TEXAS INSTRUMENTS

TVP5031/5040/5145EVM

User's Guide

September 2001 *DAV Digital Video/Imaging*

SLAU078

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EVM WARNINGS AND RESTRICTIONS

It is important to operate this EVM within the input voltage range of 1 V and the output voltage range of 0 V and 5 V.

Exceeding the specified input range may cause unexpected operation and/or irreversible damage to the EVM. If there are questions concerning the input range, please contact a TI field representative prior to connecting the input power.

Applying loads outside of the specified output range may result in unintended operation and/or possible permanent damage to the EVM. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative.

During normal operation, some circuit components may have case temperatures greater than 70°C. The EVM is designed to operate properly with certain components above 70°C as long as the input and output ranges are maintained. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors. These types of devices can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during operation, please be aware that these devices may be very warm to the touch.

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Preface

Read This First

About This Manual

How to Use This Manual

This document contains the following chapters:

- Chapter 1—Functional Description
- Chapter 2—Setup and Configuration
- Chapter 3—System Operation
- Chapter 4—Troubleshooting the TVP5031/5040/5145EVM
- Appendix 1—TVP5031/5040/5145EVM Schematics and Board Layouts

Notational Conventions

This document uses the following conventions.

- Program listings, program examples, and interactive displays are shown in a `special typeface` similar to a typewriter's. Examples use a **`bold version`** of the special typeface for emphasis; interactive displays use a **`bold version`** of the special typeface to distinguish commands that you enter from items that the system displays (such as prompts, command output, error messages, etc.).

  Here is a sample program listing:

```
0011  0005  0001         .field    1, 2
0012  0005  0003         .field    3, 4
0013  0005  0006         .field    6, 3
0014  0006               .even
```

  Here is an example of a system prompt and a command that you might enter:

```
C:  csr –a /user/ti/simuboard/utilities
```

- In syntax descriptions, the instruction, command, or directive is in a **bold typeface** font and parameters are in an *italic typeface*. Portions of a syntax that are in **bold** should be entered as shown; portions of a syntax that are in *italics* describe the type of information that should be entered. Here is an example of a directive syntax:

  .asect "*section name***",** *address*

  .asect is the directive. This directive has two parameters, indicated by *section name* and *address*. When you use .asect, the first parameter must be an actual section name, enclosed in double quotes; the second parameter must be an address.

- Square brackets (**[** and **]**) identify an optional parameter. If you use an optional parameter, you specify the information within the brackets; you don't enter the brackets themselves. Here's an example of an instruction that has an optional parameter:

  LALK *16–bit constant [, shift]*

  The LALK instruction has two parameters. The first parameter, *16-bit constant*, is required. The second parameter, *shift*, is optional. As this syntax shows, if you use the optional second parameter, you must precede it with a comma.

  Square brackets are also used as part of the pathname specification for VMS pathnames; in this case, the brackets are actually part of the pathname (they are not optional).

- Braces ({ and }) indicate a list. The symbol **|** (read as *or*) separates items within the list. Here's an example of a list:

  ```
  { * | *+ | *– }
  ```

  This provides three choices: *, *+, or *–.

  Unless the list is enclosed in square brackets, you must choose one item from the list.

- Some directives can have a varying number of parameters. For example, the .byte directive can have up to 100 parameters. The syntax for this directive is:

  .byte $value_1$ *[, ... ,* $value_n$*]*

  This syntax shows that .byte must have at least one value parameter, but you have the option of supplying additional value parameters, separated by commas.

FCC Warning

This equipment is intended for use in a laboratory test environment only. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment in other

environments may cause interference with radio communications, in which case the user at his own expense will be required to take whatever measures may be required to correct this interference.

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Chapter 1

Functional Description

The TVP5031/5040/5145EVM evaluation module is a stand-alone printed circuit board designed for demonstration of the TVP5031, TVP5040, or the TVP5145 video decoder with the TVP6000 NTSC/PAL video encoder. The board is designed to provide ease of use while allowing full evaluation of the TVP5xxx video decoder.

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1.1 Description Overview

The TVP5031/5040/5145EVM uses the PC parallel port to emulate the I2C bus, which provides communication with the TVP5xxx video decoder and the video encoder. The *WinVCC4* application software that communicates with the devices via I^2C has been provided.

The analog video inputs supported by the TVP5031/5040/5145EVM include composite video, S-video, and component video. The video inputs available depend on the TVP5xxx video decoder under evaluation. This is discussed in more detail in the *Video Input Description* section. In general, the video decoder converts the analog video input signal into digital YUV data. This digital YUV data and the associated clocks from the video decoder are sent to the video encoder. The video encoder then converts the digital YUV data back into an analog video output signal. The analog video outputs supported by the video encoder include composite video and S-video.

When evaluating the performance of the TVP5xxx video decoder, the preferred method is to take the video decoder output directly to a studio-quality video encoder. The digital YUV data is output in ITU–R BT.656 format through the connector labeled *Digital Component Video Out*.

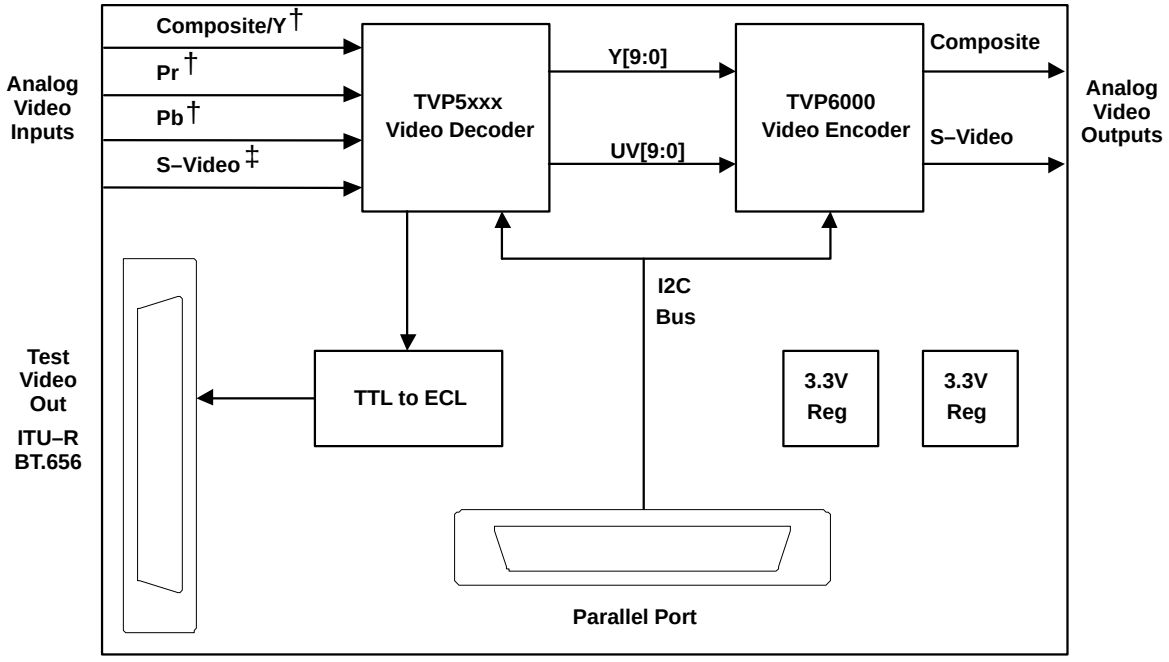
To experiment with the programmable features of the TVP5xxx video decoder and the video encoder, the parallel port of the TVP5031/5040/5145EVM is connected to the parallel port of a PC. A Windows™ compatible application provides the user interface for performing register-level and high-level control of the TVP5xxx video decoder and the video encoder. This application is called *WinVCC4* (Windows Video Chipset Control Program).

1.1.1 Board-Level Description

The board-level block diagram of the TVP5031/5040/5145EVM is shown in Figure 1–1. The primary features are listed below.

- TVP5xxx video decoder
- TVP6000 NTSC/PAL video encoder
- Parallel port interface for I2C emulation
- ITU–R BT.656 digital component video output

Figure 1–1. TVP5031/5040/5145EVMEVM Board-Level Block Diagram



† Component video input is only supported by the TVP5145.
‡ S-video input is not supported by the TVP5031.

1.1.2 Video Input Description

The following explains the various video input configurations available depending on the specific TVP5xxx video decoder.

Table 1–1. TVP5031/5040/5145EVM Video Input Configurations

EVM Type	Composite Input(s)	S-Video Input	Component Input	Video Input Label(s) on EVM
TVP5031EVM	1	NA	NA	Composite/Y–IN
TVP5040EVM	2	1	NA	Composite/Y–IN, Pr–IN, S–IN
TVP5145EVM	3	1	1	Composite/Y–IN, Pr–IN, Pb–IN, S–IN

Note:

The Composite 1 video input source is selected by default in the WinVCC4 application program. This can be changed by going to Edit → Property Sheets → TVP5xxx, and clicking on the Analog tab. The video input source is selected here.

1.1.2.1 TVP5031EVM

The TVP5031 video decoder supports two composite inputs. It does not support S-video input or component video input. Only the first composite video input is available on the TVP5031EVM. This composite video input is labeled *Composite/Y–IN* on the board.

1.1.2.2 TVP5040EVM

The TVP5040 video decoder supports up to four composite inputs or two S-video inputs. It does not support component video input. The TVP5040EVM supports two composite inputs and one S-video input. The first composite video input is labeled *Composite/Y–IN*. The second composite input is labeled *Pr–IN* on the board. The S-video input is labeled *S–IN.*

1.1.2.3 TVP5145EVM

The TVP5145 video decoder supports up to two component inputs, six composite inputs, two S-video inputs or one digital video input. The TVP5145EVM however only supports three composite inputs, one S-video input, and one component input. The first composite video input is labeled *Composite/Y-IN*. The second composite input is labeled *Pr-IN* on the board. The third is labeled Pb-IN. The S-video input is labeled *S-IN*. The component input is labeled *Composite/Y-IN, Pr-IN, Pb-IN.*

1.1.3 Video Output Description

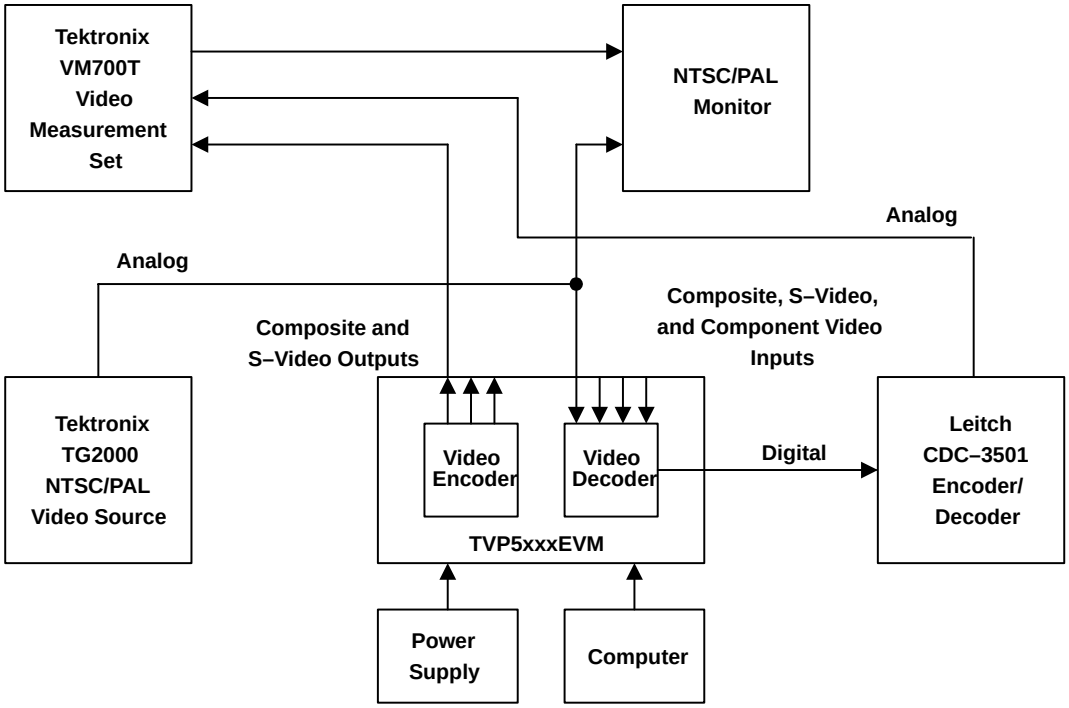
Composite and S-video outputs are supported on all TVP5031/5040/ 5145EVMs.

1.1.4 System-Level Description

A system-level block diagram incorporating the TVP5031/5040/5145EVM is shown in Figure 1–2. Typical, commercially available test equipment is also shown. The primary features of this configuration are listed below.

- Power is provided by individual supply sources: –5V, +5V, GND
- Supported analog inputs include composite video, S-video or component video
- Re-encoded composite video or S-video output via onboard video encoder
- Optional ITU–R BT.656 digital component video output for external re-encoding
- I^2C bus initialization of the video devices
- TVP5xxx video decoder performance parameters may be measured with a video analyzer.
- TVP5xxx video decoder performance can be viewed and compared with the source video.

