TVP5145

Firmware v6.00

Errata

Contents

1 Introduction

The firmware, internal to the TVP5145, is responsible for the various algorithms, functions and controls of the device. This firmware is executed from the device's internal ROM. The device itself also has an additional 5K-bytes of RAM. This RAM is reserved to fix any ROM firmware problems not addressed with simple register accesses. The RAM is referred to as PatchRAM. The code executed from the PatchRAM is referred to as PatchCode.

This document describes the known problems in the firmware, version 6.00 of the TVP5145. The problems are resolvable with simple register accesses.

Use of the PatchRAM is *not* required for version 6.00 of the TVP5145. Please see below for details. To easier customer designs, Texas Instruments also developed an alternative PatchCode solution, version 6.02, which is available for download at:

http://focus.ti.com/docs/prod/productfolder.jhtml?genericPartNumber=TVP5145

under *Development Tools*.

Examples given in this document assume I2C communication.

2 Identifying the Device Revision and Firmware Version

Users need to check the device revision or firmware version before applying the solutions described in this document. Previous revisions of TVP5145 devices have different firmware versions which require different solutions to fix the problems. The firmware version 6.00 devices have a mark of "U1.3-B" on the device. The firmware version of the TVP5145 can be determined by reading I2C/PHI registers. Reading address 80h, the major version register, and 87h, the minor version register, should display firmware version 6.00, or values of 0x06 and 0x00 respectively.

3 Firmware Problems Resolved with Register Accesses

The following problems can be resolved by writing to various I2C/PHI registers. The register accesses required are described in detail below.

3.1 Changing Input Type from Composite (CVBS) to S-Video

When changing the input type from composite (CVBS) to S-video, there is a loss of color lock in the S-video.

3.1.1 Required Register Accesses

To resolve this, it is necessary to first program register address 20h and then register address 00h. This will prevent a loss of color lock when changing CVBS input to S-video input.

3.2 Changing Input Type from YPbPr to S-Video

When changing the input type from component to S-video, there is a loss of color lock in the S-video.

3.2.1 Required Register Accesses

To resolve this, it is necessary to first select a composite (CVBS) video input and then select S-video. This will correct the loss of color lock. The CVBS input does not have to have a signal present.

3.3 Automatic Color Gain Control (ACGC) is Not Enabled by Default

By default, the ACGC is not enabled.

3.3.1 Required Register Accesses

To resolve this, it is necessary to set register address 1Ah, bits 1 and 0, to 00.

3.4 Fast Lock is Not Enabled by Default

By default, the Fast Lock option is not enabled. This affects the switching time between inputs.

3.4.1 Required Register Accesses

To resolve this, it is necessary to set register address 25h, bit 0, to 1.

4 Firmware Problems Resolved with PatchCode

The problems described in the previous section are also fixed in the 6.02 version of the PatchCode. When using PatchCode solution, it is no need to apply the Register Accesses solutions described above.

The PatchCode is approximately 5kB in size. In order to use the PatchCode, your system must be able to store data of this size including any additional register settings.

The following is pseudo code that illustrates how the PatchRAM should be used. The PatchCode is loaded into the TVP5145 PatchRAM in much of the same way a typical I2C register write is performed.

```
// This is the PatchCode listed in data bytes
unsigned char T5145_PH[] =
{
0x0A,
0x00,
0x00,
.
.
.
0x0F,
0x54,
0xCF
};

// Start TVP5145 CPU
TVP5145_I2C_Write( 0x7F, 0x00 );

// Read ROM version registers
nMajorVersion = TVP5145_I2C_Read( 80h );
nMinorVersion = TVP5145_I2C_Read( 87h );

// ROM 1.3 = Firmware version 06.00

if( ( nMajorVersion == 0x06 ) && ( nMinorVersion == 0x00 ) )
{
        // Load TVP5145 patch code for ROM version 1.3
        // CPU goes into reset state when code download begins
        // 0x7E is the PatchRAM address byte
        TVP5145_I2C_Write( 0x7E, T5145_PH );

        // Restart CPU
        TVP5145_I2C_Write( 0x7F, 0x00 );
}

// Initialize registers as usual; these are examples only
TVP5145_I2C_Write( 0x00, 0x00 ); // Select VI1A composite video
TVP5145_I2C_Write( 0x20, 0x00 );

TVP5145_I2C_Write( 0x0D, 0x47 ); // Set to ITU-R BT.601 sampling rate,
                                 // ITU-R BT.656 format
```

5 Unresolved Firmware Problems

The following problems are observed with the firmware 6.00 device. Currently these problems are unresolved.

5.1 Image Instability When Square Pixel Sampling PAL-M S-Video Input Signals

When the video signals are PAL-M system though S-video input, using square pixel sampling may cause the video image unstable for some video sources. This problem is not fixed in the above solutions. However, the problem is found to be limited only to this specific combination: PAL-M, S-video, and square pixel.

6 Technical Support

For technical support, please visit www.ti.com/sc/support.

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