TVP51xx Product Family - FAQ

HPA Digital Audio Video

Contents

Abstract

The following frequently asked questions (FAQ) on the TVP5146 and the TVP5150A product family of video decoders focus on general questions related to the features and differences between the TVP5146 and the TVP5150A.

For more specific questions on the TVP5146 or the TVP5150A, refer to the *TVP5146 Frequently Asked Questions*, SLEA020 or the *TVP5150A Frequently Asked Questions*, SLEA021.

Questions not covered in either of these documents may also be found by referring to the TVP5146 Data Manual, SLES084, the TVP5150A Data Manual, SLES087 or the various application notes and user guides available at www.ti.com.

1 General Questions

1. What video formats do the TVP5146 and the TVP5150A support?

   Both devices support the following video formats:

   - NTSC (M, 4.43)
   - PAL (B, D, G, H, I, M, N, Nc)
   - SECAM (B, D, G, K, K1, L)

   In addition, the TVP5146 also supports:

   - PAL 60

2. What are the differences between the TVP5146 and the TVP5150A?

   Please see the table next page.

Part Number			TVP5146	TVP5150A
Video Formats Supported				
NTSC (M, 4.43)			Y	Y
PAL (B, D, G, H, I, M, N)			Y	Y
PAL 60			Y	N
SECAM (B, D, G, K, K1, L)			Y	Y
Autoswitch Between Standards			Y	Y
Inputs / Outputs				
Analog Video Input(s) Total			10	2
Analog Video Input Types			10 CVBS or 4SV or 3 YPbPr/RGB, 1 CVBS or 2 YPbPr/RGB, 2 SV, 2 CVBS or other combinations	2 CVBS or 1SV
Digital RGB Overlay			All Inputs	N
SCART Support			Y	N
Output Formats			10/8-bit 4:2:2 YCbCr ITU-R BT.656 20/16-bit 4:2:2 YCbCr ITU-R BT.601 Square pixel	8-bit 4:2:2 YCbCr ITU-R BT.601 8-bit 4:2:2 YCbCr ITU-R BT.656
Programmable output data rates			Y	N
Analog Front End				
ADC		#	4	1
		Resolution	11 bit	9 bit
		Speed	30MHz	30MHz
Comb Filter				
Adaptive Comb Filter			5-line	4-line
Programmability & Controls				
Communications Options			I2C	I2C
Controls		Brightness	Y	Y
		Contrast	Y	Y
		Saturation	Y	Y
		Hue	Y	Y
		Sharpness	Y	Y
Macrovision				
Macovision Copy Protection Detection			Y	Y
VBI Data Processing				
VBI	Raw VBI data		Y	Y
	Closed Caption (CC)		Y	Y
	Teletext (NABTS, WSS)		Y	Y
	WSS		Y	Y
	CGMS		Y	Y
	VPS		Y	Y
	VITC		Y	Y
	Gemstar1x, 2x		Y	Y
	Extended Data Service (XDS)		Y	Y
	Moji		Y	Y
	V-Chip		Y	Y
Ancillary Readback of VBI Data			Y	Y
I2C Readback of VBI Data			Y	Y
Misc.				
Power Supplies			1.8V/3.3V	1.8V/3.3V
Power Consumptions (typical)			335 mW	115 mW
Package			80-pin TQFP	32-pin QFP

3. Does either the TVP5146 or the TVP5150A have a built in scaler?

   No, neither the TVP5146 nor the TVP5150A has a built in scaler. Both devices do support AVID cropping though. AVID cropping allows you to horizontally “crop”, not rescale, a programmable window of the active video data.

4. How do I decide which decoder is right for my application?

   This decision is really based on the requirements of your design.

   If small size and low power are your key careabouts, then the TVP5150A is the best choice.

   If your application is cost sensitive but still requires good quality, then the TVP5150A is the best choice.

   If you are looking for a high-quality video decoder for medium- to high-end applications then the TVP5146 is the best choice.

   If your application requires many inputs, YPbPr inputs, SCART, or even digital character inputs from a VBI decoder, then the TVP5146 is your best choice.

   These are only a few examples of careabouts that may drive your applications. We recommend referring to the datasheets for both devices to make your final decision.

5. Can I use the TVP5150A as a low-cost alternative of the TVP5146?

   The TVP5150A was designed to specifically target the portable video market by significantly reducing the size and power consumption. In doing so, there are differences in the quality of the TVP5150A compared to the TVP5146.

