

Application Clip

Standard Linear and Logic

5-V TS5V330 Video Switch for RGB Video Applications

Why is a Video Switch Needed?

With today's growing demand for feature-rich applications, an original equipment manufacturer (OEM) can gain an edge on its competition by providing a high-performance, cost-effective solution to a recurring trend in video applications—multiplexing video signals. Texas Instruments (TI) now offers the quad SPDT (1:2 MUX/DEMUX) TS5V330 video switch in its specialty switches portfolio to address these applications.

Historical Background

In the past, OEMs had no choice but to use analog switches that were not specifically designed to handle video signals. Some drawbacks to using these older switches include:

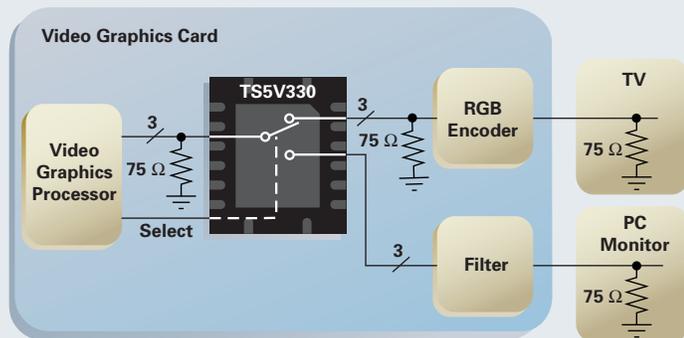
- The high ON-resistance caused a voltage drop large enough that an amplifier was needed, which added more cost.
- Low pass-current capabilities were insufficient for the RAMDAC's requirement of 26.66 mA.
- There were no specifications on the datasheet to guarantee good video quality.
- Testing was not done to meet vigorous VGA requirements.

Application Examples

Switching Video Signals Between Two Displays

Example 1 shows the TS5V330 multiplexing video signals from the video graphics processor to two external video ports of the VGA card.

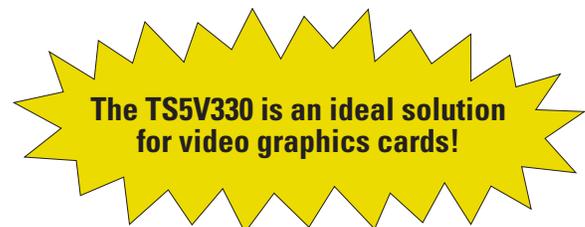
Example 1



TI Solution

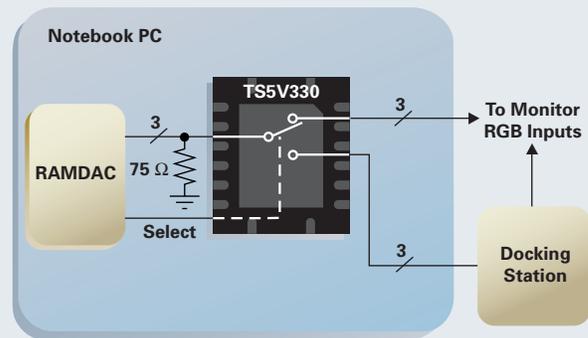
The following table shows how the TS5V330 is right for your video switching applications.

| Key Features | Benefits |
|--|---|
| Low R_{ON} , C_{ON} (3 Ω , 14 pF typ.) | Maintains good signal quality at frequencies up to 300 MHz |
| High off-isolation (-60 dB typ.) | Excellent isolation at high frequencies when video switch is open |
| Low crosstalk (-63 dB typ.) | Excellent isolation between channels to prevent unwanted interference |
| Low differential gain, phase (0.64%, 0.1° typ.) | Very low signal distortion |
| Space-saving, QFN package | Smallest PCB footprint |



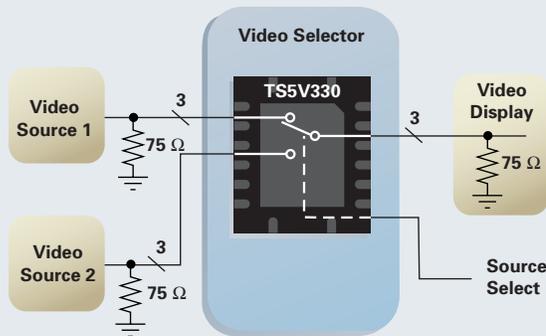
In Example 2, the TI video switch is used to route the RGB video signals directly through the video port of the notebook PC or through the docking station with minimal signal degradation.

