

Description

This evaluation board is designed to help the customer evaluate the ProXO[®] XF Evaluation Board. The user guide details the board layout and settings while walking through the IDT Timing Commander[™] Software. When it is connected to the software via USB, the device can be configured and programmed to generate different combinations of frequencies.

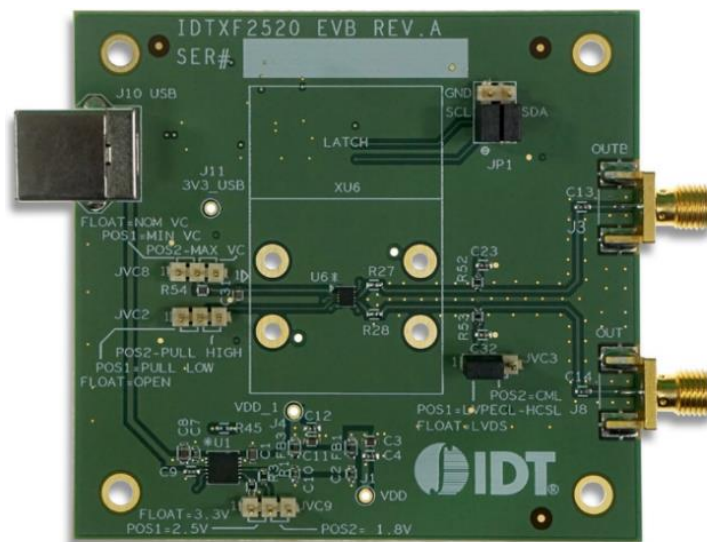
Kit Contents

- Evaluation board
- USB cable for connecting the board to a personal computer

Features

- The evaluation board has an XF series ProXO assembled that can be programmed to operate as any part number in the XF series
- The evaluation board connects to a personal computer through USB and is both programmed and powered from USB
- Use IDT's Timing Commander software to develop configurations and program the configurations to the ProXO
- The evaluation board has several jumpers for the following features:
 - Chose a power supply voltage between 3.3V, 2.5V, and 1.8V
 - Chose output termination configurations for LVDS, LVPECL, HCSL or CML logic
 - Control the Output Enable (OE) pin
 - Control the VC pin in case of VCXO operation and choose between Min=0V, Nom=50%VDD and Max=VDD
 - Use JP1 jumpers to connect the ProXO to the on-board USB-to-I2C bridge or connect the ProXO to an alternative external I2C host (e.g. Aardvark adapter)
- SMA edge connectors allow for direct connection of the AC coupled clock to test equipment like oscilloscopes or phase noise equipment
- Timing Commander software can be downloaded here: <https://www.idt.com/products/clocks-timing/timing-commander-software-download-resource-guide>
- The ProXO personality for Timing Commander can be downloaded on the product landing page

ProXO XF Family Evaluation Board



Important Notes

Disclaimer

Integrated Device Technology, Inc. and its affiliated companies (herein referred to as "IDT") shall not be liable for any damages arising out of defects resulting from

- (i) delivered hardware or software
- (ii) non-observance of instructions contained in this manual and in any other documentation provided to user, or
- (iii) misuse, abuse, use under abnormal conditions, or alteration by anyone other than IDT.

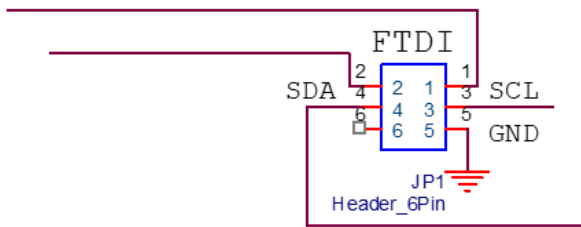
TO THE EXTENT PERMITTED BY LAW, IDT HEREBY EXPRESSLY DISCLAIMS AND USER EXPRESSLY WAIVES ANY AND ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, STATUTORY WARRANTY OF NON-INFRINGEMENT, AND ANY OTHER WARRANTY THAT MAY ARISE BY REASON OF USAGE OF TRADE, CUSTOM, OR COURSE OF DEALING.

1. Interfacing

Table 1. Evaluation Kit Connection Descriptions

Number	Name	On-Board Connector Label	Function
0	USB connector	J10	Connect USB to a Personal Computer to control the ProXO device with IDT Timing Commander. The USB port will also supply power to the board.
1	Differential output	J3, J8	Available logic types: LVDS, LVPECL, HCSSL, and CML.
2	Power supply voltage selector	JVC9	Place Jumper to the right for 1.8V Place Jumper to the left for 2.5V No Jumper (floating) for 3.3V
3	Output termination selector	JVC3	Place Jumper to the right for CML Place Jumper to the left for LVPECL and HCSSL No Jumper (floating) for LVDS
4	Vcontrol selector	JVC8	Intended for use with the VCXO function.
5	Output Enable selector	JVC2	Place jumper to pull low or high. No Jumper (floating) will always enable the output.

