



Libero® SoC v2021.1

Netlist Viewer User Guide

Introduction

As FPGA designs grow in size and complexity, it has become essential for FPGA designers to traverse the netlist to analyze their designs. The Microchip Netlist Viewer is a graphical representation of the design netlist that displays different views for the different stages of the design process.

Table of Contents

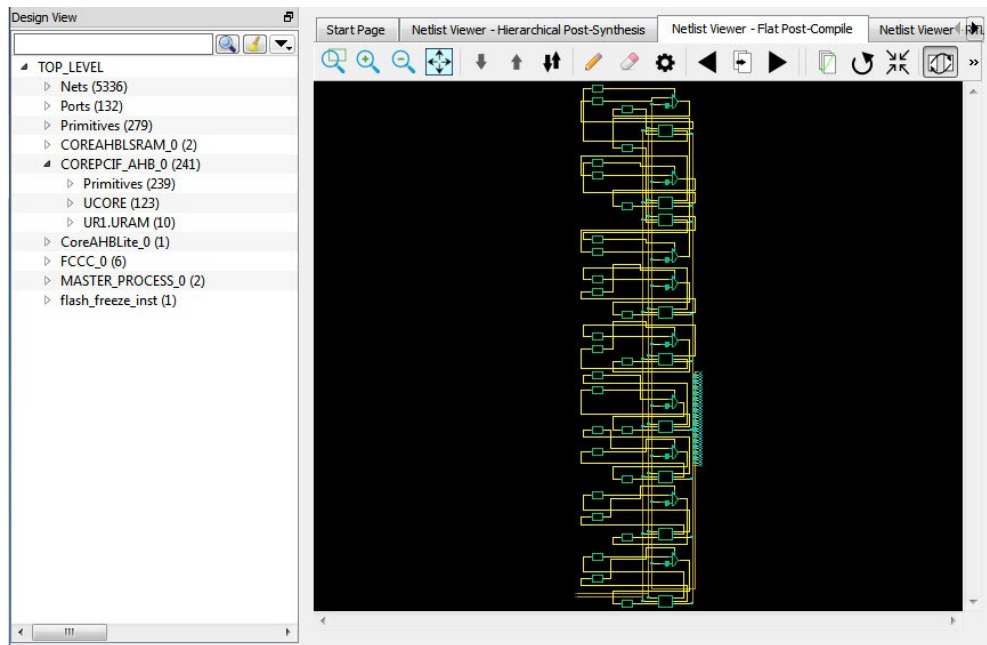
Introduction.....	1
1. Supported Families and Platforms.....	3
2. Views.....	4
3. Invocation.....	6
4. Netlist Viewer Windows.....	7
4.1. Opening a View.....	7
4.2. Closing a View.....	10
4.3. Netlist Viewer Windows.....	11
4.4. Design Tree Window.....	11
4.5. Canvas Window.....	13
4.6. Log Window.....	14
5. Revision History.....	16
6. Microchip FPGA Technical Support.....	17
6.1. Customer Service.....	17
6.2. Customer Technical Support.....	17
6.3. Website.....	17
6.4. Outside the U.S.....	17
The Microchip Website.....	18
Product Change Notification Service.....	18
Customer Support.....	18
Microchip Devices Code Protection Feature.....	18
Legal Notice.....	19
Trademarks.....	19
Quality Management System.....	20
Worldwide Sales and Service.....	21

1. Supported Families and Platforms

The Netlist Viewer supports SmartFusion®2, IGLOO®2, RTG4™, PolarFire®, and PolarFire® SoC devices and runs on Windows and Linux systems.

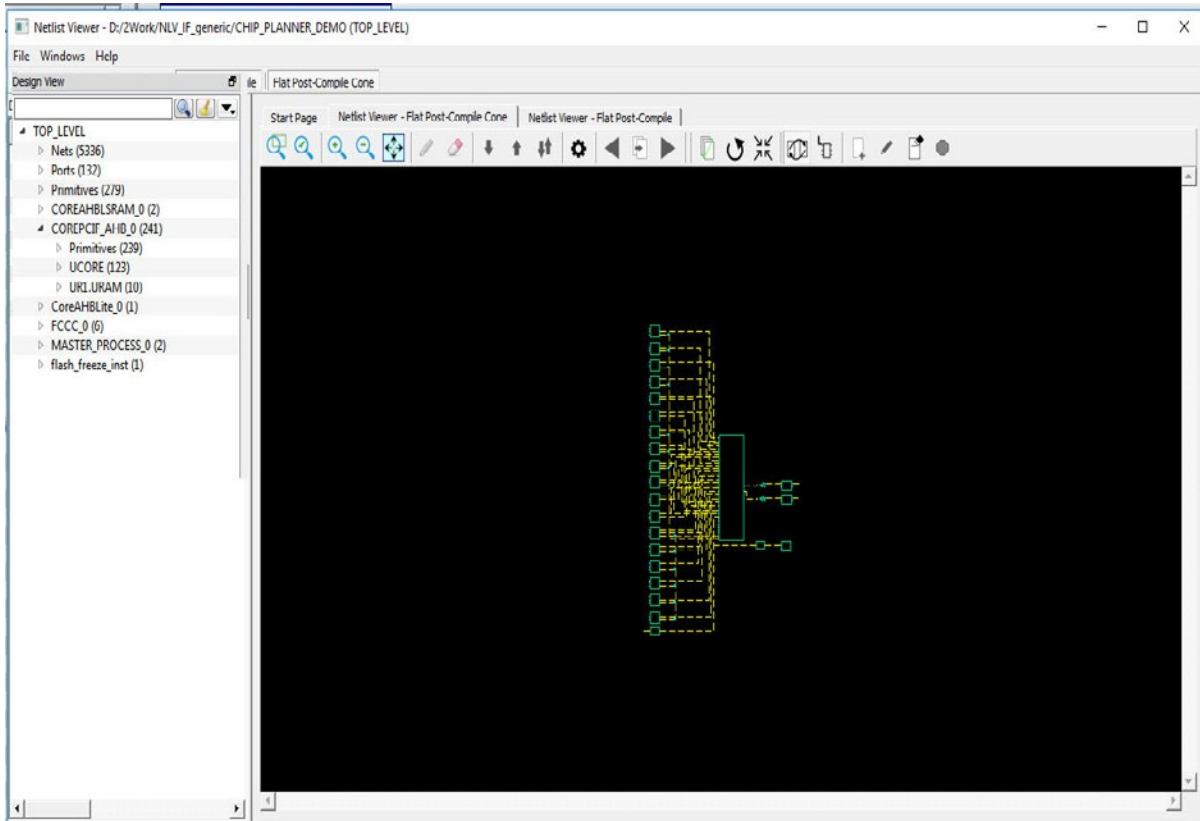
Note: Depending on the device selected, some user interface elements such as icons, options, tabs, and dialog boxes may vary slightly in appearance and/or content. Basic Netlist Viewer functionality remains the same, regardless of the device chosen. In this user guide, a PolarFire device is used in the example figures.