   The TVP5146 was designed for medium- to high-end end equipments with a superior 5-line comb filter and other advanced features, giving the TVP5146 the advantage in best overall picture quality. However, there are many applications in which the TVP5150A can be used, and have been used, as a low-cost alternative to the TVP5146.

   Compared to video decoders typically used in portable video end equipments, the TVP5150A provides unparalleled performance given its size and power.

6. How do Texas Instruments video decoders compare to other video decoders?

   We continue to benchmark our devices against the strongest competition in the market today. Based on these results we strive hard to constantly improve our IP and our devices to outperform the competition. We believe that given today’s competition, the TVP5150A and the TVP5146 have accomplished this in their respective target end equipments.

7. I am looking for a video decoder that is smaller and designed more for portable video applications. Does TI have a solution available for this?

Yes, the TVP5150A video decoder is designed specifically for portable video end equipments. This device consumes less than 150mW and is the smallest video decoder in a 32-pin TQFP. Compared to typical video decoders the TVP5150A requires 3/4 less board space and consumes 1/4 to 1/5 the power.

8. Does the TVP5146 or the TVP5150A autoswitch or auto-detect between video formats? What is the difference?

   Both the TVP5146 and the TVP5150A autoswitch between input video formats. This means that the video decoder automatically detects and then reinitializes itself to decode the input video standard without I2C register settings. For example, if the video decoder is decoding an NTSC input from a VCR on one channel and then is switched to decode a PAL input from a DVD player on another channel, the video decoder automatically detects and reinitializes itself to support the change in video format.

   The difference between autoswitch and auto-detect is that autoswitch is the ability for a video decoder to detect and then automatically reconfigure itself to adapt to an input video standard. Auto-detect only detects the video standard and then relies on a backend to reinitialize it. Again, both the TVP5146 and TVP5150A supports the better of the two, autoswitch.

2 TVP5150A Questions

1. I like the small size and low power of the TVP5150A, but I need more than 2 CVBS inputs. What can you recommend?

   There are two designs you can implement that would enable more than 2 CVBS inputs into the TVP5150A. The first is to use an analog switch. This design is used on the TVP5150AEVM to provide 2 CVBS and 1 SV inputs. GPCL, a general purpose output pin on the TVP5150A, is used to control the analog switch.

   The alternative to the analog switch is to route multiple connectors to the same input. For example on the TVP5150AEVM we could have done without an analog switch by routing two CVBS inputs to Ch1 and Ch2 respectively. By then routing Y and C of the S-video connector to Ch1 and Ch2, respectively, we can support both S-video and 2 CVBS inputs. In this design though, where multiple inputs are connected to channel on the TVP5150A, you cannot have active sources on each of the inputs connected to the channel.

2. What inputs does the TVP5150A support?

   The TVP5150A supports two CVBS inputs or one S-Video input.

3. What outputs does the TVP5150A support?

The TVP5150A supports the following user programmable video output formats:

- 8-bit ITU-R BT.656 4:2:2 YCbCr with embedded syncs
- 8-bit 4:2:2 YCbCr with separate syncs
- 2x sampled raw VBI data in active video during a vertical blanking period
- Sliced VBI data during a vertical blanking period or active video period (Full Field mode)

3 TVP5146 Questions

1. What inputs does the TVP5146 support?

   The TVP5146 supports various combinations of:

   - CVBS
   - S-Video
   - Component YPbPr (480i, 576i)
   - Component RGB (video inputs, not computer graphics)
   - SCART

   It also supports digital RGB character data inputs from a Line 21 decoder or other VBI data decoders.

2. Does the TVP5146 support EDTV (480p or 576p) or HDTV (720i, 720p, 1080i)?

   The TVP5146 does not support EDTV or HDTV modes. It only support 480i (component NTSC) and 576i (component PAL).

3. What outputs does the TVP5146 support?

   The TVP5146 supports the following user programmable video output formats:

   - 10/8-bit ITU-R BT.656 4:2:2 YCbCr with embedded syncs
   - 10/8-bit 4:2:2 YCbCr with separate syncs
   - 20/16-bit 4:2:2 YCbCr with separate syncs
   - 2x sampled raw VBI data in active video during a vertical blanking period
   - Sliced VBI data during a vertical blanking period or active video period (Full Field mode)

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