Figure 1. Interfacing with a Computer to Run Timing Commander

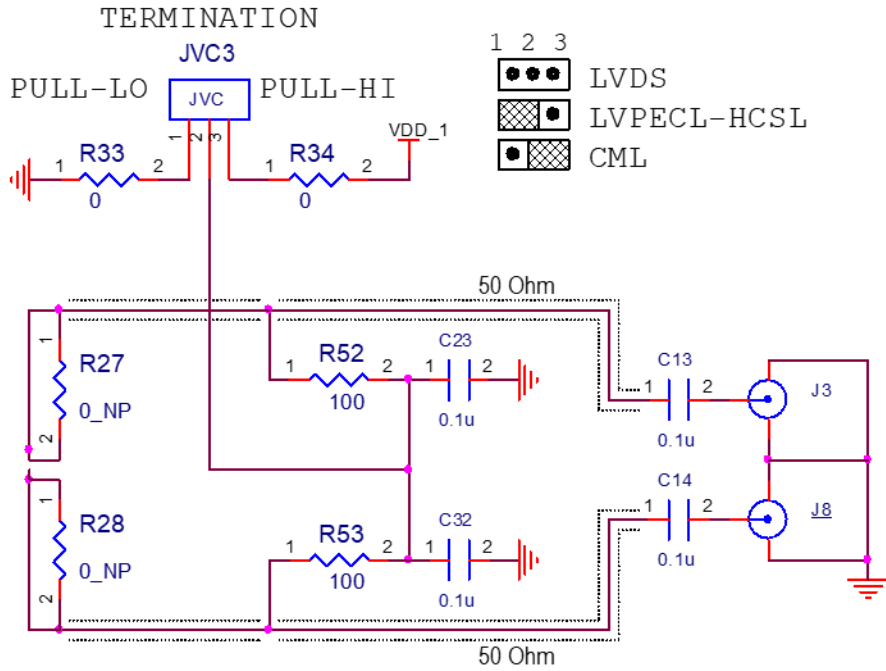


JP1 controls the routing of I2C signals. Pins 1 and 2 connect to the on-board FTDI USB to I2C bridge and pins 3 and 4 connect to I2C pins of the ProXO device.

Place jumpers on 1-3 and 2-4 to allow the FTDI chip to control the ProXO device.

Remove jumpers and connect to pins 3-4-5 to control the ProXO device from an external I2C controller. An Aardvark adapter will connect directly onto pins 3-4-5.

Figure 2. Output Terminations



The differential output has a pair of SMA connectors to connect to 50Ω coax. It is recommended to combine the two signals, using a balun or splitter/combiner device when measuring jitter or phase noise. The circuit at the SMA connectors is shown in Figure 2.