Figure 2-3. Netlist Viewer — Flat Post-Compile View



Note: A progress bar indicates that the flattened netlist is being loaded. For a large netlist, the loading may incur some runtime penalty. A **Cancel** button is available to cancel the loading.

Figure 2-4. Netlist Viewer — Flat Post-Compile Cone View

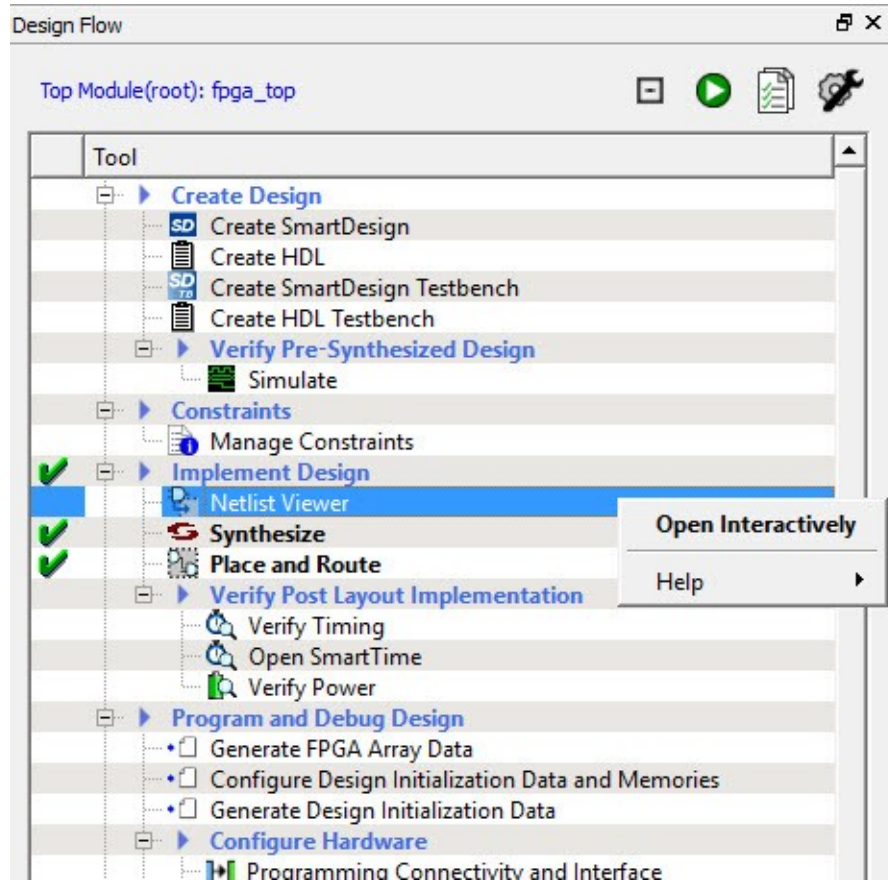


3. Invocation

The standalone Netlist Viewer is available for invocation in the Design Flow window. To open the standalone Netlist Viewer in the Flow window, perform one of the following steps:

- Double-click **Netlist Viewer** in the Design Flow window.
- Right-click **Netlist Viewer** and select **Open Interactively**.

Figure 3-1. Netlist Viewer Invocation — Design Flow Window



When Netlist Viewer opens, it makes available for loading and viewing the following views of the netlist:

- RTL — available after design capture/design generation
- Hierarchical Post-Synthesis — available after Synthesis
- Flat Post-Compile — available after Synthesis or Place and Route. If after Place and Route, the Netlist Viewer loads the Flat Post-Compile view to reflect the netlist generated after Place and Route.
- Flat Post-Compile Cone — available after Synthesis or Place and Route. If after Place and Route, the Netlist Viewer loads the Flat Post-Compile view to reflect the netlist generated after Place and Route. This view does not display any netlist on the canvas until an instance from the design tree is selected and loaded. This view allows you to load in a special area of the design in which you are interested. It also cuts down the runtime.

4. Netlist Viewer Windows

When the standalone Netlist Viewer opens, no netlist views are loaded. The Start Page shows the netlist views that can be opened for viewing.

The Netlist Viewer User Guide is available from the Design Flow window (**Netlist Viewer > Help > Netlist Viewer User Guide**) and also from the Help menu (**Help > Reference Manuals**).

4.1 Opening a View

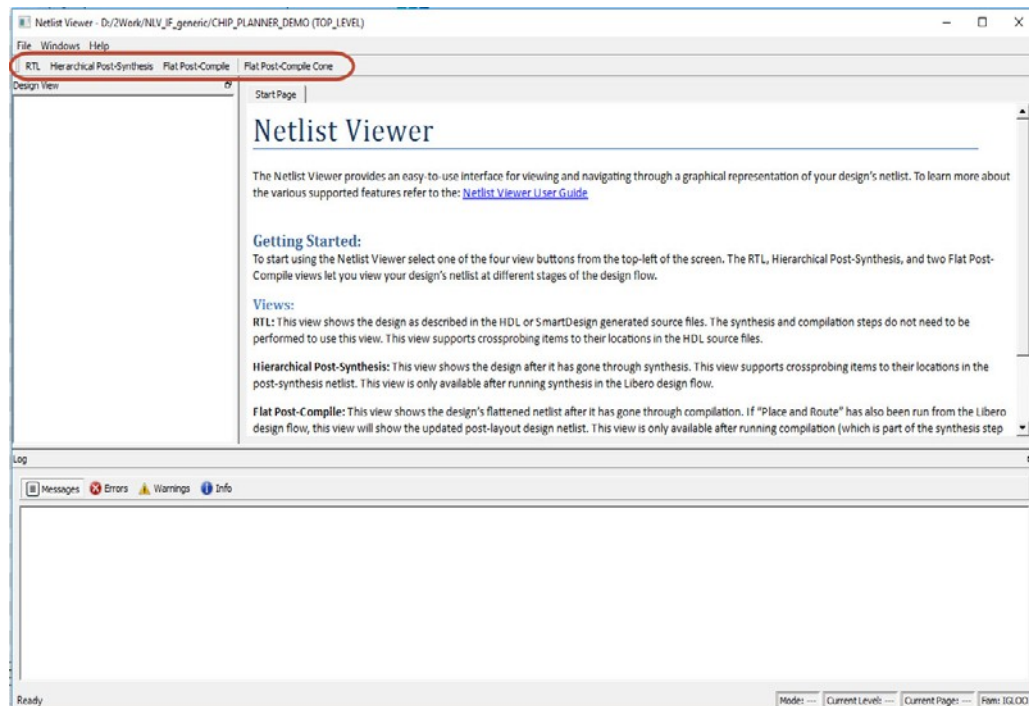
Click any of the following views at the top-left corner to load the netlist into the Netlist Viewer for viewing:

- RTL view — pre-synthesis RTL netlist is drawn in the view.
- Hierarchical Post-Synthesis view — post-synthesis netlist is drawn in the view.