Figure 1–2. TVP5031/5040/5145EVM System Level Block Diagram



Chapter 2

Setup and Configuration

The following summarizes the steps for setup and operation of this EVM. Please follow the steps in the order shown.

1) Software Installation or Updating the Software

2) Hardware Configuration

Topic **Page**

2.1 Software Installation

All necessary software for the TVP5031/5040/5145EVM is provided on enclosed CD-ROM. Both the EVM software and the device files must be installed on the PC emulating the I2C bus via the parallel port.

1) Insert the CD-ROM into the computer that will emulate the I2C bus via the parallel port

2) Run the Port95NT.exe file first to install the parallel port driver.

3) Run SETUP.EXE file to install *WinVCC4.*

4) Click *Next* at all prompts and finally click *Finish* to complete the installation process.

2.1.1 Updating the Software

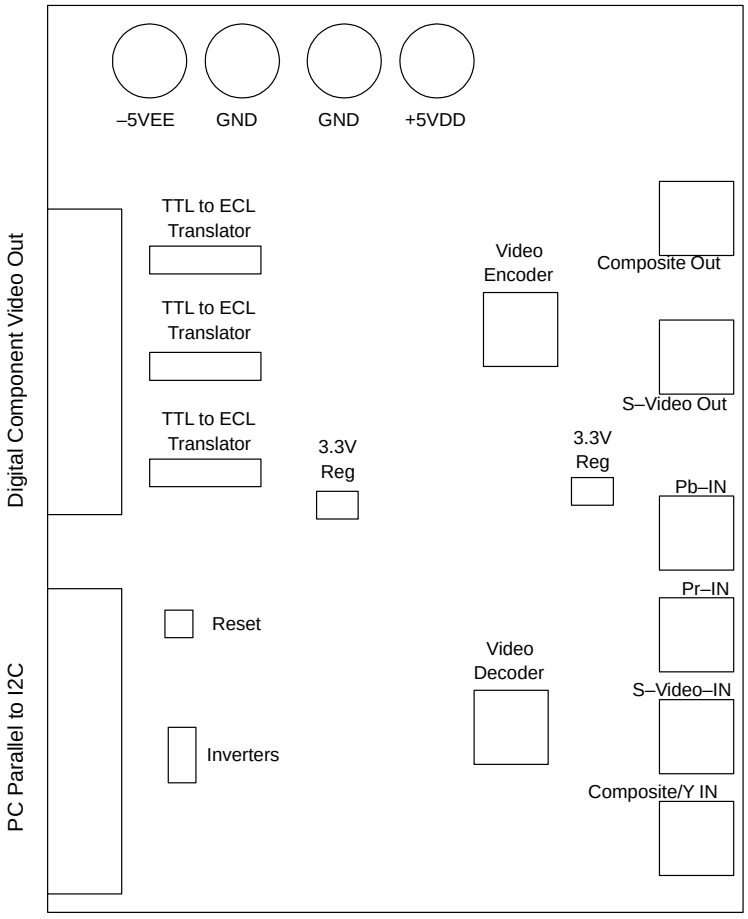
Visit www.ti.com or contact videohelponline@list.ti.com to obtain the latest version of the EVM software and the device software.

2.2 Hardware Configuration

Figure 2–1 shows the TVP5031/5040/5145EVM layout and indicates the location of the power supplies and the appropriate connectors. All connectors are labeled according to their function. To prepare the EVM for evaluation, connect the following:

- ❏ Power supplies: –5V, +5V and GND
- ❏ Parallel port cable to a PC
- ❏ Analog video in
- ❏ Analog video out

Figure 2–1. TVP5031/5040/5145EVM Layout



2.2.1 Using the ITU-R BT.656 Digital Video Output

To re-encode the TVP5xxx digital component video output, connect a ribbon cable from TVP5031/5040/5145EVM connector labeled *Digital Component Video Out* to the external encoder. This connector outputs the data in ITU–R BT.656 format.

Table 2–1. Digital Component Video Output Connector Pinout

Pin	Name	Pin	Name
1	SCLKP	14	SCLKN
2	DGND	15	DGND
3	Y_P9	16	Y_N9
4	Y_P8	17	Y_N8
5	Y_P7	18	Y_N7
6	Y_P6	19	Y_N6
7	Y_P5	20	Y_N5
8	Y_P4	21	Y_N4
9	Y_P3	22	Y_N3
10	Y_P2	23	Y_N2
11	Y_P1	24	Y_N1
12	Y_P0	25	Y_N0
13	DGND		

Chapter 3

System Operation

This chapter describes how to start and use the WinVCC4 application program.

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3.1 Power Up

After *Software Installation* and *Hardware Configuration* have been completed, the TVP5031/5040/5145EVM may be powered up.

3.2 Starting the *WinVCC4* Application Program

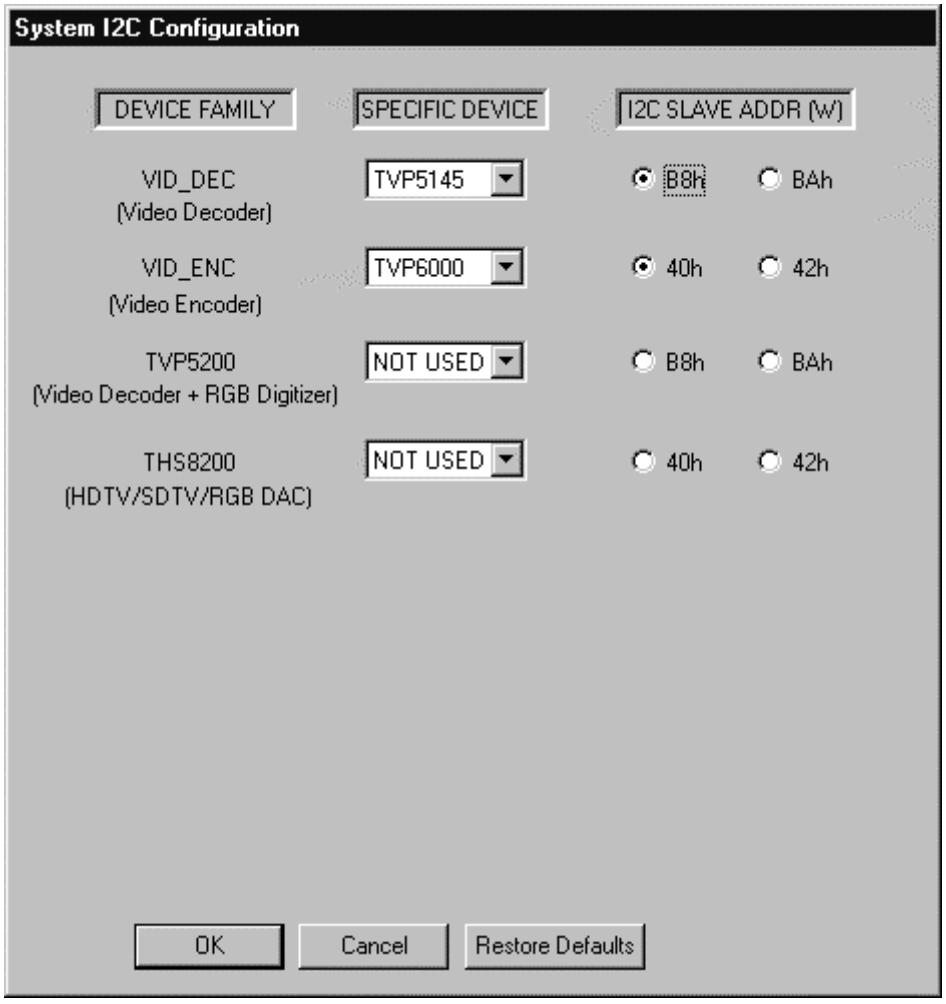
The *WinVCC4* application program must have been previously installed on the PC. Run *WinVCC4* from the Windows™ Start Menu:

Start → Programs TVP5031/5040/5145EVM Software → WinVCC4

3.2.1 Device I²C Address Configuration

The I²C Address Configuration window as shown in Figure 3–1 is now visible. The TVP5145 video decoder and the TVP6000 video encoder are selected by default. Select the specific video decoder from the drop-down list and click OK. The I²C addresses for each are set according to the default setup on the TVP5031/5040/5145EVM board.

Figure 3–1. I²C Address Configuration

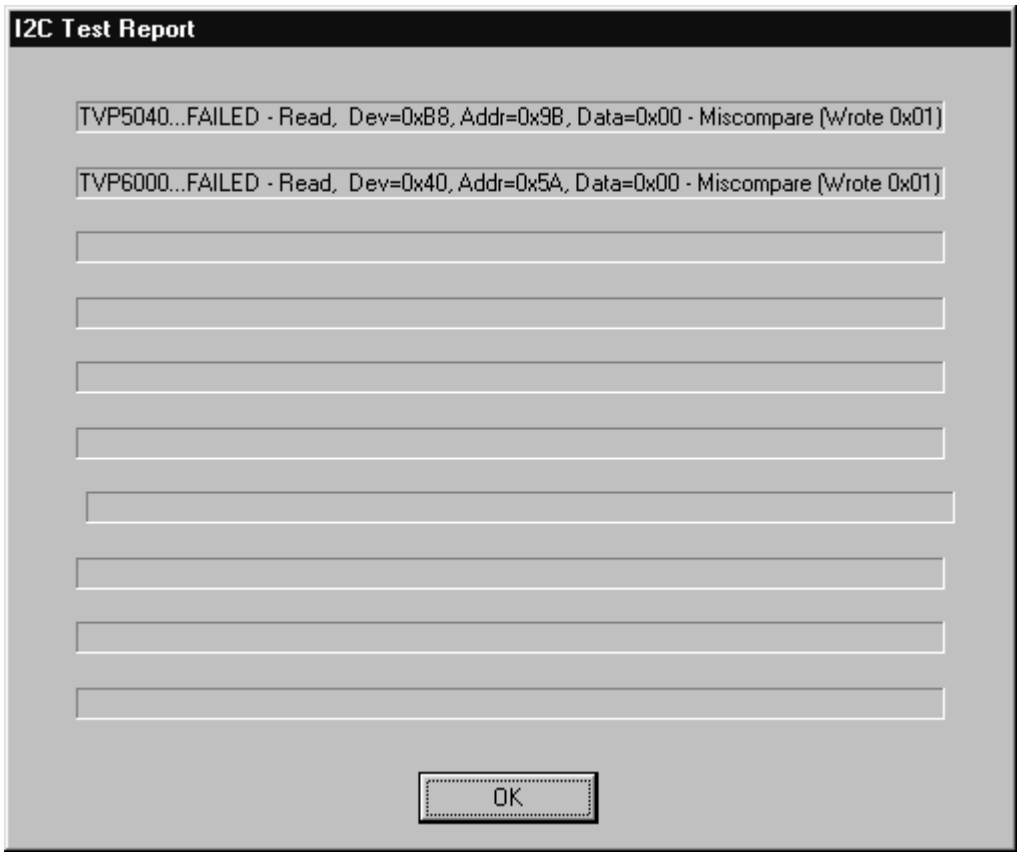


Pressing *OK* will set the I2C device address for the TVP5xxx video decoder as 0xB8 and the video encoder as 0x40. The *WinVCC4* software is now set up to communicate with the video devices via I2C.

3.2.2 I2C Test Results

After the I2C Address Configuration window is closed, WinVCC4 performs a test of all active devices on the I2C bus. A series of values are written and read back from each device. The original values are then restored. If this test fails, a dialog box similar to Figure 3–2 appears.