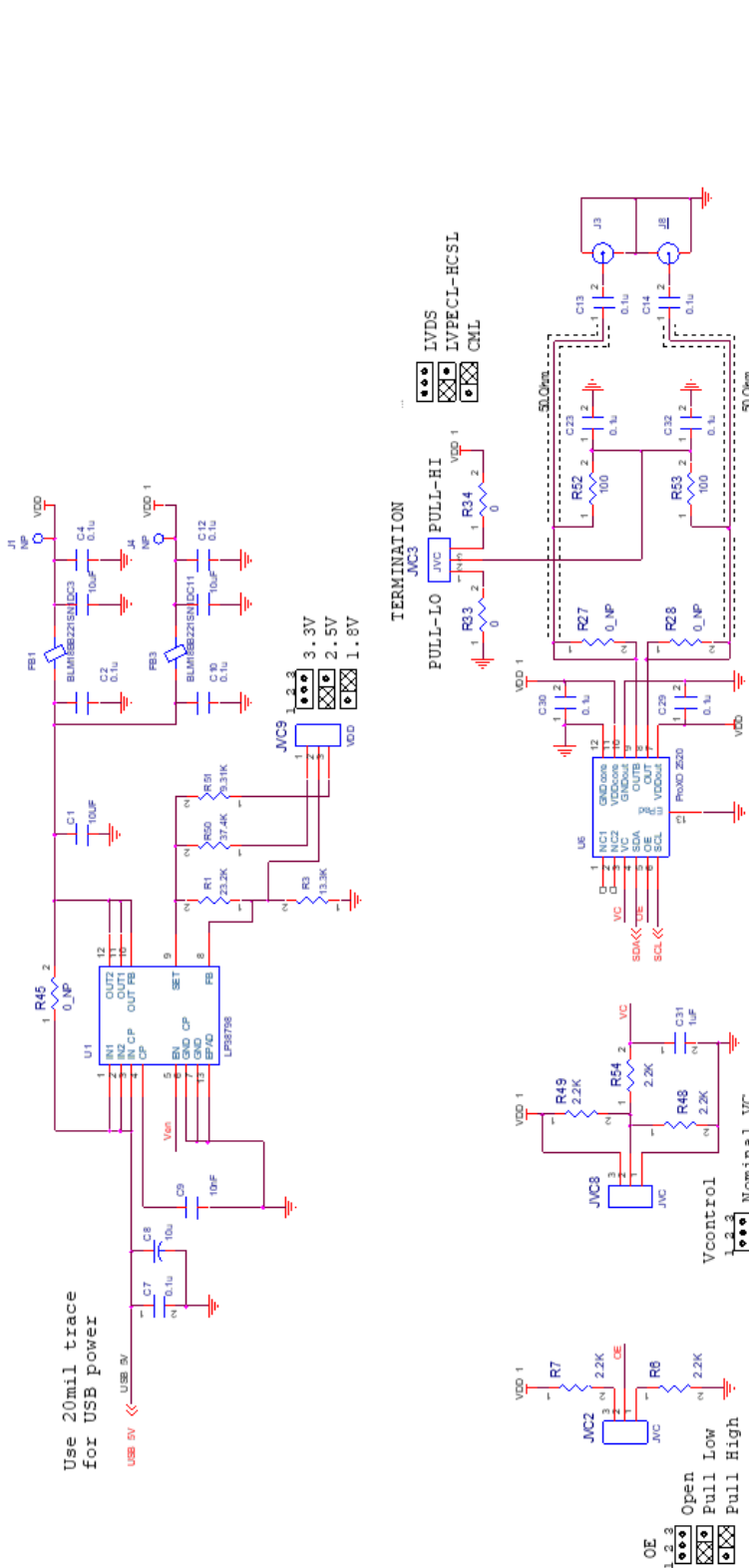
2. Usage Guide

2.1 Operating Instructions

1. Set all jumpers for power supply choices.
2. Connect the USB.
3. Start Timing Commander.
 - Start new configuration or load TCS file for existing configuration.
 - Chose ProXO Personality.
 - In case of a new configuration, prepare all settings.
 - Click the button with the IC symbol to connect to the ProXO device.
 - Click the button with the arrow pointing at the IC symbol to write all settings to the ProXO device.
 - It should now be possible to measure clocks on outputs.
 - While connected, each change to settings will be written to the ProXO immediately and can be observed at the clock outputs.