Note: The Hierarchical Post-Synthesis view is not available if synthesis is disabled in the design flow (**Project > Project Settings > Design Flow > Enable Synthesis** is unchecked).

- Flat Post-Compile view — flattened post-compile netlist is drawn in the view.
- Flat Post-Compile Cone view — no netlist is drawn until design objects are added to the view.

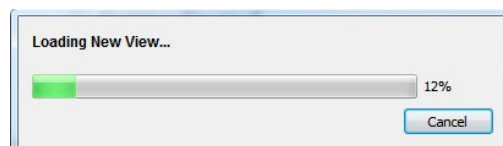
Figure 4-1. Netlist Viewer on Start Up



Note: When netlist views are opened for the first time in the Netlist Viewer, they load into system memory, where they remain until the Netlist Viewer exits. For very large designs, loading the netlist for the first time may take some time. A pop-up window reports the status of the loading process.

Note: The Flat Post-Compile Cone view takes very little runtime because no netlist is drawn when this view is first loaded. This view does not display a netlist until instances from the design tree are selected and loaded.

Figure 4-2. Loading New View Pop-up Window

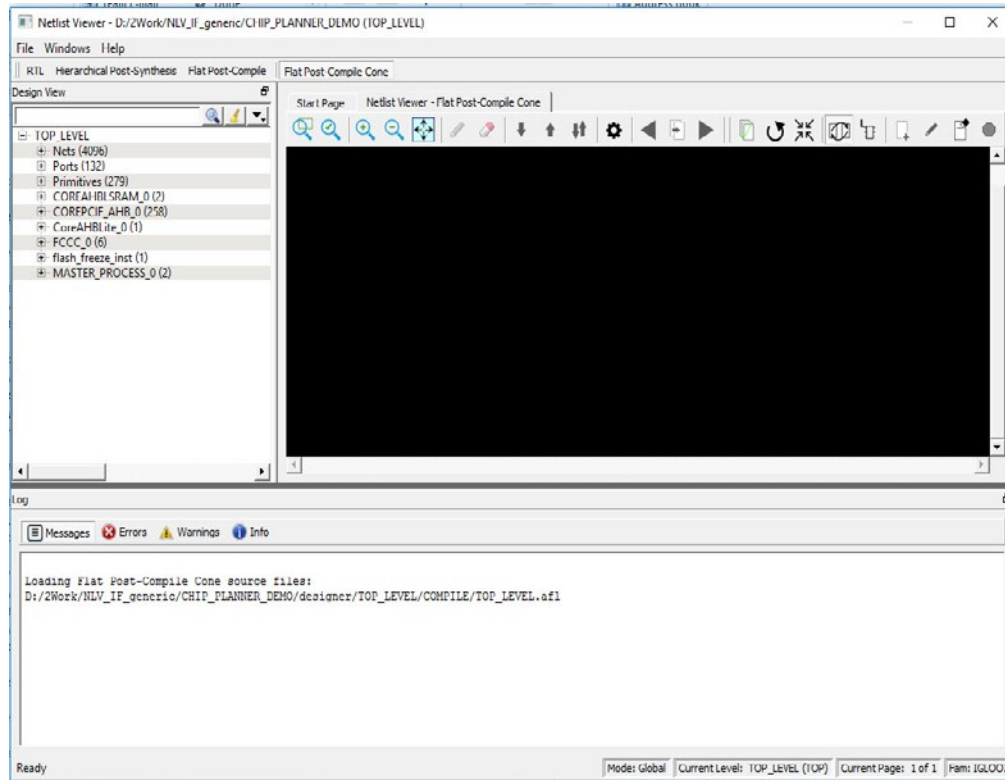


After the netlist views open for the first time, they load into system memory, making them available almost immediately in the Netlist Viewer.

4.1.1 Displaying the Flat Post-Compile Cone View

When the Flat Post-Compile Cone view has finished loading, unlike the other three views, nothing is drawn in the canvas.

Figure 4-3. Flat Post-Compile Cone View when Loaded— No Design Object Added



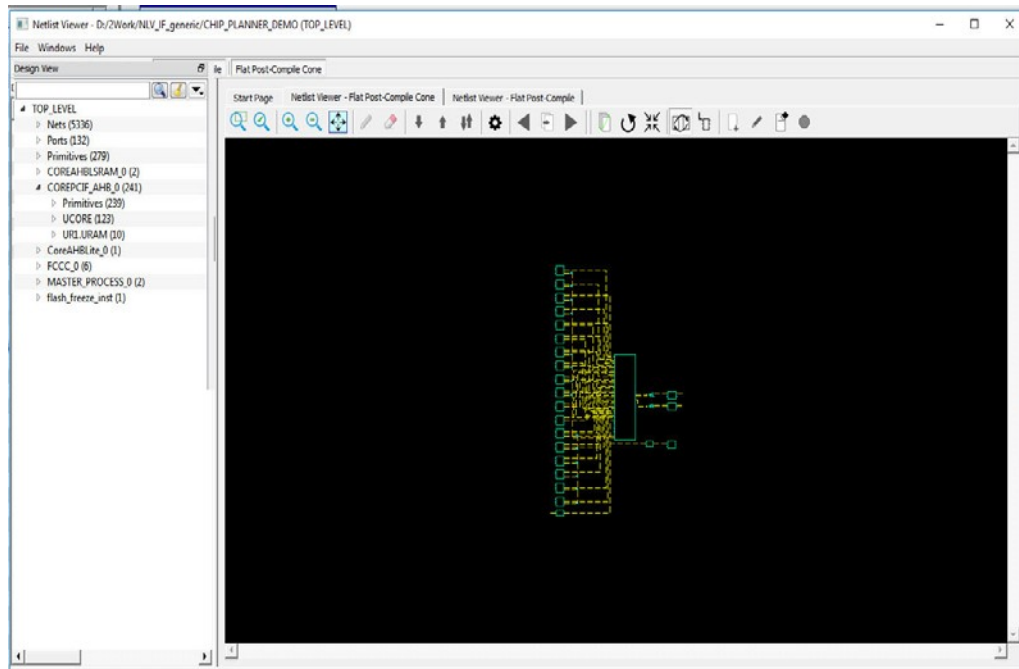
Opening a design in the Flat Post-Compile view may incur a runtime penalty. This cone view loads the same AFL netlist source file as the Flat Post-Compile view. However, this cone view, unlike the Flat Post-Compile view, draws nothing until you select a part of the design you want to display. This reduces the runtime penalty associated with drawing a large netlist for display.