Figure 3–2. I2C Test Report



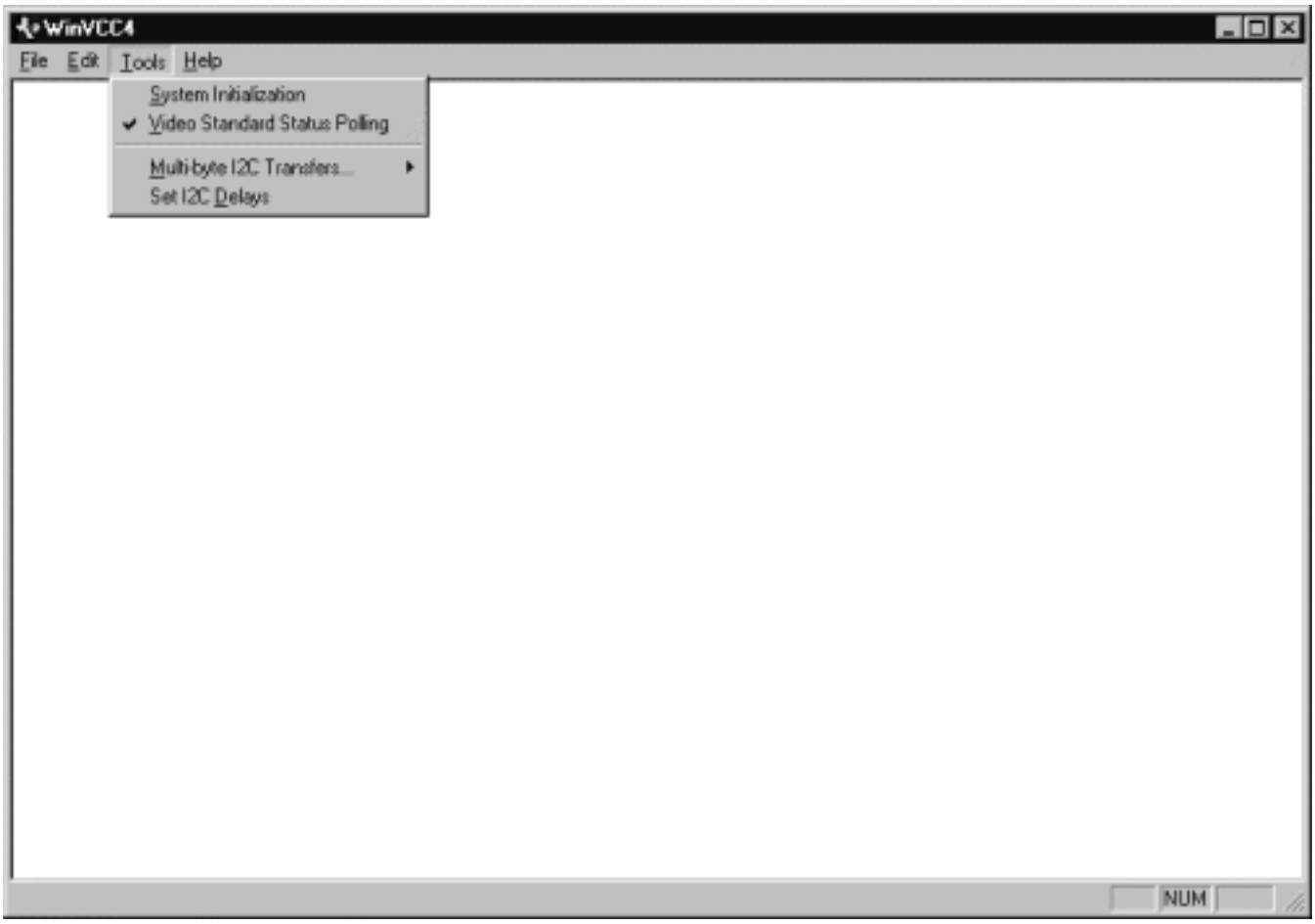
The most common causes of this problem are not having the EVM powered on or not having the EVM connected to a PC parallel port. If these are not the cause, this may indicate a problem with the EVM itself.

3.2.3 The Main Menu

Once the I2C addresses have been configured for the TVP5xxx and the TVP6000, the Main Menu is displayed as shown in Figure 3–3. This menu provides a means of communication with each device. It also provides access to the system initialization.

The system initialization allows both the TVP5xxx video decoder and video encoder to be setup with predefined settings that are commonly used in video applications.

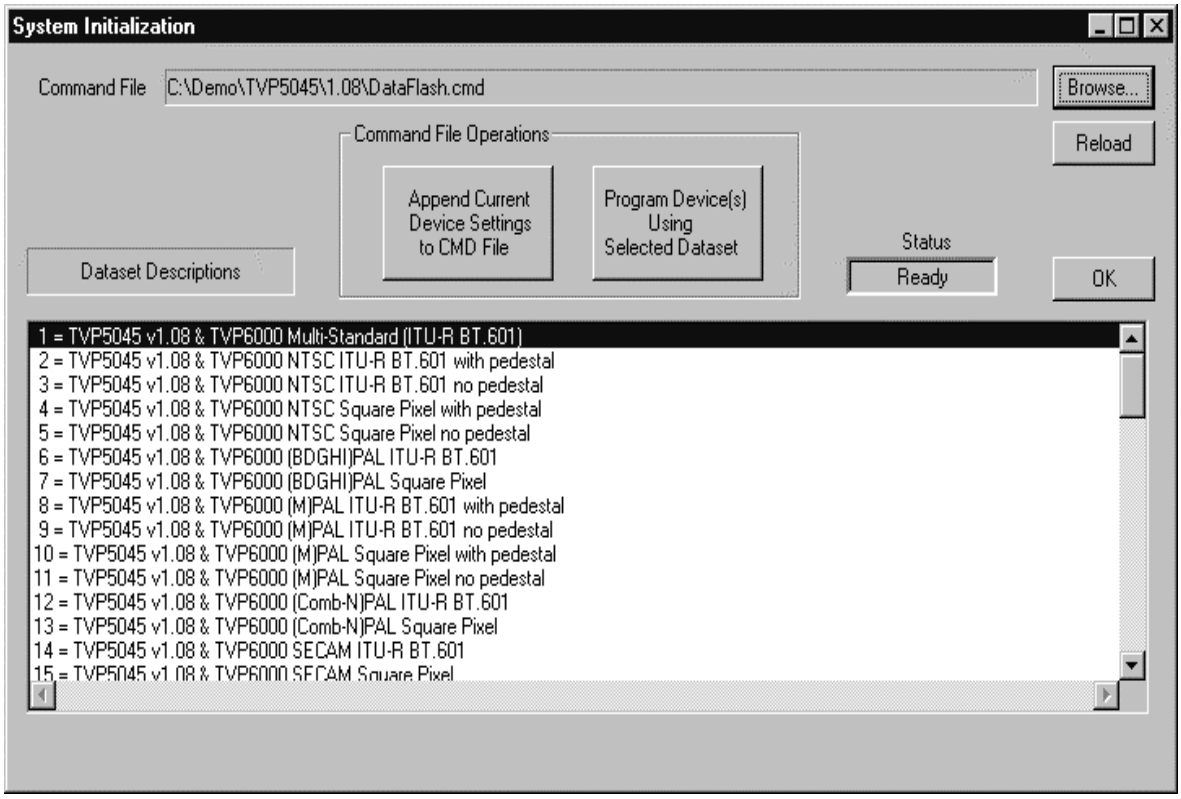
Figure 3–3. Main Menu



3.2.4 System Initialization

From the Main Menu, *Tools–>System Initialization* will display the window shown in Figure 3–4. This provides the means for initializing the system using a CMD file; a text file generated using any common editor. This is especially useful for testing and comparing various changes in the device setup. A default CMD file has been provided on the CD-ROM. This CMD file should contain most of the desired setups.

Figure 3–4. System Initialization



The CMD file type is used to initialize the TVP5xxx video decoder and the video encoder. The CMD file is a text file as seen in Figure 3–5 that contains up to 64 data sets, also referred to as setups. Each data set specifies a device file to download and the register settings for that particular video mode. The register settings may be listed in the CMD file itself and/or may be stored in a separate INC file and be included in the CMD file using the *include* statement.

3.2.4.1 Example Command File

An example of one data set within a CMD file is shown below. There may be up to 64 data sets within one CMD file. Each command file may have independent register settings, a group of register settings within an include file, or both.

Figure 3–5. Example CMD File With One Data Set

```
BEGIN_DATASET              // Dataset 1

DATASET_NAME,"TVP5xxx v1.08 & TVP6000 Multi-Standard (ITU-R BT.601)"

WR_MEM,VID_DEC,TVP5040_AUTO.C

INCLUDE,5_P.INC             // Initialize TVP5xxx registers
WR_REG,VID_DEC,0x01,0x0D,0x47      // Set to ITU-R BT.601 sampling rate

RESET,VID_ENC,100            // Activate TVP6000 reset for 100ms
INCLUDE,6N6_P.INC            // Initialize TVP6000 registers

END_DATASET

////////////////////////////////////////////

BEGIN_DATASET              // Dataset 2

DATASET_NAME,"Initialize my other I2C devices using a literal sub-address"

WR_REG,0x70,0x01,0x02,0x03  // Load my device at I2C device address 0x70
WR_REG,0x70,0x01,0x04,0x05

WR_REG,0x94,0x01,0x06,0x07  // Load my device at I2C device address 0x94
WR_REG,0x94,0x01,0x08,0x09

END_DATASET

////////////////////////////////////////////
// NOTES:
// 1. No restriction on multiple nesting of INCLUDE statements.
// 2. Can include an entire command file (between END_DATASET and BEGIN_DATASET).
```

The CMD file is opened using the *Browse* button. Once the CMD file is opened, the text list box displays the data set descriptions contained within the CMD file. Click once on the desired data set description to select it. Click the *Program Device(s) Using Selected Dataset* button to initialize the devices. The devices are initialized when the progress status indicates *Ready*.

Note:

If *Ready* does not display, then the devices are not initialized and the I2C bus is not communicating. See *Troubleshooting the TVP5031/5040/5145EVM* for a solution.

Click the *OK* button to close the dialog box. On program exit, the initialization file pathname and the data set selection number are saved in the Windows™ registry to retain these settings for the next time WinVCC4 runs.

3.2.5 Saving Current Register Settings

Saving custom register settings is done by appending them to an existing command file. To do this, open the System Initialization under Tools on the

Main Menu, and click the button labeled *Append Current Device Settings to CMD File*. A prompt will ask for a description of the setup. By default, a list of current descriptions is provided. An item from the list may be selected and modified. Clicking *OK* will add the description to the end of the data set descriptions list.

To save to a new CMD file, click *Browse* and type a new file name.

3.2.6 Auto-Switch Capability

The auto-switch capability allows the video encoder to detect a change in the video format. The change in format is detected by the WinVCC4 application program, which continuously polls the video decoder. Once a change in video format is detected, the registers within the video encoder are updated to support the new format.

In order to work properly, the video encoder and decoder must be configured on the I2C bus. The *Multi-Standard* dataset listed under *System Initialization* must be loaded. This loads the auto-switch code. The auto-switch capability is now enabled.

To monitor the I2C bus for communication issues the auto-switch capability must be disabled since it continuously polls the video decoder via the I2C bus. Once the auto-switch capability has been disabled, the I2C bus may be monitored. The auto-switch capability may be disabled by going to *Tools* → *Video Standard Status Polling*.

3.3 Using the *WinVCC4* Application Program

The following sections describe how to use the WinVCC4 application program.

3.3.1 Main Menu

The menus, which are used to operate WinVCC4, are File, Edit, Tools, and Help. The File menu's only function is *Exit*, which terminates the program. Table 3–1 is a summary of the main menu contents.

Table 3–1. Main Menu Summary

Menu	Contents
File	Exit WinVCC4
Edit	Register Map Editors for selected devices Property Sheets for selected devices
Tools	System Initialization Video Standard Status Polling Multi-byte I2C Transfers for selected devices Set I2C Delays
Help	Display program version

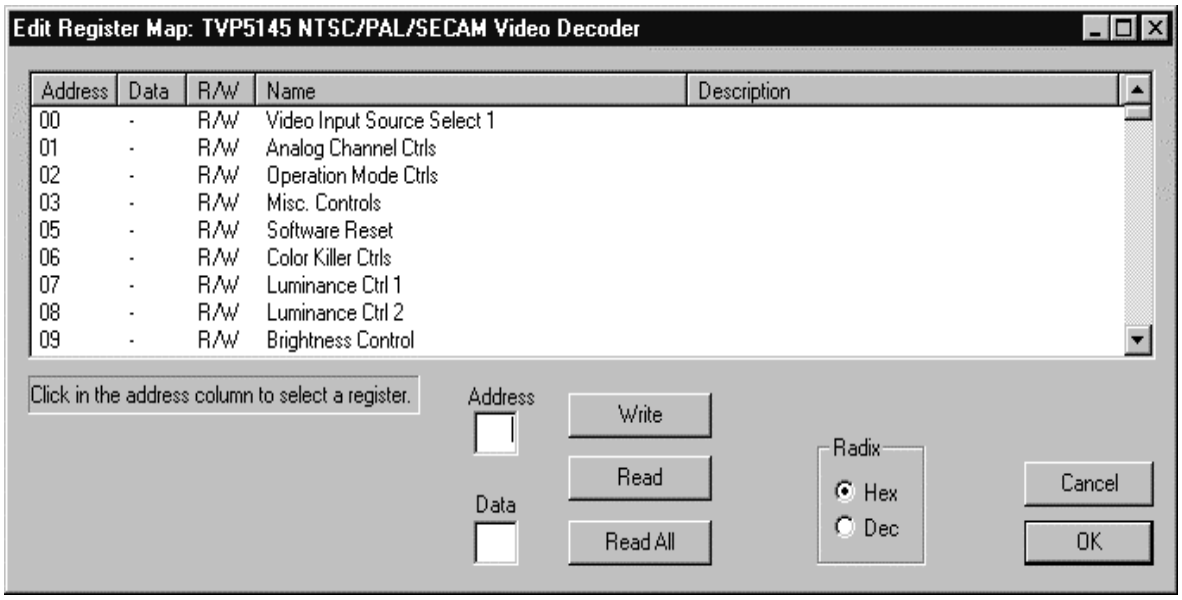
3.3.2 Register Editing

The next sections describe the two available modes of register editing: Register Map Editors and Property Sheets. Each of these functions can be selected from the *Edit* menu on the Main Menu.