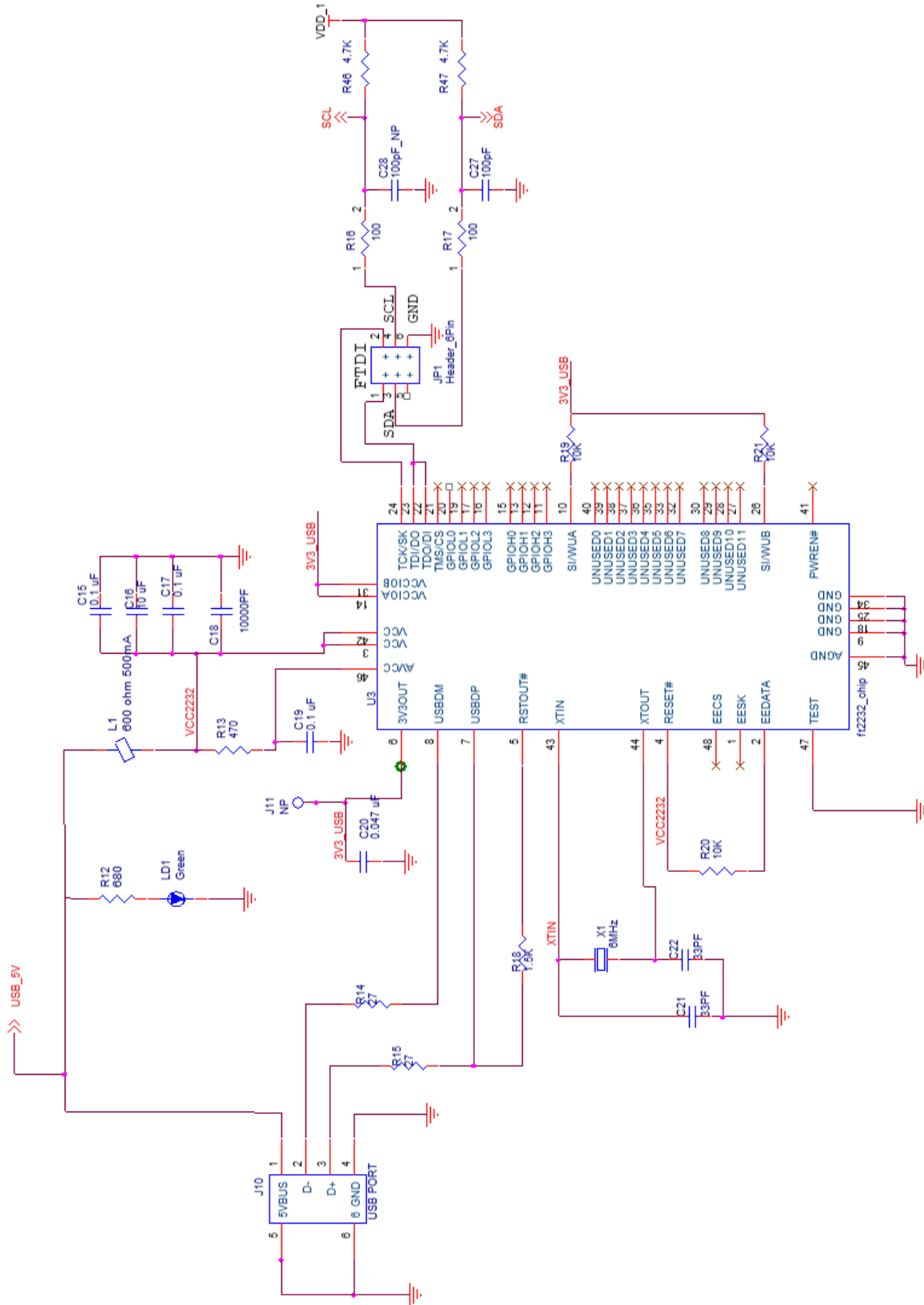
3. Schematics

Figure 3. Evaluation Board Schematic 1



* Place R27 and R28 close to the OUT pins underneath the socket.
 * Short out the R27 and R28 footprints.
 * Place R52 and R53 close to the 50 ohm trace, just outside the socket.
 * Place C23 as close as possible to R52.
 * Place C32 as close as possible to R53.
 * Place C13 and C14 close to the SMA connectors J3 and J5.

Figure 4. Evaluation Board Schematic 2



4. Glossary

Table 2. Glossary

Term	Definition
Bit Set	A single variable stored within the registers of the device. A bit set can use only part of a register or many span multiple registers but is thought of as a single field. For example, a 20-bit output divider ratio can be defined as a single bit set of length 20-bits, but can be stored in Register 0x4A, bits [3:0], Register 0x4B, bits [7:0] and Register 0x4c, bits [7:0].
Default Value	When referring to any field that the user can edit, Default Value means the value recommended by the personality for that field, considering the settings in other fields in the device. Changes of other fields can result in a change to the Default Value. Whenever a field is unlocked, Default Value = Value. Only by locking a field can a user set a field to a Value other than the Default Value or prevent a field's Value from changing if Default Value changes.
Display Value	A field can be controlled by a personality to display its Value or Default Value in a more meaningful way. For example, if the Value is defined in MHz, but the actual value is 0.008MHz, the personality can choose to display this to the user as 8KHz. In another example, if a bit set represents a divider ratio that can only be an even number and so does not implement the Least Significant bit, the personality can choose to show a divider ratio of 2 when the bit set value is 1 (i.e., 1 increment of divide-by-2).
IDT Timing Commander Software	Executable file that will execute a personality, connect to a timing chip on an evaluation board, and read or write Settings files.
Metadata	Variable used within the personality, but not stored directly in device registers. For example, an output frequency is generally not stored anywhere in a device's registers but must be known to calculate register settings for the device with which we achieve those frequencies.
Personality	Encrypted file with an extension .tcp. Used by IDT Timing Commander Software to determine the characteristics for a specific family of timing devices. A personality file can refer to a single device or an entire family of similar devices. Please contact IDT to obtain the most current version of a personality file for the devices of interest.
Settings File	Text file with extension .tcs. Written or read by IDT Timing Commander Software to save or restore a setup for a specific version of a device personality and version of IDT Timing Commander Software. Settings files created with newer versions of IDT Timing Commander Software or a device personality can not be compatible when read into older version of IDT Timing Commander Software, or, if an older version of the personality is installed. Forward compatibility (older settings files read by newer software and/or personality) will be maintained.
Tooltip	Context-sensitive pop-up that appears briefly as the mouse pointer hovers over an icon or element on the screen. These are intended to provide useful information about the specific item being pointed to.
Value	When referring to any field that the user can edit, Value means the current internally-represented value of that field.

5. Ordering Information

Orderable Part Number	Description
EVK-ProXO XF	Evaluation Board for ProXO XF series.

6. Revision History

Revision Date	Description of Change
March 12, 2019	Initial release.

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 skilled in the art 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 for development of 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 out of 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.1.0 Mar 2020)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
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/

Trademarks

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