This view is useful when a small or critical part of a very large design needs to be examined. Design objects that can be selected for display in this view include:

- Nets
- Ports
- Macros
- Components

To display design objects in the Flat Post-Compiled Cone view, right-click the design object (**Nets, Macro, Ports, or Component**) in the Design Tree and select **Load Selection**. The design object is added to the view.

Figure 4-4. Flat Post-Compile Cone View— Design Objects Added

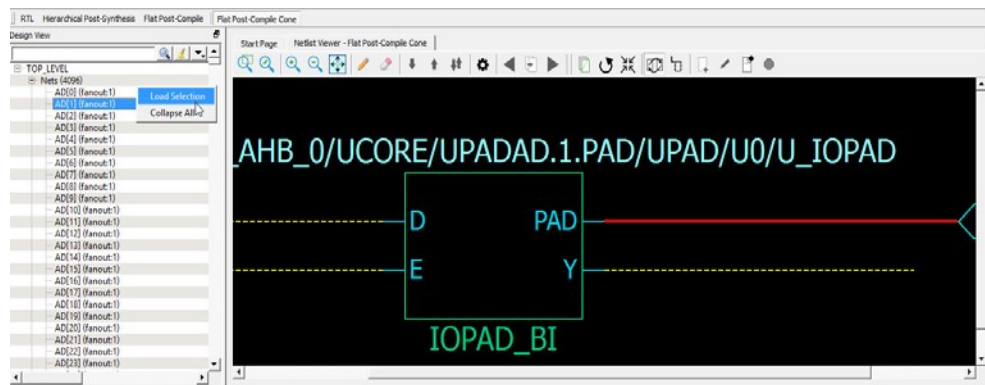


4.1.1.1 Adding a Net

Right-click a net in the Design Tree and select **Load Selection** to add a net to the view. Adding a net to the view adds a solid line net to the view (unless you cancel early), including all the instances and ports the net is connected to. The added net is selected in the view.

Nets that span multiple pages can be followed through the right-click menu item **Follow Net to Page#** to go to different pages that the net is on.

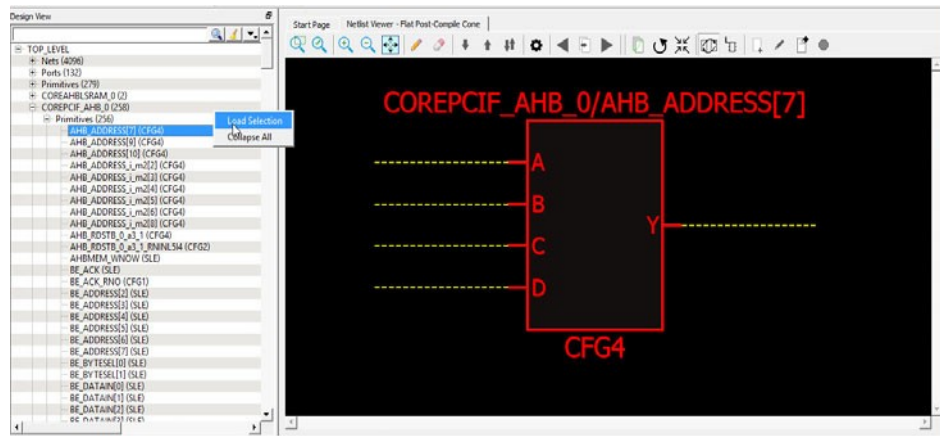
Figure 4-5. Net Added to View — Solid Line



4.1.1.2 Adding a Macro

A macro is a basic low-level design object from the Macro Library in the Catalog. Right-click a macro in the Design Tree and select **Load Selection** to add a macro. Adding a macro adds the instance with its connected nets to the view. The connected nets are always dashed yellow lines, even if they are not connected to any logic outside the view. Double-clicking the net adds connections (if any) and turns the net from a dashed line to a solid line. A solid line for a net indicates that it is a user-added net.

Figure 4-6. CFG4 Macro Added



4.1.1.3 Adding a Port

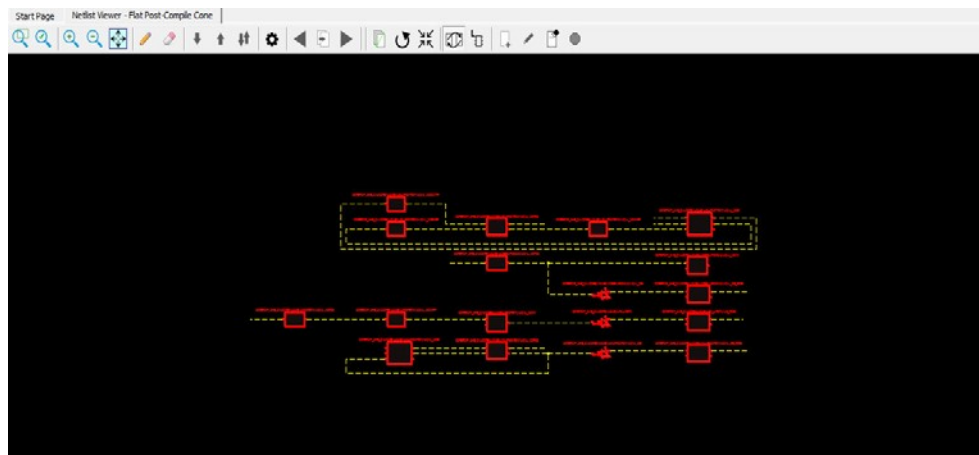
To add a port to the view, right-click a port in the Design Tree and select **Load Selection**. Adding a port to the view is the same as adding a net connected to the port.

4.1.1.4 Adding a Component

Right-click a component in the Design Tree and select **Load Selection** to add a component to the view. Adding a component to the view is the same as selecting all lower level macros and adding them to the view. The added macros are selected.

Note: To save runtime for very large components with many low level macros, the macros are added, but cannot be selected.

Figure 4-7. Component Added



4.1.1.5 Load/Driver Display

Design objects can also be added to the view through the right-click menu to add load/driver. This action adds any instances at the different logical levels.