3.3.2.1 Register Map Editor

The Register Map Editor as shown in Figure 3–6 allows the display and editing of the entire register set of the device with a simple scrolling text box. Data is displayed and entered in decimal or hexadecimal bytes by toggling the *Hex* and *Dec* radio buttons.

Figure 3–6. Register Map Editor



Clicking the *Read All* button will read all registers within the device and display the address and data in the text box. To read only one register, highlight the address inside the text box and click *Read*. The data of the highlighted register address is now updated. Notice the highlighted address and data values are also displayed in the two small edit boxes.

To write to one register, again highlight the desired register address. When the address and data values are displayed in the two small edit boxes, the address or data value may be changed simply by clicking inside the edit box and changing the value. Clicking the *Write* button will update the register address in the small address text box with the value in the small data text box.

The functions of the buttons within the *Register Map Editor* are explained in Table 3–2.

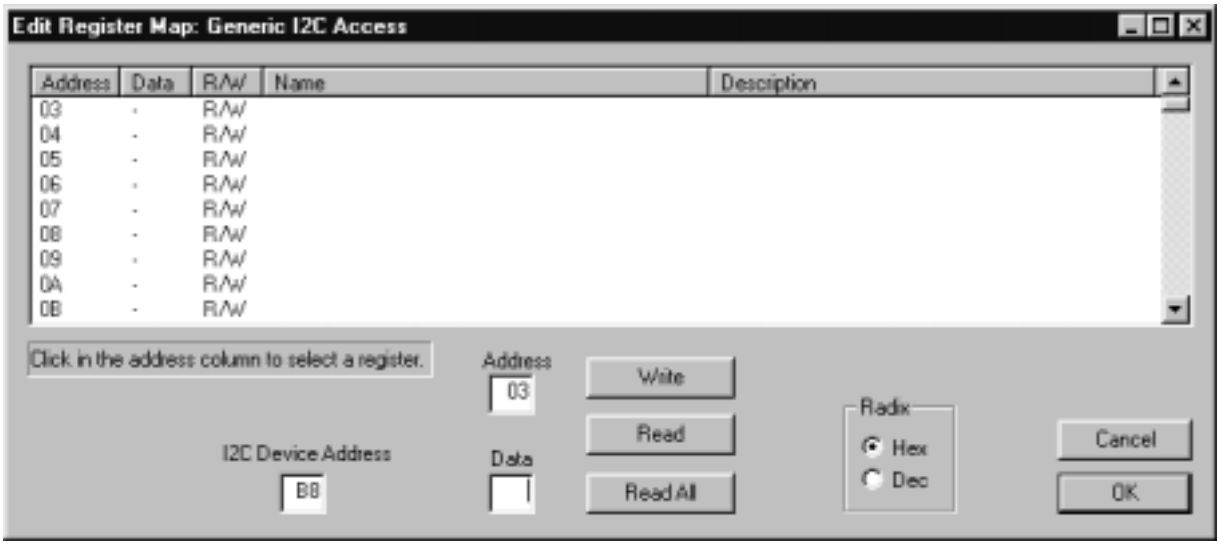
Table 3–2. Register Map Editor Button Controls

Button Control	Definition
Read	Reads the register address in the Address text box and updates the display.
Read All	Reads all readable registers from the device indicated and updates display.
Hex	Converts all register address and data in the list to hexadecimal
Dec	Converts all register address and data in the list to decimal
Cancel	Closes the dialog.
OK	Writes all write-able registers, that have been changed in the dialog box, to hardware. Closes the dialog.

3.3.2.2 Generic I2C Register Map Editor

Using the WinVCC4 application program, it is possible to access any device on the I2C bus. Figure 3–7 shows the Register Map Editor for Generic I2C Access. This is used to modify the data of any accessible register within a device on the I2C bus. The full address range of 0x00 to 0xFF is supported. The I2C device address (for write mode) must be typed into the I2C Device Address box

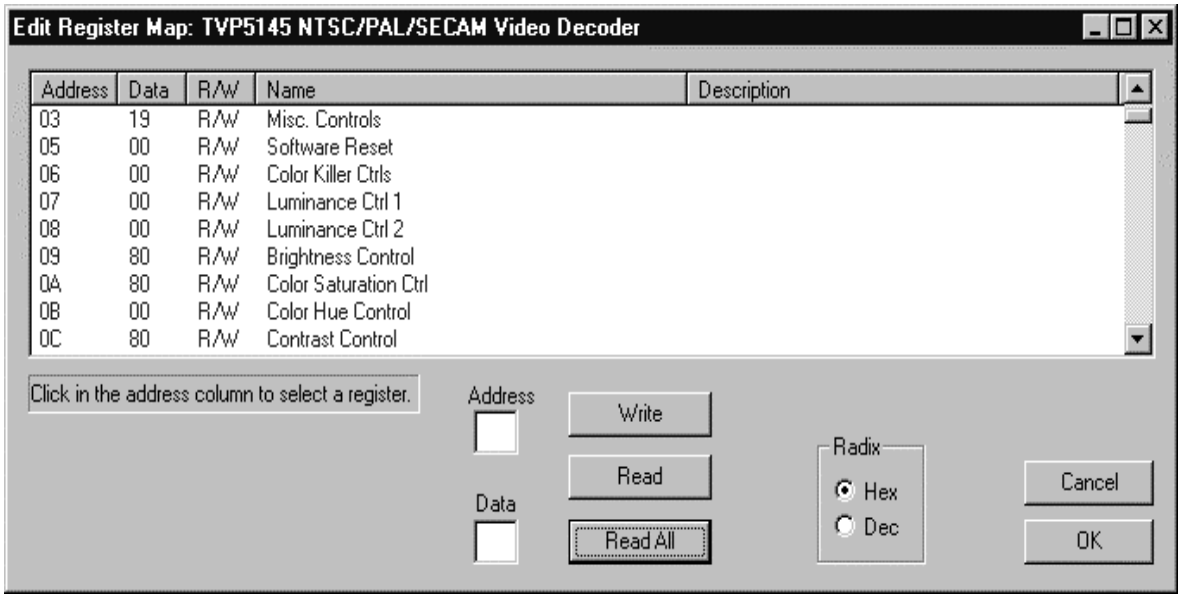
Figure 3–7. Register Map Editor for Generic I2C Access



3.3.2.3 Example: Disable the YUV Outputs

Click once on 03 in the address column, change the data text box to 09 and click *Write* as shown in Figure 3–8.

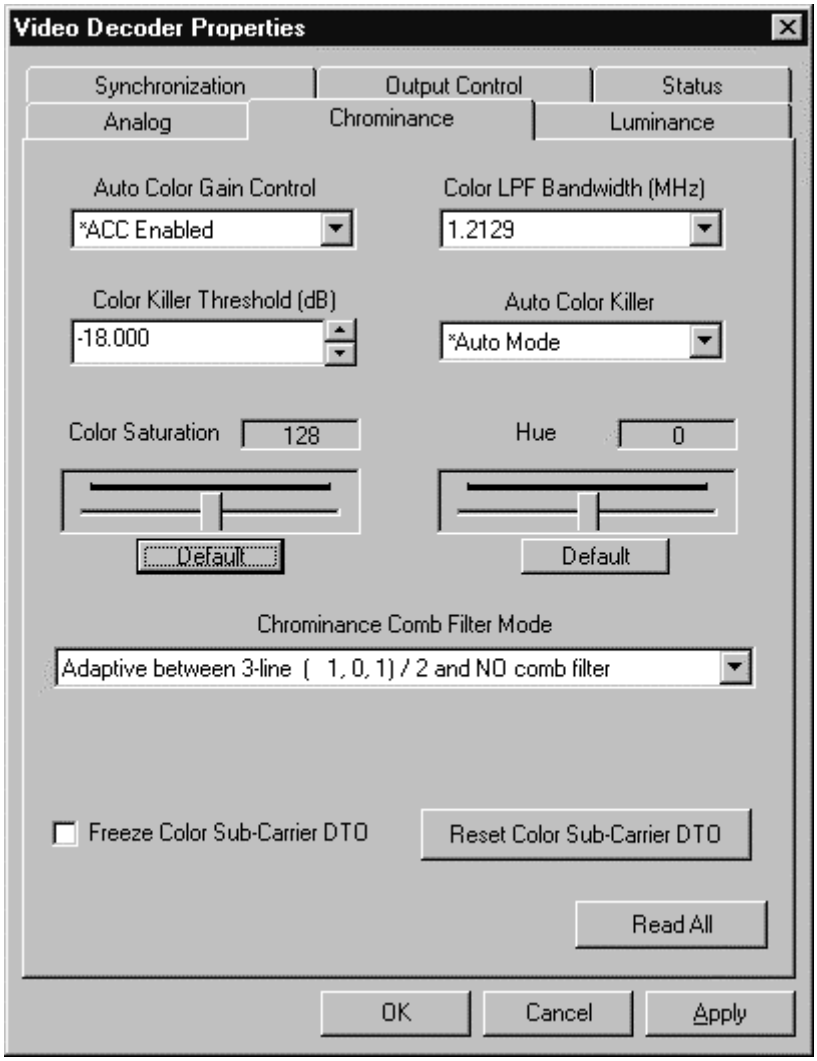
Figure 3–8. Example: Disable the YUV Outputs



3.3.2.4 Property Sheets

A property sheet for the TVP5xxx video decoder and the video encoder is available on the *Main Menu* under *Edit* as shown in Figure 3–9. The property sheet presents the register data in a user-friendly format. The data is organized by function, with each function having its own page. The pages are selected using the tabs at the top of the window.

Figure 3–9. Property Sheets



When the property sheet function starts, or when a different page is selected, all readable registers in the device are read from hardware to initialize the dialog pages. Values on the page are changed by manipulating the various dialog controls as described in Table 3–3.

Table 3–3. Use of Dialog Controls

Dialog Control	What Do I Do With It?	When is Hardware Updated?
Read-Only Edit Box	Read status information	N/A
Check Box	Toggle a single bit	After *Apply Changes*
Drop-Down List	Select from a text list	After *Apply Changes*
Edit Control	Type a number	After *Apply Changes*
Pushbutton	Initiate an action	Immediately
Spin-Edit Control	Use up/down arrows or type a number	Immediately
Slider	Slide a lever	Immediately

There are three buttons at the bottom of each page of the *Property Sheet*. These are explained in Table 3–4.

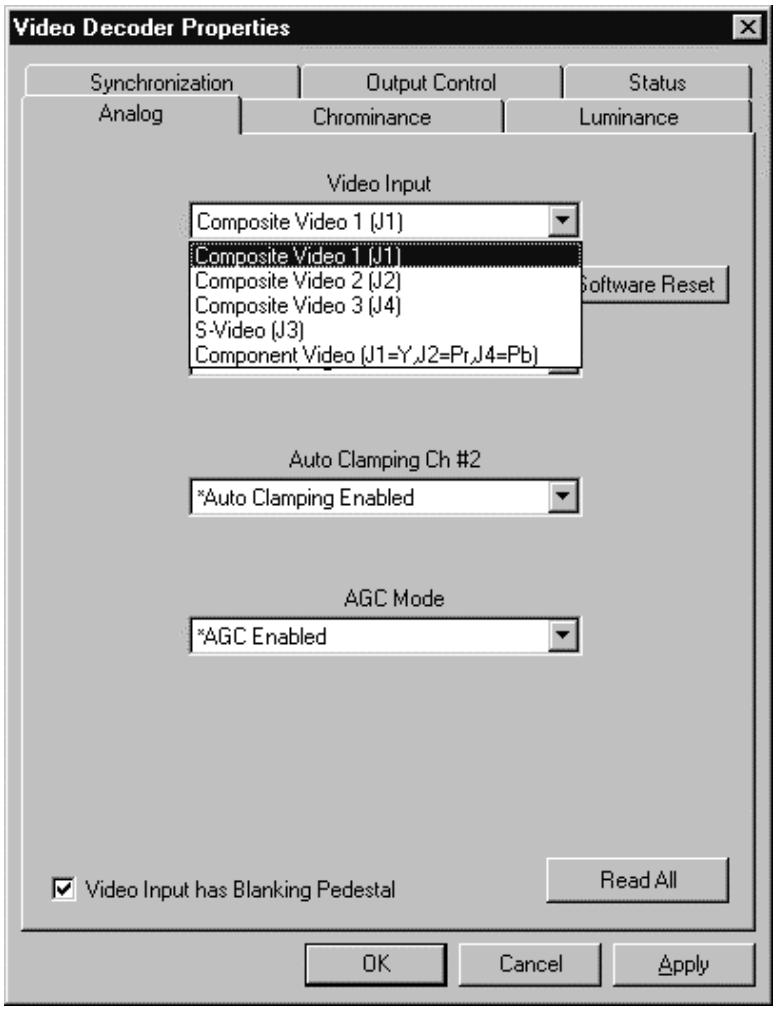
Table 3–4. Property Sheet Button Controls

Button Control	Definition
OK	Writes all write-able registers, that have been changed to hardware. Closes the dialog.
Cancel	Causes all changes made to the dialog since the last *Apply* to be discarded. Changes made to dialog controls with *immediate hardware update* are not discarded, since they have already been changed in hardware. Does not write to hardware. Closes the dialog.
Apply	Causes all changes made to the dialog since the last *Apply* to be written to hardware.

