

## Introduction

The 8T49N282I evaluation board is designed to help the customer evaluate the IDT8T49N281, IDT8T49N282, and IDT8T49N283 devices, the latest additions to IDT's 3rd generation Universal Frequency Translator family. When the board is connected to a PC running IDT Timing Commander™ software through USB, the device can be configured and programmed to generate frequencies with best-in-class performances.

## Requirements

### 1. PC Requirements:

- IDT Timing Commander software installed.
- **USB 2.0 interface.** The evaluation board USB module is not compatible with USB 3.0. If using a computer with high speed USB ports, please check if there's a standard USB 2.0 port available for use. The hardware drivers are automatically installed during the Timing Commander installation.
- Windows XP SP3 or later.
- Processor: Minimum 1GHz.
- Memory: Minimum 512MB, recommended 1GB.
- Available Disk Space: Min 600MB (1.5GB 64bit), recommended 1GB (2GB 64bit)
- Network access during installation if the .NET framework is not currently installed on the system.

### 2. Power Supply with 3.3V and 1000mA rating

### 3. Three banana plug cables to connect the power supply to the board.

## Quick Start: Powering Up the Board

- (1) Set 3.3V supply current limit to 500mA.
- (2) Remove all output terminations.
- (3) Set Dip Switch selectors to the middle position.
- (4) Connect a cable from a PC to the USB port.
- (5) Connect VEE to the black GND jack.
- (6) Connect 3.3V to VCC\_J and VDDO\_J.
- (7) Power on the Power Supply.
- (8) Press the Reset Button.

Once correct operation is verified, set the power supply limit for the number of outputs to be active.



The USB port must be powered by the PC in order to have the correct I<sup>2</sup>C bus voltage levels.

## Default Power-Up Condition

The board ships with a 38.88MHz crystal and will have a default frequency of 155.52MHz on Q0. If all outputs are unterminated, current should measure ~256mA with 3.3V on VCC\_J and VDDO\_J. If all outputs are terminated, current should measure ~262mA.

When evaluating performance with the default hardware configuration, it is recommended that all active outputs be terminated 50ohms to VEE by either terminator plugs or an instrument.

## Inputs:

### Differential Inputs

Connect the input signal to CLKx and nCLKx. For CLK0, the CLK0\_S and nCLK0\_s sense lines are available for observation of the signal. They can be connected with 50ohm impedance cables to an oscilloscope with 50ohm termination, otherwise, they should be terminated with 50ohm plugs in order prevent reflections.

### Single-ended Input

Connect the input signal to CLKx and float nCLKx. For CLK0, connect CLK0\_S with a 50ohm impedance cable to an oscilloscope with 50ohm termination or terminate with a 50ohm plug.

### Input Signals Below 1MHz

For slow-frequency signals below 1MHz, we recommend that the coupling capacitors for the corresponding input be replaced with zero-ohm resistors and that the signal input dc-offset be set so that it meets the device's Vcmr requirements. Refer to the schematics for location of the ac-coupling capacitors.

## Outputs:

The outputs are ac-coupled, allowing for maximum flexibility for observation of the output whether configured for LVPECL, LVDS, or LVCMOS levels. The default termination scheme can be used to measure either of the three output level-types.

### Output Signals Below 1MHz

For slow-frequency output signals below 1MHz, we recommend that the 1 $\mu$ F ac-coupling capacitors be replaced with 0ohm resistors and that the correct terminations be provided at the receiver.

## IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES ("RENESAS") PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01)

### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

### Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit [www.renesas.com/contact-us/](http://www.renesas.com/contact-us/).

### Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.