4.2 Closing a View

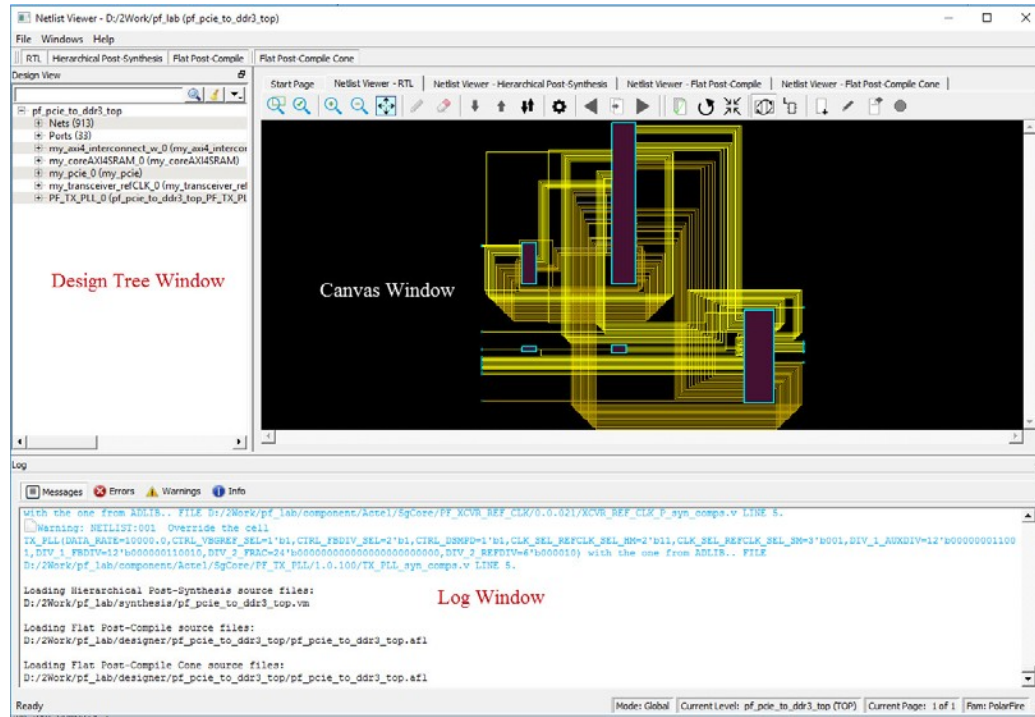
To close the opened view, click an opened view at the top of the Netlist Viewer. A closed view stays in system memory as long as the Netlist Viewer remains open. Opening the same netlist view at a later time does not incur runtime penalty, as no loading is required.

4.3 Netlist Viewer Windows

When the Netlist Viewer opens, it displays three windows by default.

- Design Tree window displays the design hierarchy from the top level.
- Canvas window displays the netlist views.
- Log window displays messages, warnings, info, and so on.

Figure 4-8. Netlist Viewer Windows



4.4 Design Tree Window

The Design Tree window displays the design hierarchy from the top level. By default, when the Netlist Viewer opens, it displays the Design Tree window.

Note: The Design Tree window is displayed by default when the Netlist Viewer opens. Hiding the Design Tree view will leave more display area for the Canvas view. To get a bigger display area for the canvas view, hide the Design Tree window (**Netlist Viewer > Windows** and uncheck **Show Tree**)

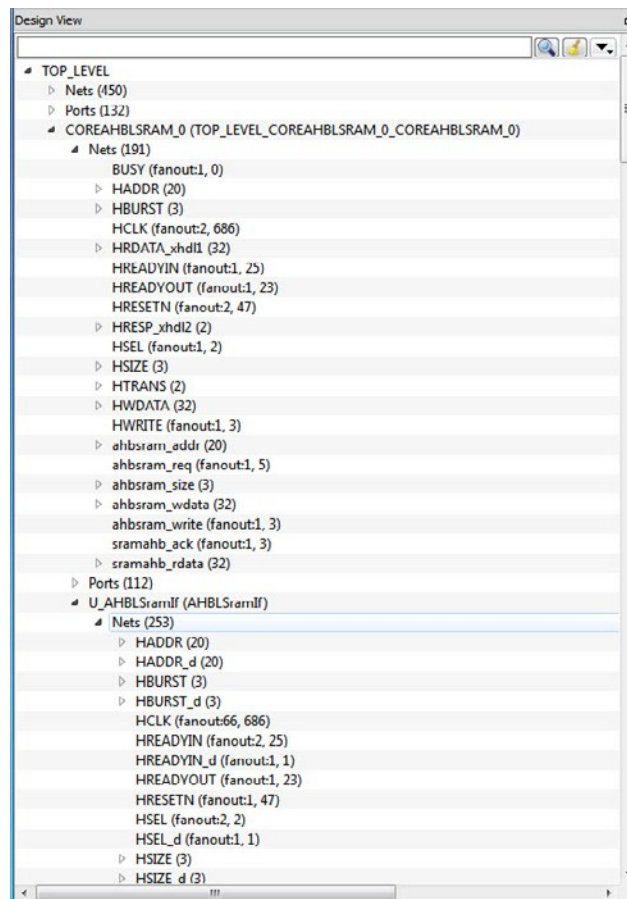
The Design Tree window displays:

- Nets (<integer>) — number in brackets is the total number of nets at the top level.
- Ports (<integer>) — number in brackets is the total number of ports at the top level.
- Design components under the top level — each component can be collapsed or expanded to expose.
 - Nets — total number of nets at the component level.
 - Ports — total number of ports at the component level.
 - Subcomponents inside the component.
- Fanout Values (Nets) — when two numbers are displayed in the bracket, the first number is the fanout of the net at the local level (of hierarchy) and the second number is the fanout of the net at the global level. As an example, net_xyz (fanout: 1,3) means the net goes down the levels of hierarchy to three different pins (global fanout 3) and is not connected to any other pins at the current level (local fanout 1).
- Primitives — primitives refer to macros and low-level design objects and can appear in the top level or component level.

The design tree is different with different netlist views. For the Flat Post-Compile view, the design tree displays a much larger number of nets than the RTL view or Hierarchical Post-Synthesis view, because the netlist is flattened in the Post-Compile view and all nets are counted. The nets in the Flat Post-Compile view, unlike the RTL view or the Hierarchical Post-Synthesis view, shows only one value for fanout (global fanout) because it is a flattened view (no hierarchy).

For nets that are part of a NetBundle, the NetBundle name is followed by a number in parentheses that indicates the total number of nets in the NetBundle.