3.3.2.5 Example: Selecting the Video Input

The video decoder Analog page allows the selection of the active video input. A drop-down box labeled *Video Input* as shown in Figure 3–10 is provided for this purpose. The available entries in the drop-down box depend on which video decoder is currently installed. To change it, select the desired video input and click *Apply.*

Figure 3–10. Example: Selecting the Video Input



3.3.3 Tool Descriptions

This section describes the tools available within the WinVCC4 application program. The tools include:

- ❑ System Initialization
- ❑ Video Standard Status Polling
- ❑ Multibyte I2C Transfer
- ❑ Set I2C Delays

3.3.3.1 System Initialization Tool

System initialization is used to load a command file, select one of its data sets and program the device(s).

3.3.3.2 VIdeo Standard Status Polling Tool

Video standard status polling, when checked, causes the video standard status from the video decoder to be constantly polled. The polling begins once

the video decoder is initialized. Unchecking this feature stops the polling immediately. When the software detects a change in video standard or sampling rate, the video encoder is immediately reprogrammed with the correct register values.

3.3.3.3 Multibyte I2C Transfer Tool

Multibyte I2C Transfers defines how these transfers are performed for each device. When checked, the PC will write and read multiple bytes to consecutive addresses using a single I2C transfer (between I2C Start and I2C Stop). The default setting is checked for the TVP6000 video encoder. When unchecked, the PC will write and read using an I2C transfer for each byte. The default setting is unchecked for the TI video decoders.

3.3.3.4 Set I2C Delay Tool

Set I2C Delays is a debug feature that does not require changing.

Chapter 4

Troubleshooting the TVP5031/5040/5145EVM

If you are experiencing problems with the TVP5031/5040/5145EVM hardware or the WinVCC4 software, see Table 4–1 for available solutions.

Table 4–1. Troubleshooting Guide

Item	Problem	Cause	Solution
1	After closing the initial I2C System Configuration dialog box, the I2C Test Result dialog box displays errors.	I2C communication failed with the indicated device(s)	Click *OK* to close the I2C Test Result dialog box. Follow the on screen instructions
2	The following message is displayed: Is a parallel cable connected from the computer's LPT1 port to the evaluation module (EVM), and power applied to the EVM?	I2C communication failed	Click *Yes* or *No*
3	NO was entered in item 2 and the following message appeared: Connect a parallel cable from the computer's LPT1 port to the EVM and apply power to the EVM. Then, click *OK*.	I2C communication failed	Insure that PC parallel cable is connected and EVM power is ON. Click *OK*. Program should continue normally by displaying the main menu.
4	YES was entered in item 2, and the following message appeared: This program will not work with the current parallel port configuration. Restart the computer and run the BIOS setup program. Set parallel port LPT1 to ECP mode, if available, or to bidirectional mode (sometimes called PS/2 or BYTE mode). After clicking OK, WinVCC4 terminates.	A noncompatible PC parallel port configuration was detected.	Restart the computer and run the BIOS setup program. Set parallel port LPT1 to ECP mode, if available, or to bidirectional mode.
5	WinVCC4 locks up	Auto-switch polling on I2C bus interrupted by EVM power-down.	Close the WinVCC4 application program, power–on EVM and restart WinVCC4.
6	While attempting to observe traffic on the I2C bus, constant traffic is seen.	Auto-switch I2C polling is in operation.	Disable by unchecking the Tools → Video Standard Status Polling menu item.
7	TVP5xxx or TVP6000 does not initialize using the System Initialization tool	Wrong initialization files	Verify that the names of the device software files (*.C) match the name of your video decoder device.
8	The Video Input does not seem to work	The devices were not initialized correctly The video input source was not changed in the Video Decoder Property Sheet	Go to Edit → Property Sheets → TVP5xxx, and click on the Analog tab. Verify and change if necessary the selected Video Input source. Composite 1 is selected by default.

Table 4–1. Troubleshooting Guide (Continued)

Item	Problem	Cause	Solution
9	The Digital Component Video Output does not seem to work	Power has not been properly supplied to the EVM	Verify all connections including the power supplies Verify that both +5 V and –5 V has been properly supplied to the EVM
10	The MC10H124 devices located next to the Digital Component Video Output get hot	These devices are TTL to ECL translators. It is normal for them to get hot.	NA

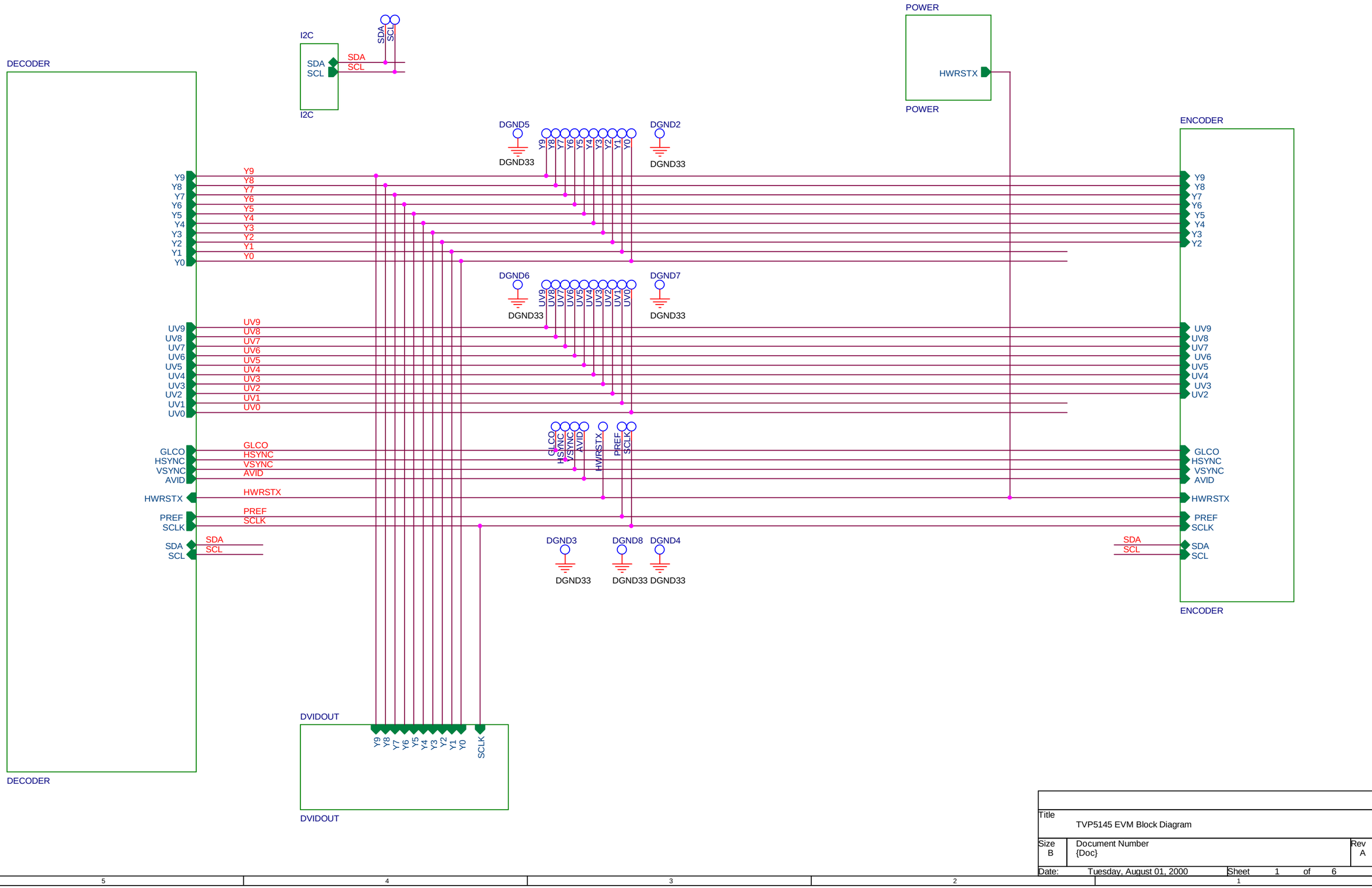
Appendix A

Schematics and Board Layouts

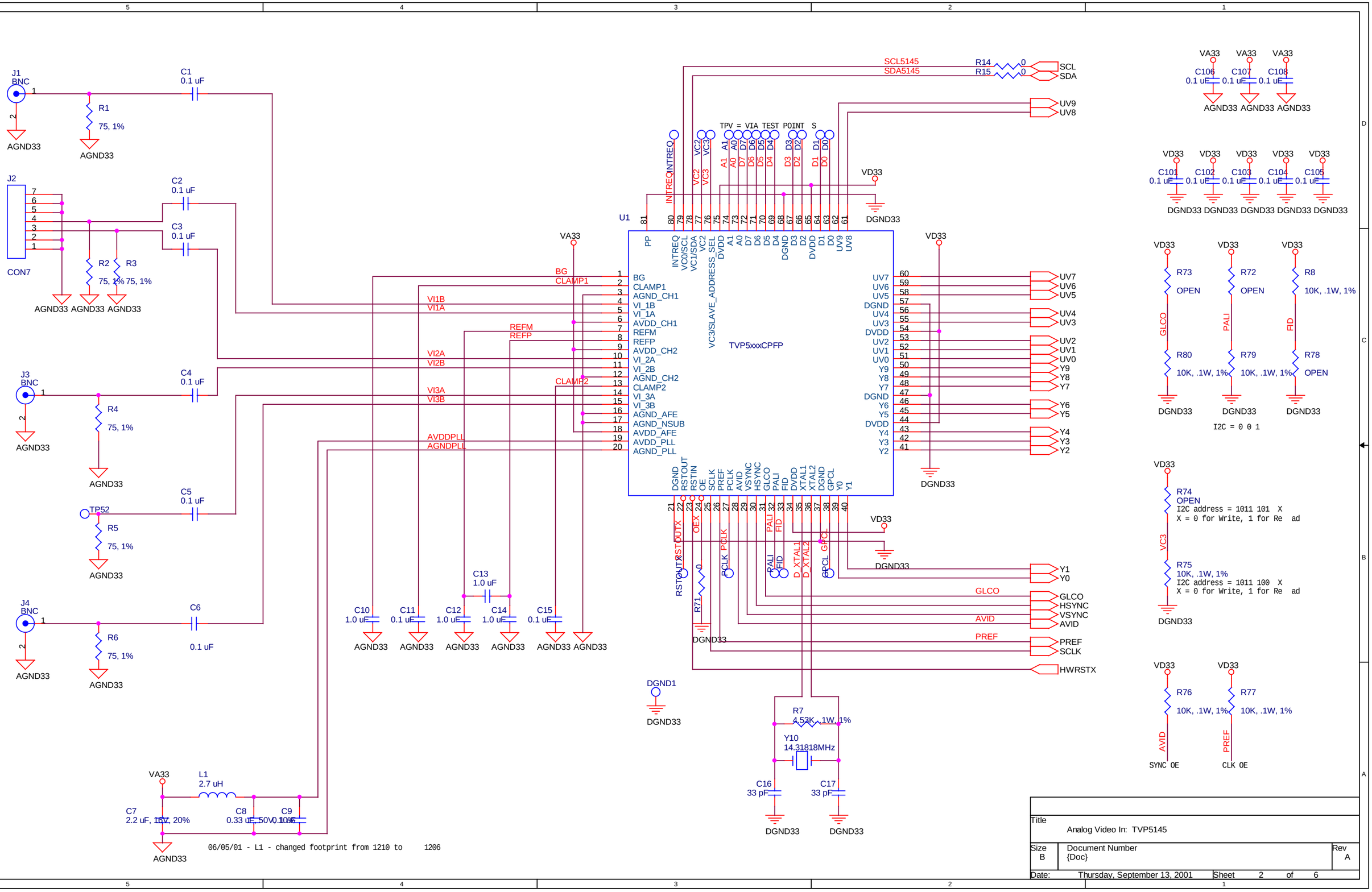
This section contains schematics and board layouts.