Example 2

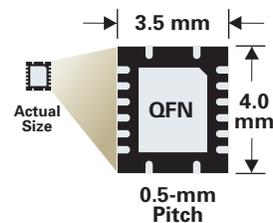


Switching Video Signals Between Two Video Sources

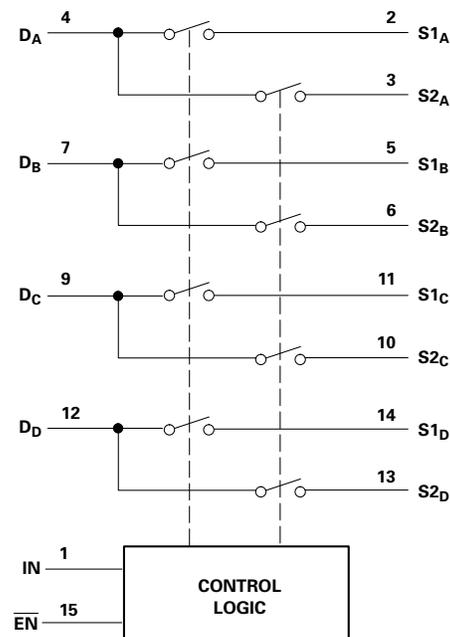
Another growing need in the industry is having the capability to select multiple video signal inputs on one video display terminal. An example of this is toggling between a DVD and a set-top box.



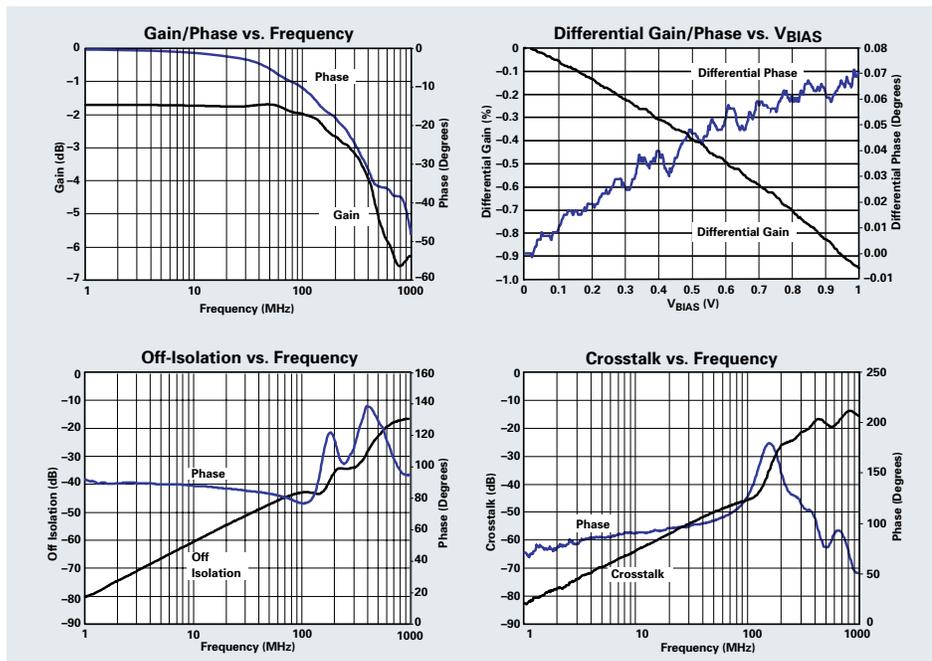
Smallest TS5V330 video switch solution available today!



TS5V330 Functional Diagram



Typical Characteristics of the TS5V330



For More Information

Product Folder:

focus.ti.com/docs/prod/folders/print/ts5v330.html

Datasheet:

focus.ti.com/lit/ds/symlink/ts5v330.pdf

Ordering Information (Note: A 3-V video switch is also available as TS3V330.)

| Package* | | | Orderable Part Number | Top-Side Marking |
|-------------|-----|---------------|-----------------------|------------------|
| JEDEC | TI | Carrier | | |
| QFN | RGY | Tape and reel | TS5V330RGYR | TS5V330 |
| SOIC | D | Tube | TS5V330D | TS5V330 |
| | | Tape and reel | TS5V330DR | |
| SSOP (QSOP) | DBQ | Tape and reel | TS5V330DBQR | TS5V330 |
| TSSOP | PW | Tube | TS5V330PW | TS5V330 |
| | | Tape and reel | TS5V330PWR | |
| TVSOP | DGV | Tape and reel | TS5V330DGV | TS5V330 |

*Package drawings, standard packing quantities, thermal data, symbolization and PCB design guidelines are available at www.ti.com/sc/package

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