Figure 4-9. Design Tree Window

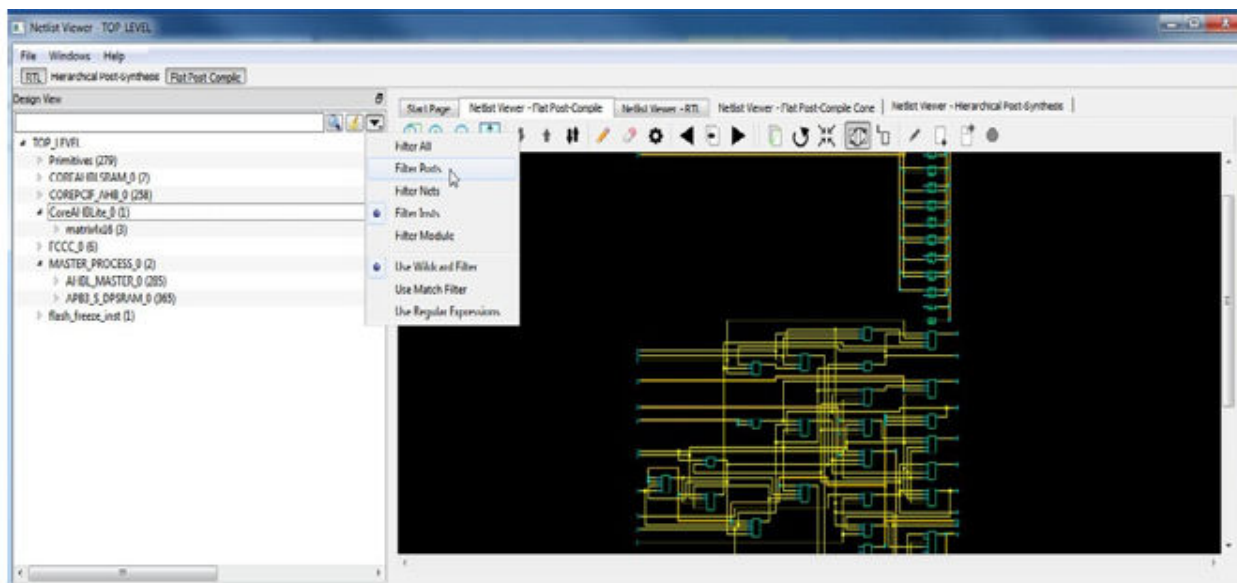


4.4.1 Filter

The display of design objects in this view can be filtered based on:

- Ports — displays all ports only, including component level ports.
- Nets — displays all nets only, including component level nets.
- Instances — displays all instances only, including component level instances.
- Modules — displays all modules only.
- Filter All — displays all design objects only.
- Use Wildcard Filter
- Use Match Filter
- Use Regular Expressions

Click the **Filter** button at the top-right corner of the Design view to filter design objects.



4.4.2 Interoperability Between Windows and Views

When a design object such as a net, an instance or a port is selected in the Design Tree window, the object is selected in the different netlist views. The reverse is also true. An object selected in one netlist view window is also selected in the Design Tree window and other netlist views.

Interoperability works only when the Toggle Cross-probing icon is enabled.

4.5 Canvas Window

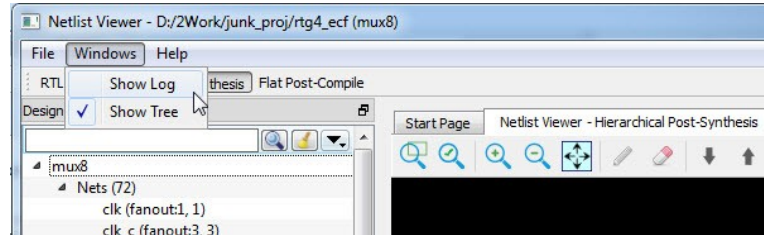
The Canvas Window displays the:

- RTL view
- Hierarchical Post-Synthesis view
- Flat Post-Compile view
- Flat Post-Compile Cone view
- Cones view
- Opened HDL files (not available in the Flat Post-Compile view)
- Start Page — when no netlist views are opened

When a view is opened, a view tab is added across the top of the Canvas window for ease of switching between views.

Note: To get a larger display area for the Canvas view, hide the Design Tree Window (**Netlist Viewer > Windows > Uncheck Show Tree**) and hide the Log window (**Netlist Viewer > Windows > Uncheck Show Log**). Hiding the Log window and the Design Tree window leaves more display area for the Canvas window. Alternatively, press **CTRL+W** to maximize the work area.

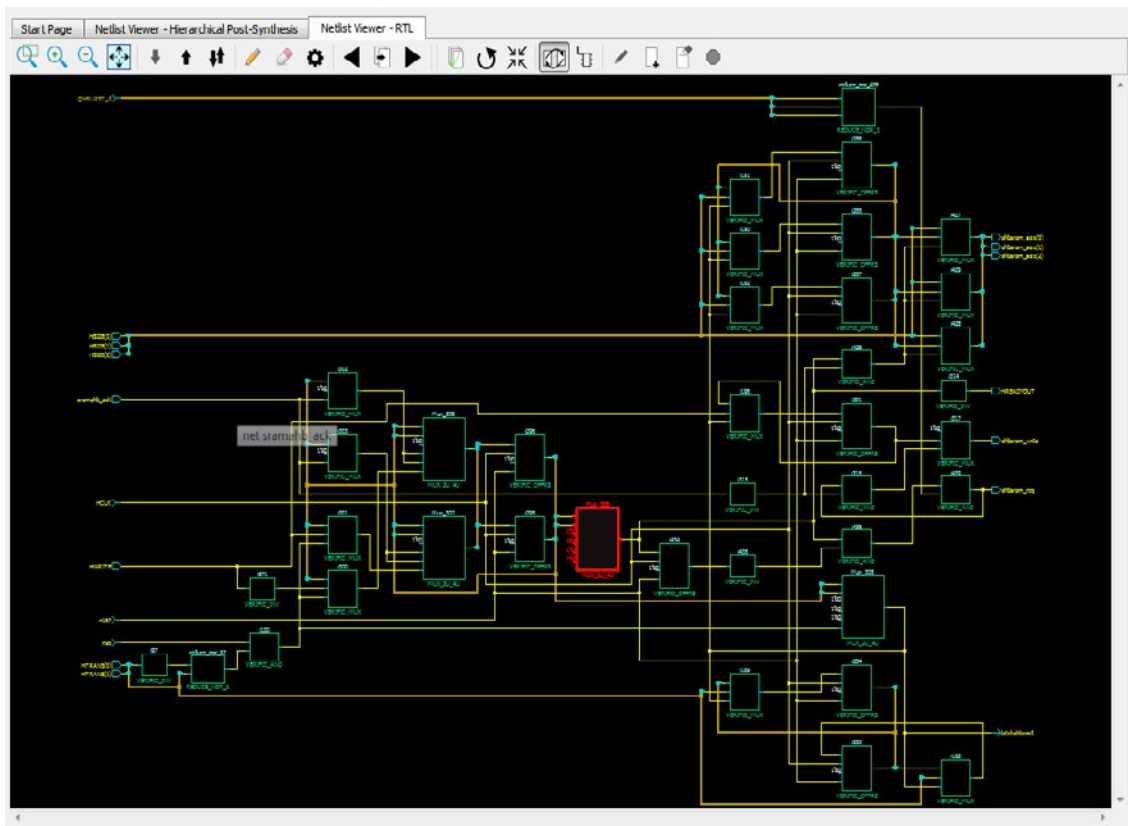
Figure 4-10. Turn on/off Design Tree Window and Log Window