Topic **Page**

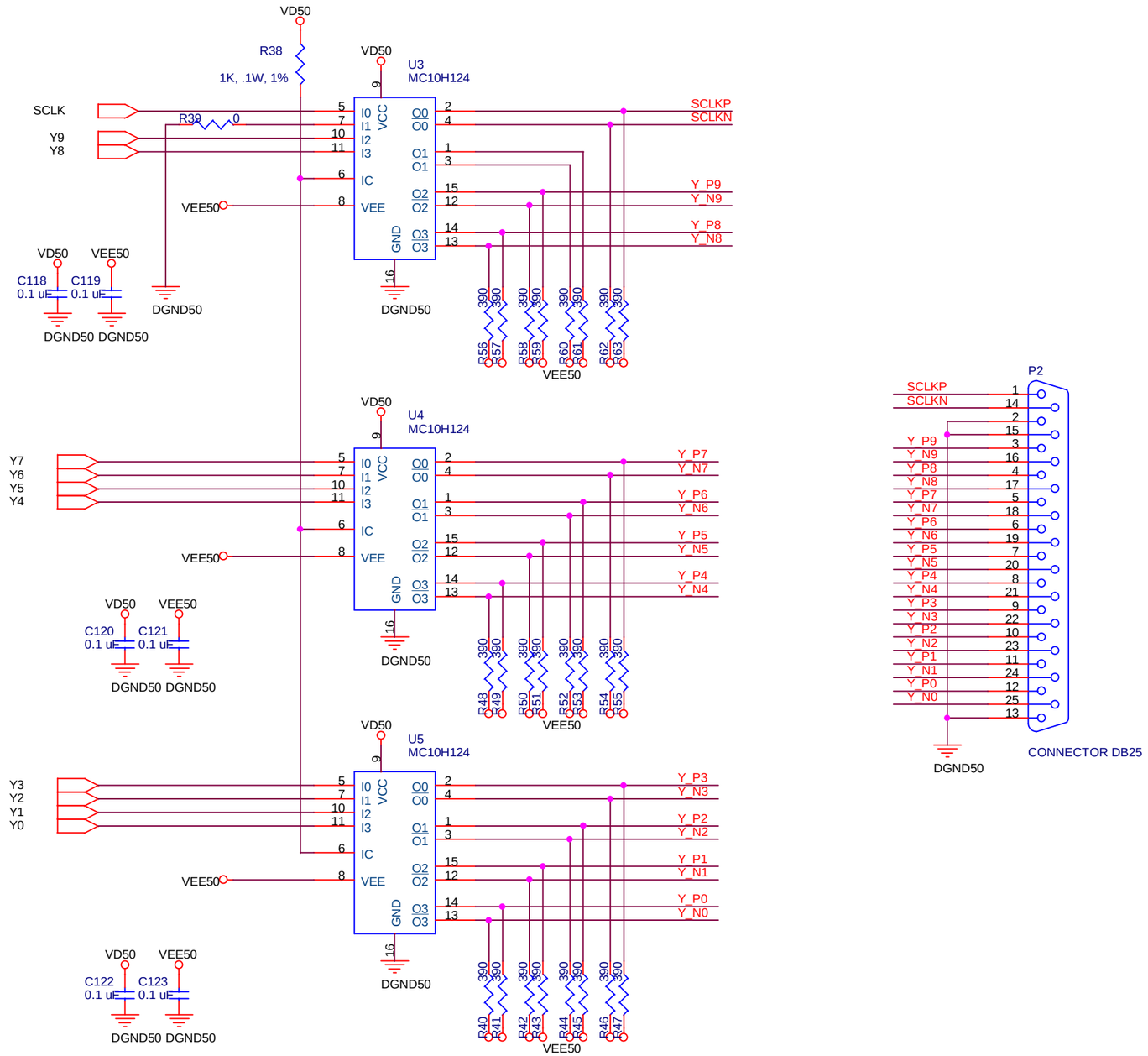
A.1 TVP5031/5040/5145EVM Schematics and Board Layouts



Title	TVP5145 EVM Block Diagram	
Size B	Document Number {Doc}	Rev A
Date: Tuesday, August 01, 2000	Sheet 1 of 6	



Title	Analog Video In: TVP5145	
Size B	Document Number {Doc}	Rev A
Date: Thursday, September 13, 2001	Sheet 2 of 6	



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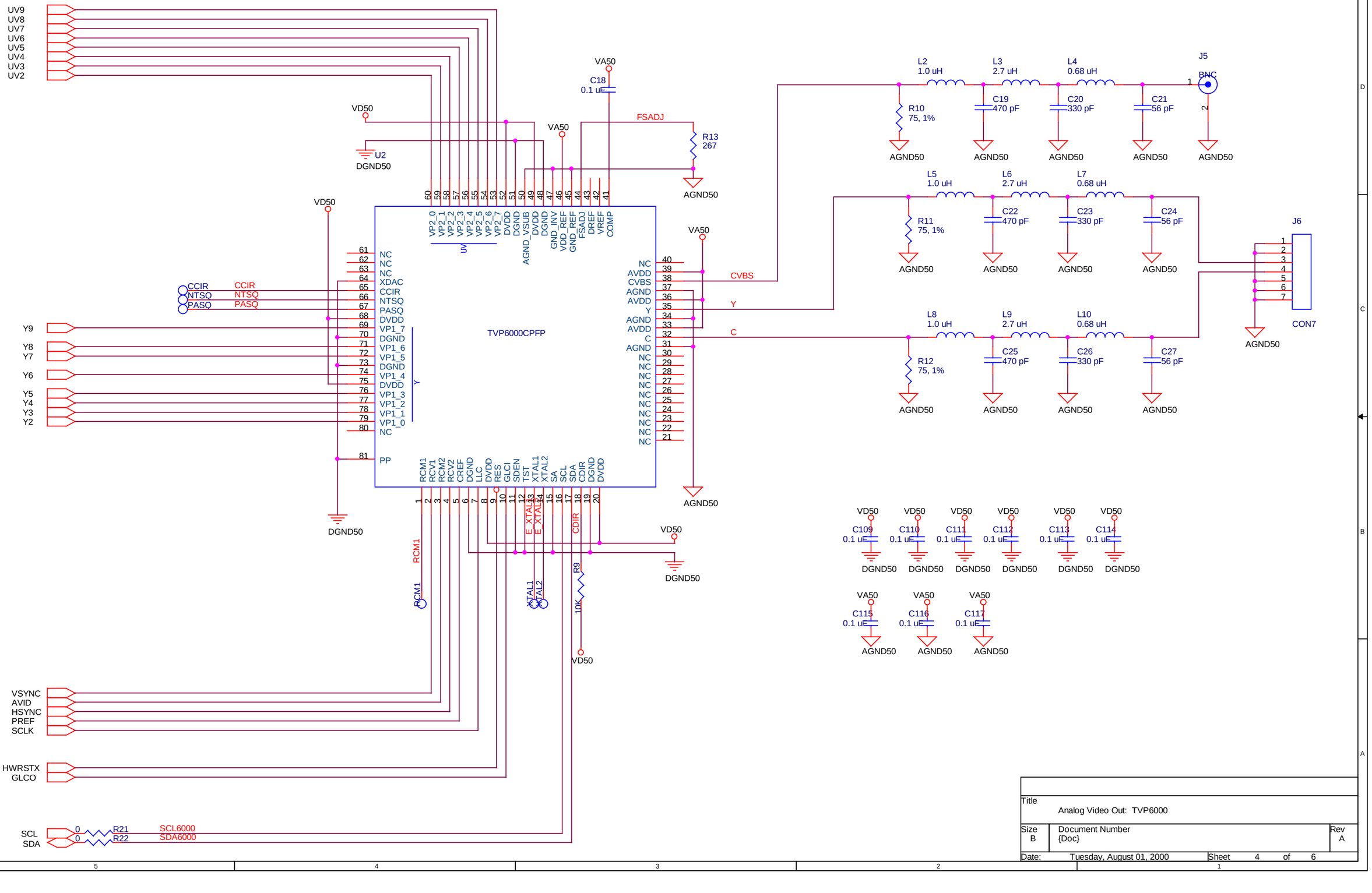
Size: B	Document Number: {Doc}	Rev: A
Date: Tuesday, August 01, 2000	Sheet 3 of 6	



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Size B	Document Number {Doc}	Rev A
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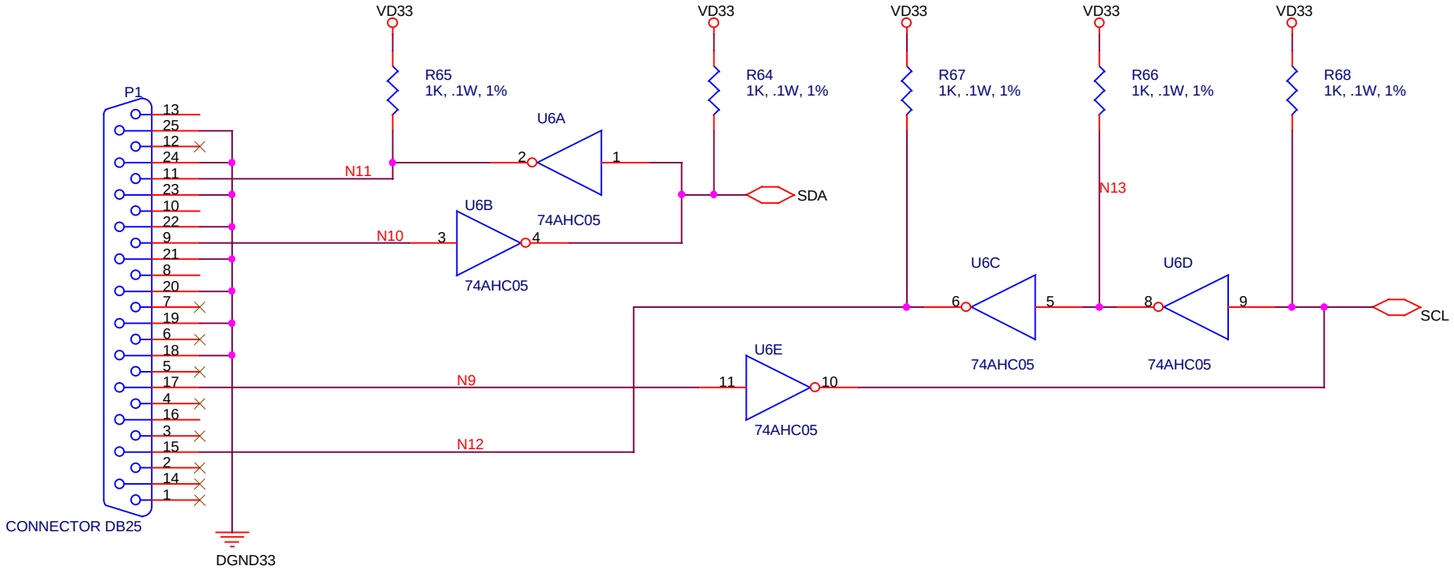

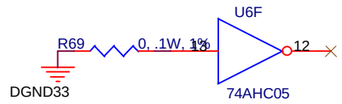

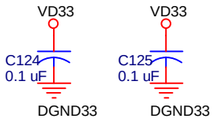

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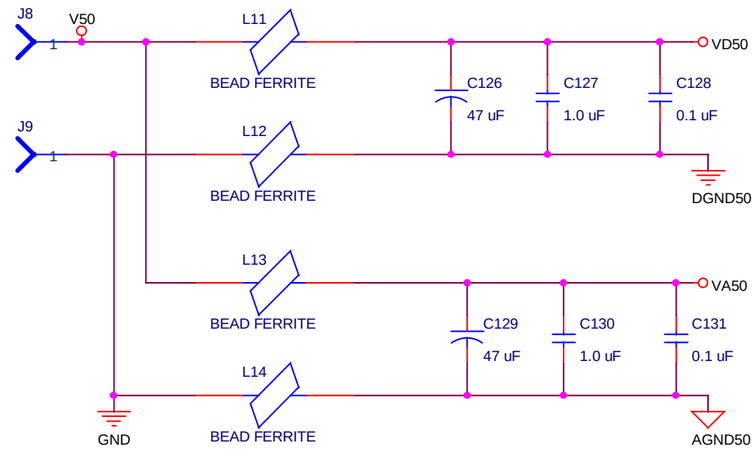
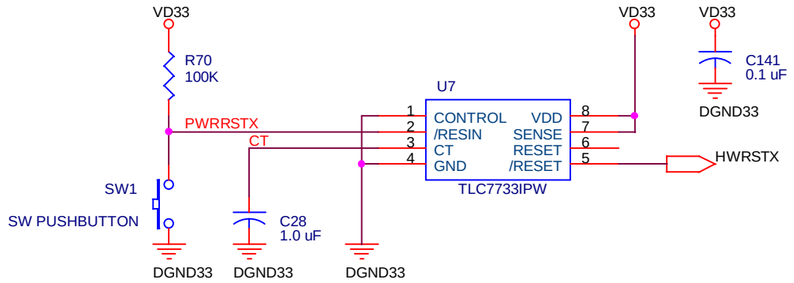
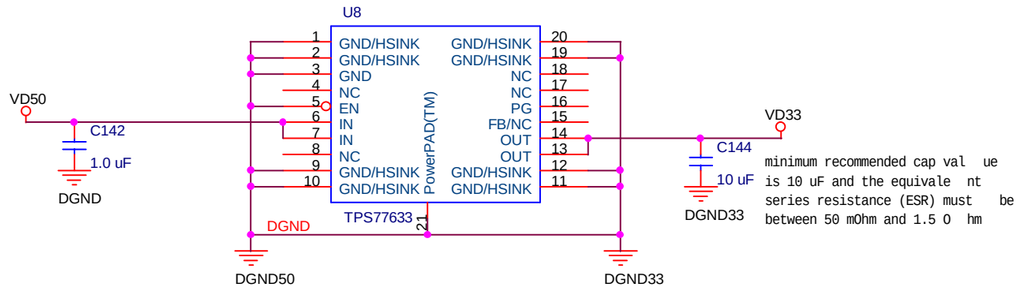
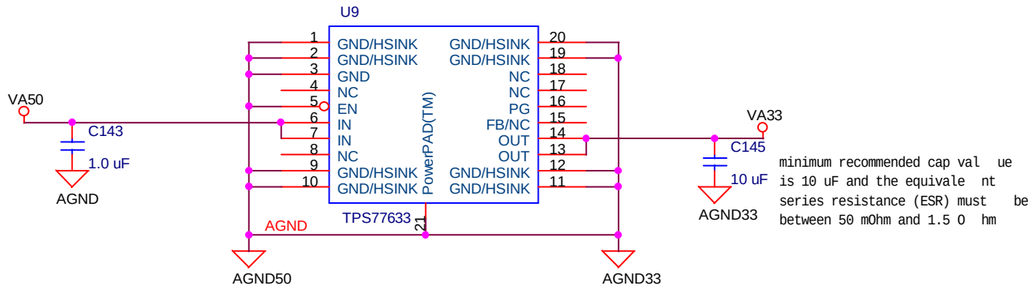
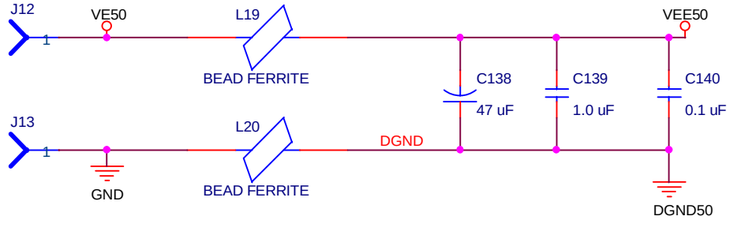
Size: B	Document Number: {Doc}	Rev: A
Date: Tuesday, August 01, 2000	Sheet 5 of 6	











