL) $B = \pm 50ppm$ • Φ $A = \pm 25$ ppm, 0 to +70°C only 4.57±.13 $\frac{13.0}{.510}$ max AA = ±20ppm, 0 to +70°C only Frequency Range .180±.005 3 = 0.5 to 6 MHzPackage 6 = 6 + to 24 MHz0 = Full Size, Thru Hole 8 = 24+ to 106.25 MHz (4) Glass 9 = Half Size. Thru Hole 7.75 max Pin 14 Insulators S = Full Size, True SMD Adaptor (see product photo) .305 Pin 8 Output K = Full Size, Gull Wing Marking Format ** J = Half Size, Gull Wing Includes Date Code, Frequency, Part Number N = Half Size, Gull Wing, Spanked Leads SARONIX **Test Circuits** TEST_O Denotes Pin 1 POINT HALF SIZE PACKAGE Pin 8 (5) Pin 14 (8) -Q Λcc OUT O 13.0 max OSCILLATOR V M CL = see specs on previous pg $\frac{10.87}{.428}$ max POWER SUPPLY GND Q 0.91 .036 max Pin 1 (1) Pin 7 (4) .200 6.35±.051 TRI-STATE INPUT (NTH only) 0.25±0.02 .018±.003 NOTE A: C_L includes probe and fixture capacitance Pin 1 *() Indicates pin numbers for half-size package 300+008 Tri-State - NTH **HCMOS (Used at SaRonix)** N/C - NCH $\emptyset \frac{1.5}{.059}$ 1 X 7.62±.20 120° .300±.008 120° TEST POINT P max $RL = 390\Omega$ M Pin 14 (8) Pin 8 (5) Pin 8 Pin 5 OUT O VDC Output VMOSCILLATOR C_L = 15pF MMBD7000 POWER (Note A) or Equiv Marking Format ** SUPPLY GND Includes Date Code, Frequency, Part Number Pin 1 (1) Pin 7 (4) SARONIX 0 TRI-STATE INPUT (NTH only) NOTE A: C_L includes probe and fixture capacitance *() Indicates pin numbers for half-size package Denotes Pin 1 TTL (Optional load) All specifications are subject to change without notice. ** Exact location of items may vary Scale: None (Dimensions in inches DS-104 REV F



True SMD Adaptor - 7.57mm High

Technical Data 20.32 12.70 10.82 .500 .426 13.4 .527 15.24 .600 RECOMMENDED LAND PATTERN REV A