Icons in the Canvas window allow you to:

- Traverse vertically up (Pop) or down (Push) the design hierarchy
- Navigate horizontally across different pages of the design view
- Zoom in/out of the design view
- Trace critical nets to the driver/load
- Create logical cones for debugging
- Control the color display the design objects

Figure 4-11. Canvas Window



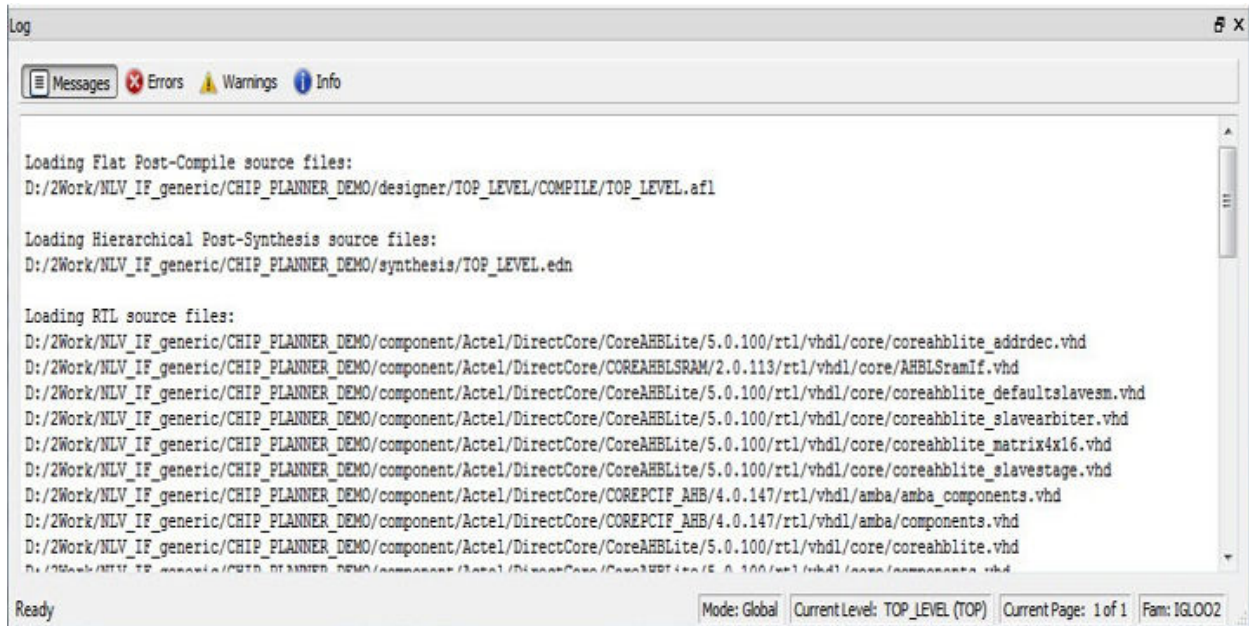
4.6 Log Window

The Log window displays the following:

- Informational messages such as the location and name of the files used to display the view.
- Any syntax errors in the HDL file if the HDL file is opened with the **Open File Location** option (right-click design object > **Open File Location**).

Note: The Log window displays by default when the Netlist Viewer opens. Hiding the Log window will leave more display area for the Canvas view. To get a larger display area for the Canvas view, hide the Log window (**Netlist Viewer > Windows** and uncheck **Show Log**)

Figure 4-12. Log Window

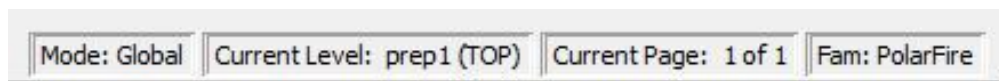


4.6.1 Status Bar

The status bar at the bottom-right corner of the Netlist Viewer displays the following:

- **Mode** — displays Global or Local mode. Global mode means the Netlist Viewer can cross hierarchical boundaries when following nets to drivers or loads. Local means the Netlist Viewer stays in the current level of design hierarchy.
- **Current Level** — displays the current level of design hierarchy, either TOP_LEVEL instance name or instance name of the component.
- **Current Page** — displays the current page of the Netlist Viewer (Page x of <total>) when traversing across different pages of the Netlist Viewer.
- **Fam** — displays the technology family.

Figure 4-13. Status Bar



5. Revision History

Revision	Date	Description
B	04/2021	Editorial updates only. No technical content updates.
A	11/2020	Document converted to Microchip template.
4.0	12/2018	Document template updates and minor text edits
3.0	10/2017	Added Flat Post-Compile Cone View
2.0	05/2017	Minor updates
1.0	12/2016	Initial Revision

6. Microchip FPGA Technical Support

Microchip FPGA Products Group backs its products with various support services, including Customer Service, Customer Technical Support Center, a website, and worldwide sales offices. This section provides information about contacting Microchip FPGA Products Group and using these support services.

6.1 Customer Service

Contact Customer Service for non-technical product support, such as product pricing, product upgrades, update information, order status, and authorization.

- From North America, call **800.262.1060**
- From the rest of the world, call **650.318.4460**
- Fax, from anywhere in the world, **650.318.8044**

6.2 Customer Technical Support

Microchip FPGA Products Group staffs its Customer Technical Support Center with highly skilled engineers who can help answer your hardware, software, and design questions about Microchip FPGA Products. The Customer Technical Support Center spends a great deal of time creating application notes, answers to common design cycle questions, documentation of known issues, and various FAQs. So, before you contact us, please visit our online resources. It is very likely we have already answered your questions.