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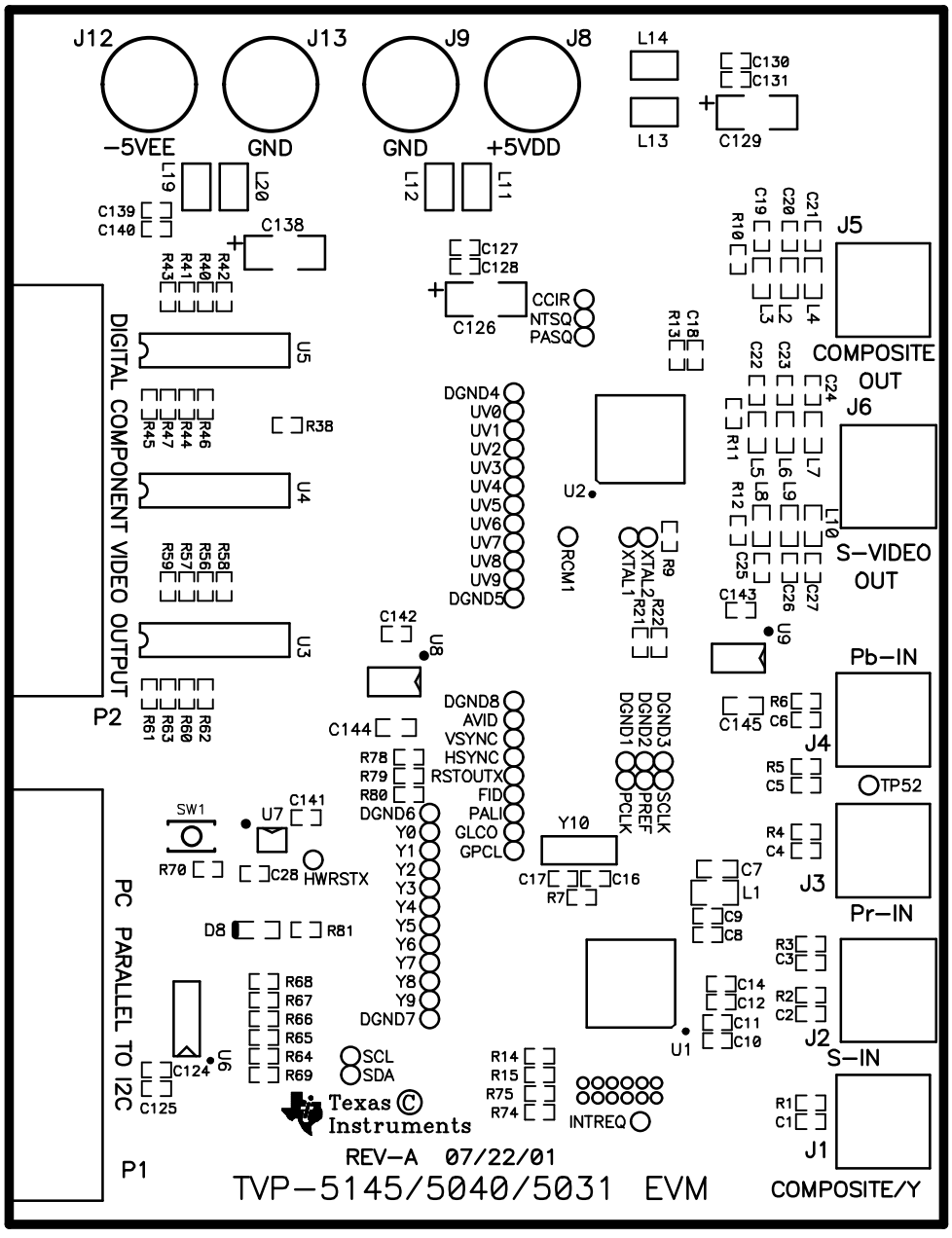
Size: B	Document Number: {Doc}	Rev: A
Date: Tuesday, August 01, 2000	Sheet 6 of 6	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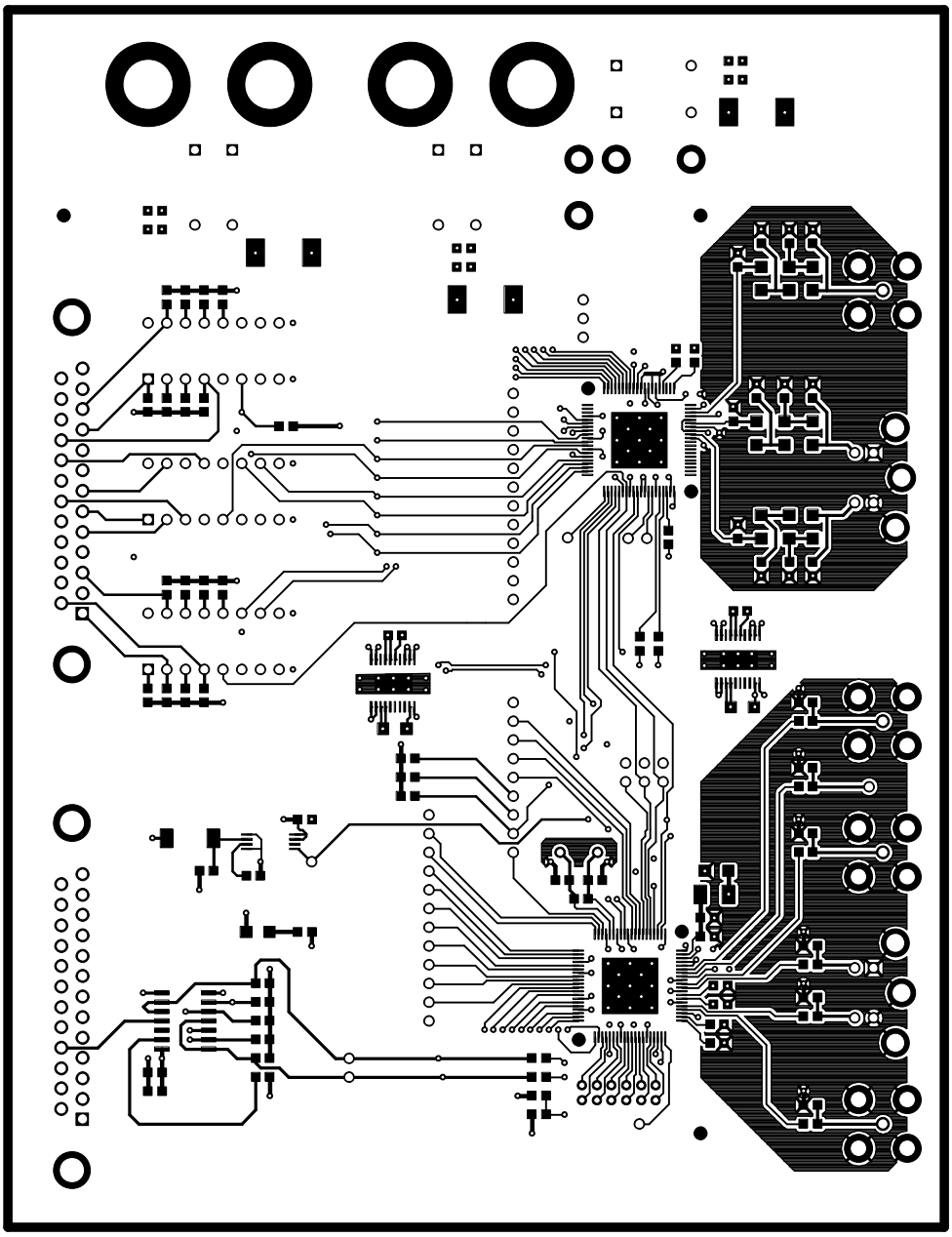
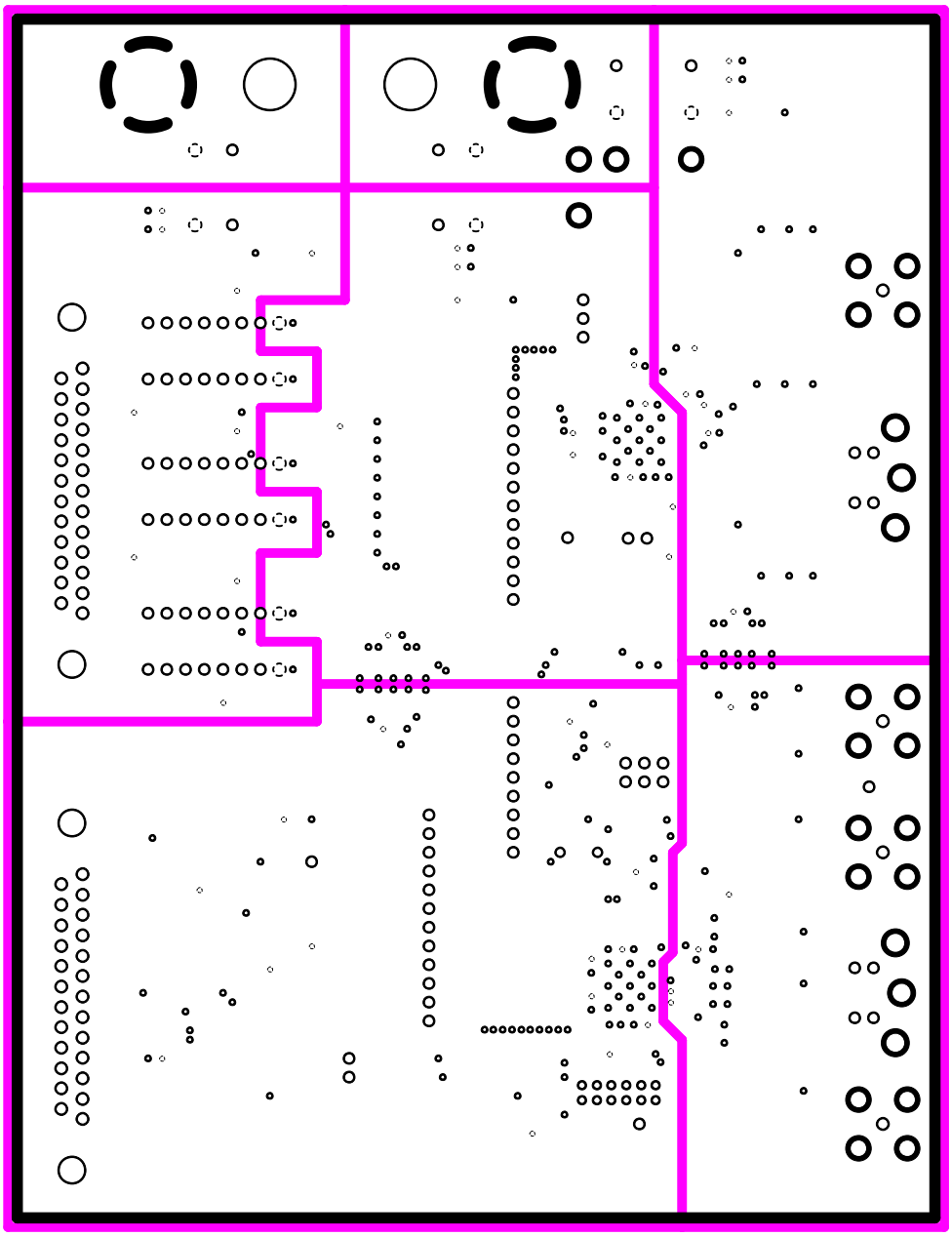
J9
J8
−5VEE
GND
GND
+5VDD
L14
L13
C130
C131
C129
L19
L20
L12
L11
C139
C140
C138
C127
C128
C126
CCIR
NTSQ
PASQ
J5
COMPOSITE
OUT
J6
S−VIDEO
OUT
DIGITAL COMPONENT VIDEO OUTPUT
P2
U5
U4
U3
R38
DGND4
UV0
UV1
UV2
UV3
UV4
UV5
UV6
UV7
UV8
UV9
DGND5
U2
RCM1
XTAL2
XTAL1
U9
C142
U8
C144
DGND8
AVID
VSYNC
HSYNC
RSTOUTX
FID
PALI
GLCO
GPCL
DGND6
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Y8
Y9
DGND7
DGND3
DGND2
DGND1
SCLK
PREF
PCLK
Pb−IN
J4
TP52
C145
SW1
U7
C141
R70
C28
HWRSTX
Y10
C17
C16
R7
J3
Pr−IN
C7
L1
C9
C8
D8
R81
R68
R67
R66
R65
R64
R69
U6
C124
C125
SCL
SDA
U1
C14
C12
C11
C10
J2
S−IN
R14
R15
R75
R74
INTREQ
J1
COMPOSITE/Y
PC PARALLEL TO I2C
P1
Texas
Instruments
REV−A 07/22/01
TVP−5145/5040/5031 EVM

