CRYSTAL CLOCK OSCILLATOR
GLOSSARY OF TERMS

■ QUARTZ CRYSTAL OSCILLATOR

A timing device that consists of a crystal and an oscillator circuit, providing an output waveform at a specified reference frequency.

■ NOMINAL FREQUENCY

The center frequency of the oscillator, typically specified in megaherts (MHz) or kilohertz (kHz).

■ FREQUENCY TOLERANCE/STABILITY

This „inclusive" specification is the amount of frequency deviation from the nominal frequency associated with a set of operating conditions. These conditions include: Operating Temperature Range, Supply Voltage, and Output Load. This parameter is specified with a maximum and minimum frequency deviation, expressed in percent (%) or parts per million (ppm).

■ LOGIC LEVELS

Defined as the Output Voltage Logic High or „Logic 1" and the Output Voltage Logic Low or „Logic 0" (Figure 1).

■ DUTY CYCLE

The measure of output waveform uniformity. This term, also referred to as symmetry, is a measurement of the time that the output waveform is in a logic high state, expressed as a percentage (%). This parameter is measured at a specified voltage threshold or at a percentage of the output waveform amplitude (Figure 1).

■ RISE/FALL TIME

The Rise Time, measured in nanoseconds (nSec), is defined as the transition time from an output logic low to an output logic high. Conversely, the Fall Time, also measured in nanoseconds (nSec), is defined as the transition time from an output logic high to an output logic low. This transition time is measured at specified voltage thresholds or at specified percentages of the output waveform amplitude (Figure 1).

■ START-UP TIME

The specified time from oscillator power-up to the time the oscillator reaches steady state oscillation.

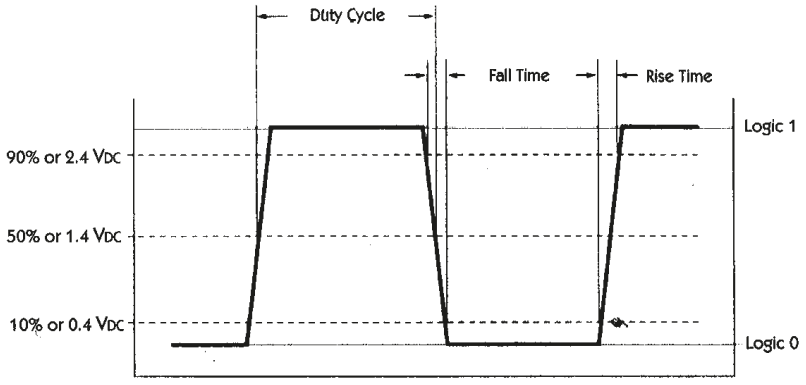

Figure 1

Oscillators... and more

digital electronic
siegfried lehrer gmbh
Rudolf-Wanzl-Str. 3+5
D-89340 Leipheim / Germany
www.digitallehrer.de
digital@digitallehrer.de

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■ LOAD DRIVE CAPABILITY

The maximum load the oscillator can drive specified in terms of the number of gates or the type of load circuit (Figures 2,3).

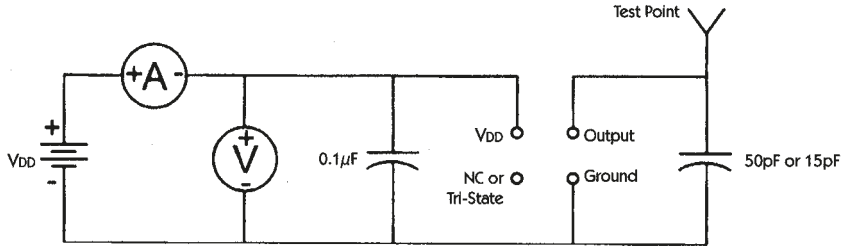

Figure 2 (HCMOS Test Circuit)

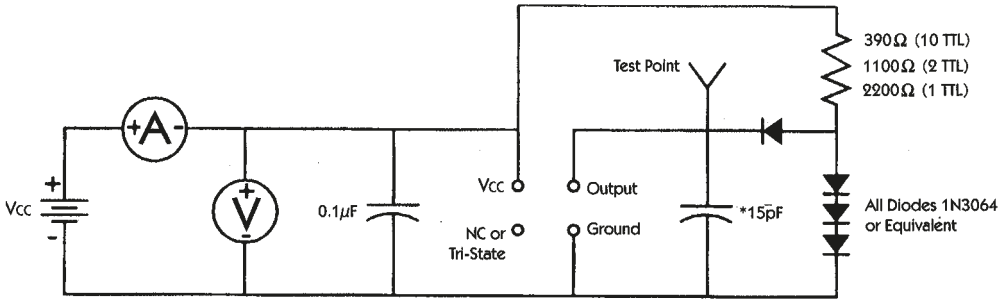

Figure 3 (TTL Test Circuit)

■ SUPPLY VOLTAGE

The DC input voltage necessary for oscillator operation, specified in volts (V).

■ INPUT CURRENT

The amount of current consumption by an oscillator from the power supply, specified in milliamps (mA).

■ TRI-STATE OUTPUT

An oscillator with this feature allows the output to be placed into a high impedance state. This feature is activated by the application of a logic control voltage to pin 1 of the oscillator.

■ METRIC TO INCH CONVERSION

1" = 25.4 mm; 1 mm = 0.039"

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