You can communicate your technical questions through our Web portal and receive answers back by email, fax, or phone. Also, if you have design problems, you can upload your design files to receive assistance. We constantly monitor the cases created from the web portal throughout the day. When sending your request to us, please be sure to include your full name, company name, and your contact information for efficient processing of your request.

Technical support can be reached at soc.microsemi.com/Portal/Default.aspx.

For technical support on RH and RT FPGAs that are regulated by International Traffic in Arms Regulations (ITAR), log in at soc.microsemi.com/Portal/Default.aspx, go to the **My Cases** tab, and select **Yes** in the ITAR drop-down list when creating a new case. For a complete list of ITAR-regulated Microchip FPGAs, visit the ITAR web page.

You can track technical cases online by going to [My Cases](#).

6.3 Website

You can browse a variety of technical and non-technical information on the Microchip FPGA Products Group [home page](#), at www.microsemi.com/soc.

6.4 Outside the U.S.

Customers needing assistance outside the US time zones can either contact technical support at (<https://soc.microsemi.com/Portal/Default.aspx>) or contact a local sales office.

Visit [About Us](#) for [sales office listings](#) and [corporate contacts](#).

The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip design partner program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

Product Change Notification Service

Microchip's product change notification service helps keep customers current on Microchip products. Subscribers will receive email notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, go to www.microchip.com/pcn and follow the registration instructions.

Customer Support

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

Customers should contact their distributor, representative or ESE for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in this document.

Technical support is available through the website at: www.microchip.com/support

Microchip Devices Code Protection Feature

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods being used in attempts to breach the code protection features of the Microchip devices. We believe that these methods require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Attempts to breach these code protection features, most likely, cannot be accomplished without violating Microchip's intellectual property rights.
- Microchip is willing to work with any customer who is concerned about the integrity of its code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is "unbreakable." Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Legal Notice

Information contained in this publication is provided for the sole purpose of designing with and using Microchip products. Information regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications.

THIS INFORMATION IS PROVIDED BY MICROCHIP "AS IS". MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL LOSS, DAMAGE, COST OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP'S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AnyRate, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, chipKIT, chipKIT logo, CryptoMemory, CryptoRF, dsPIC, FlashFlex, flexPWR, HELDO, IGLOO, JukeBlox, KeeLoq, Klear, LANCheck, LinkMD, maXStylus, maXTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PackeTime, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TempTrackr, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, FlashTec, Hyper Speed Control, HyperLight Load, IntelliMOS, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet-Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, Vite, WinPath, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, BlueSky, BodyCom, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, EtherGREEN, In-Circuit Serial Programming, ICSP, INICnet, Inter-Chip Connectivity, JitterBlocker, KlearNet, KlearNet logo, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, SAM-ICE, Serial Quad I/O, SMART-I.S., SQL, SuperSwitcher, SuperSwitcher II, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, and Symmcom are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2021, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN: 978-1-5224-7780-8

Quality Management System

For information regarding Microchip's Quality Management Systems, please visit www.microchip.com/quality.

Worldwide Sales and Service

AMERICAS	ASIA/PACIFIC	ASIA/PACIFIC	EUROPE
Corporate Office 2355 West Chandler Blvd. Chandler, AZ 85224-6199 Tel: 480-792-7200 Fax: 480-792-7277 Technical Support: www.microchip.com/support Web Address: www.microchip.com	Australia - Sydney Tel: 61-2-9868-6733 China - Beijing Tel: 86-10-8569-7000 China - Chengdu Tel: 86-28-8665-5511 China - Chongqing Tel: 86-23-8980-9588 China - Dongguan Tel: 86-769-8702-9880 China - Guangzhou Tel: 86-20-8755-8029 China - Hangzhou Tel: 86-571-8792-8115 China - Hong Kong SAR Tel: 852-2943-5100 China - Nanjing Tel: 86-25-8473-2460 China - Qingdao Tel: 86-532-8502-7355 China - Shanghai Tel: 86-21-3326-8000 China - Shenyang Tel: 86-24-2334-2829 China - Shenzhen Tel: 86-755-8864-2200 China - Suzhou Tel: 86-186-6233-1526 China - Wuhan Tel: 86-27-5980-5300 China - Xian Tel: 86-29-8833-7252 China - Xiamen Tel: 86-592-2388138 China - Zhuhai Tel: 86-756-3210040	India - Bangalore Tel: 91-80-3090-4444 India - New Delhi Tel: 91-11-4160-8631 India - Pune Tel: 91-20-4121-0141 Japan - Osaka Tel: 81-6-6152-7160 Japan - Tokyo Tel: 81-3-6880-3770 Korea - Daegu Tel: 82-53-744-4301 Korea - Seoul Tel: 82-2-554-7200 Malaysia - Kuala Lumpur Tel: 60-3-7651-7906 Malaysia - Penang Tel: 60-4-227-8870 Philippines - Manila Tel: 63-2-634-9065 Singapore Tel: 65-6334-8870 Taiwan - Hsin Chu Tel: 886-3-577-8366 Taiwan - Kaohsiung Tel: 886-7-213-7830 Taiwan - Taipei Tel: 886-2-2508-8600 Thailand - Bangkok Tel: 66-2-694-1351 Vietnam - Ho Chi Minh Tel: 84-28-5448-2100	Austria - Wels Tel: 43-7242-2244-39 Fax: 43-7242-2244-393 Denmark - Copenhagen Tel: 45-4485-5910 Fax: 45-4485-2829 Finland - Espoo Tel: 358-9-4520-820 France - Paris Tel: 33-1-69-53-63-20 Fax: 33-1-69-30-90-79 Germany - Garching Tel: 49-8931-9700 Germany - Haan Tel: 49-2129-3766400 Germany - Heilbronn Tel: 49-7131-72400 Germany - Karlsruhe Tel: 49-721-625370 Germany - Munich Tel: 49-89-627-144-0 Fax: 49-89-627-144-44 Germany - Rosenheim Tel: 49-8031-354-560 Israel - Ra'anana Tel: 972-9-744-7705 Italy - Milan Tel: 39-0331-742611 Fax: 39-0331-466781 Italy - Padova Tel: 39-049-7625286 Netherlands - Drunen Tel: 31-416-690399 Fax: 31-416-690340 Norway - Trondheim Tel: 47-72884388 Poland - Warsaw Tel: 48-22-3325737 Romania - Bucharest Tel: 40-21-407-87-50 Spain - Madrid Tel: 34-91-708-08-90 Fax: 34-91-708-08-91 Sweden - Gothenberg Tel: 46-31-704-60-40 Sweden - Stockholm Tel: 46-8-5090-4654 UK - Wokingham Tel: 44-118-921-5800 Fax: 44-118-921-5820