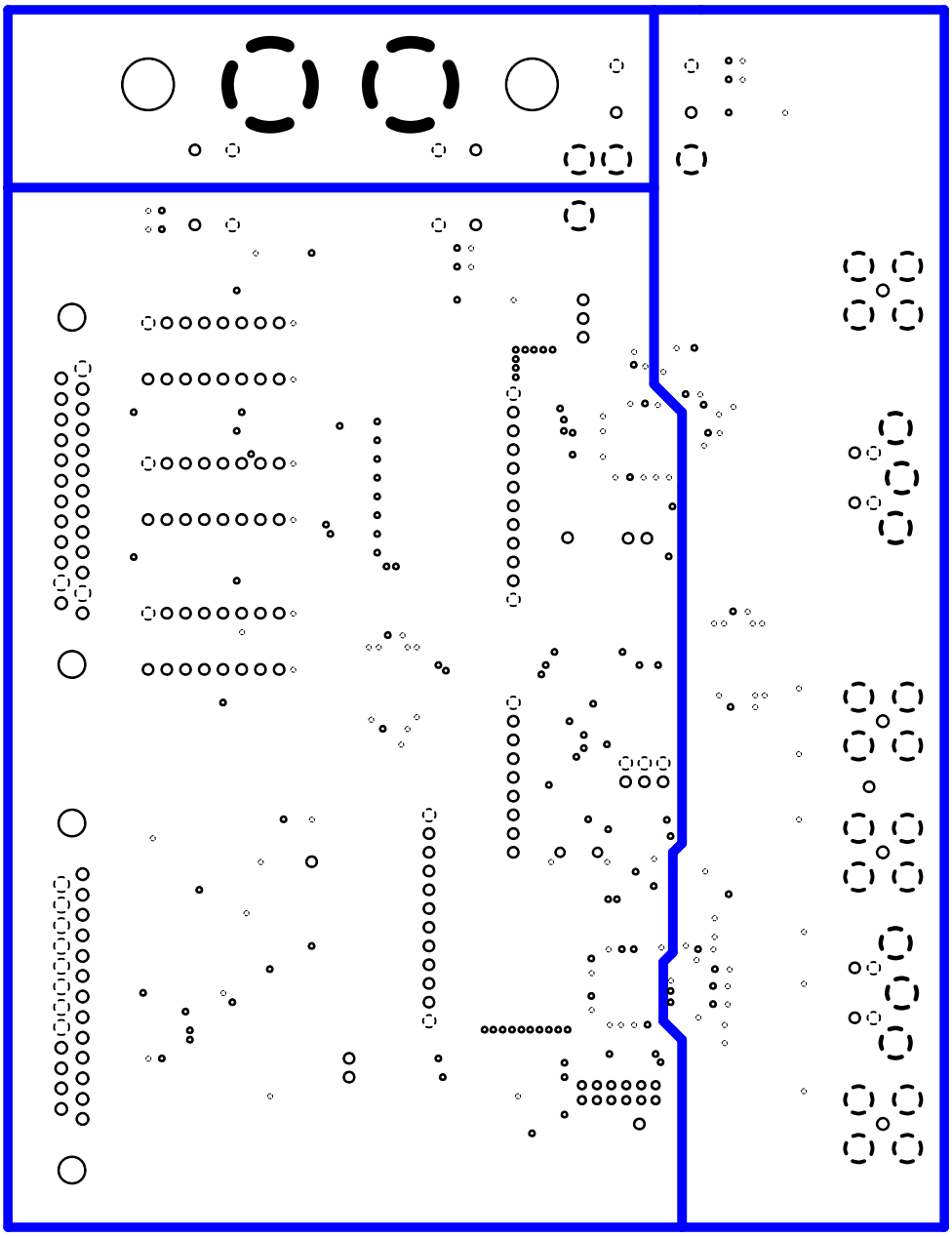
TOP_ SILK



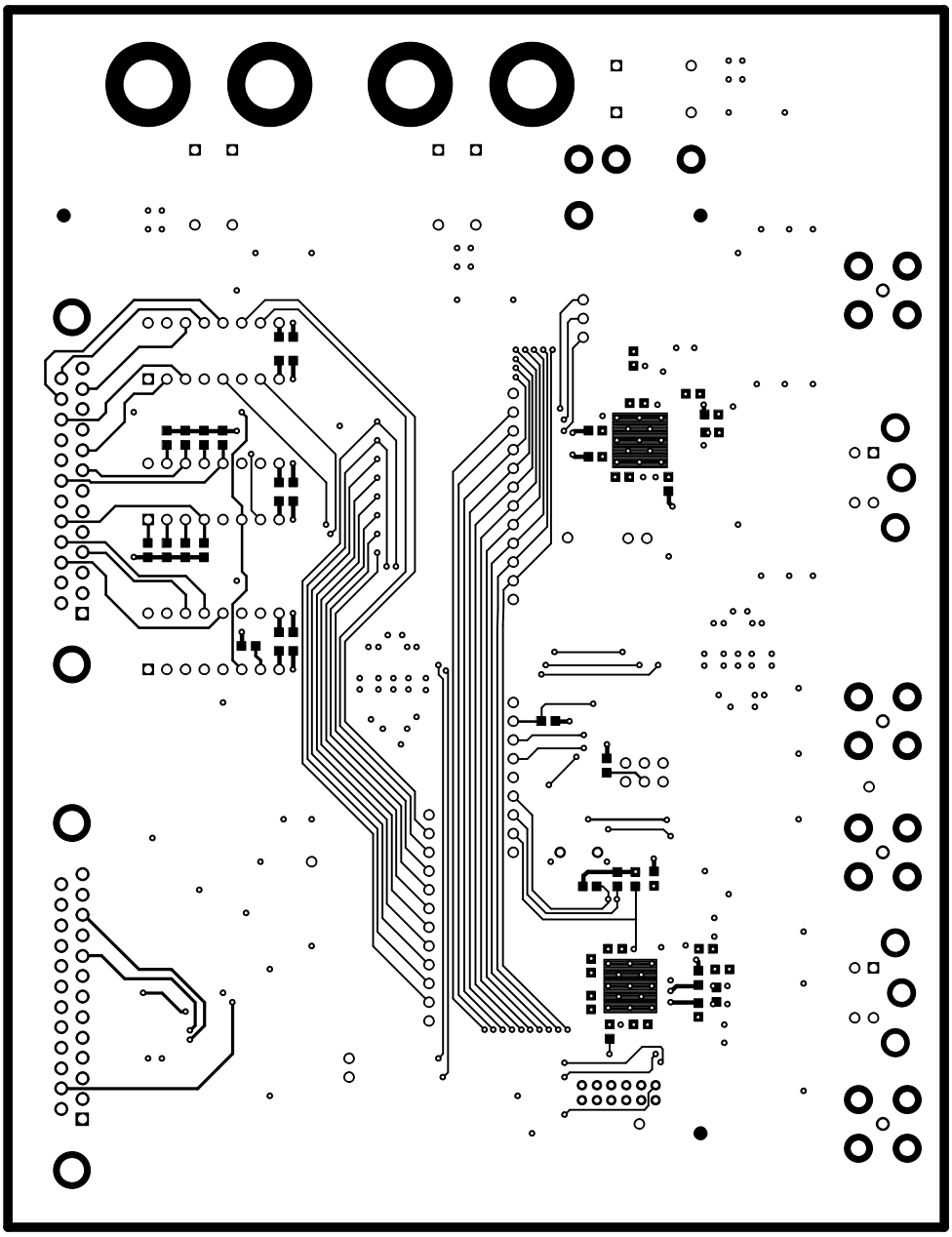
TOP



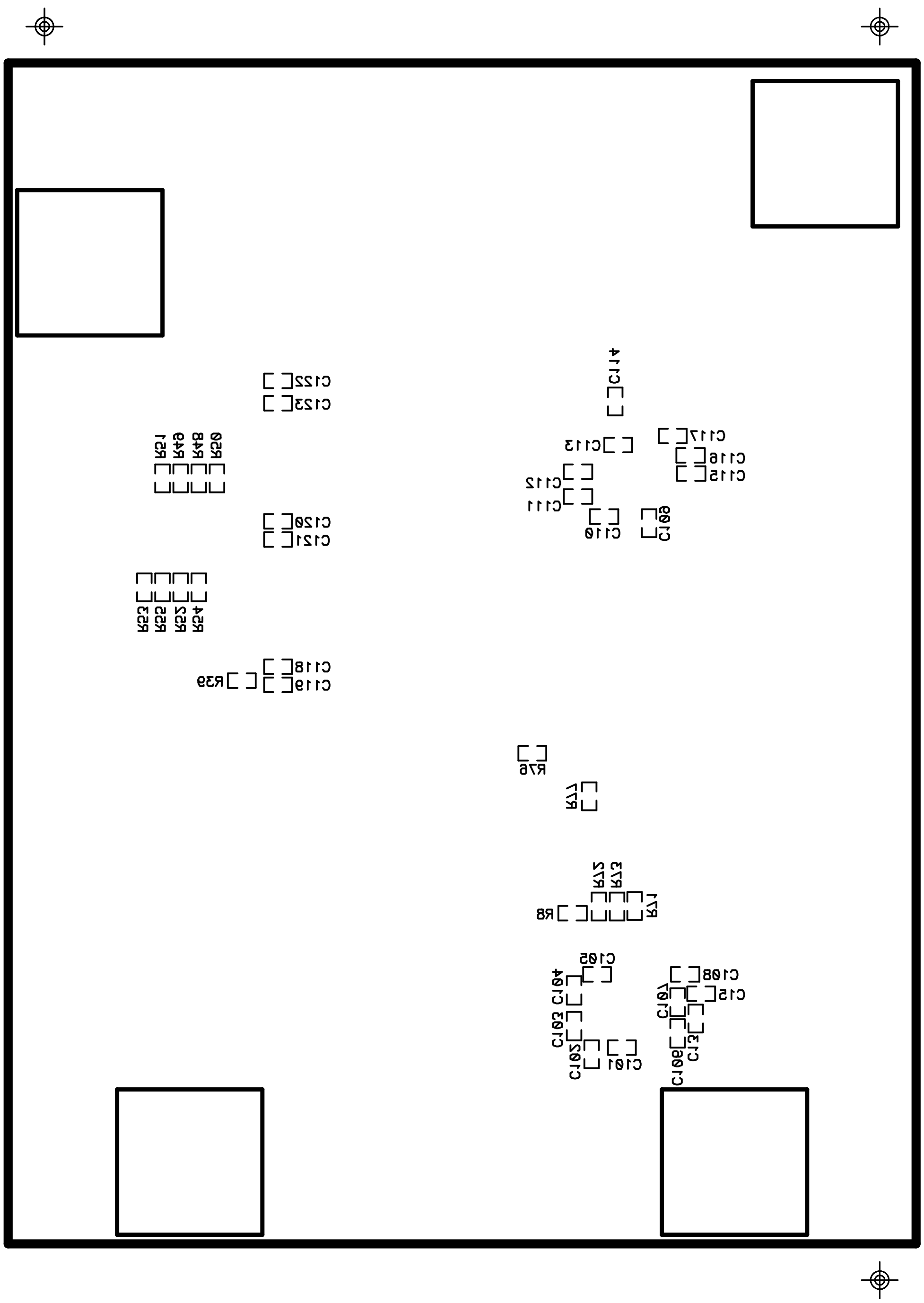
PWR



GND



BOT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C123
R51
R49
R48
R50
C120
C121
R53
R55
R52
R54
C118
C119
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C113
C117
C116
C115
C112
C111
C110
C109
R76
R77
R72
R73
R71
R8
C105
C104
C103
C102
C101
C108
C15
C107
C13
C106

BOT_ SILK