

NXP NX5DV330 demo board

Demonstrate high-fidelity video with a wideband mux/demux

Use this compact demo board to evaluate the NX5DV330, a quad 1-of-2 high-speed TTL-compatible video multiplexer/demultiplexer with low ON resistance.

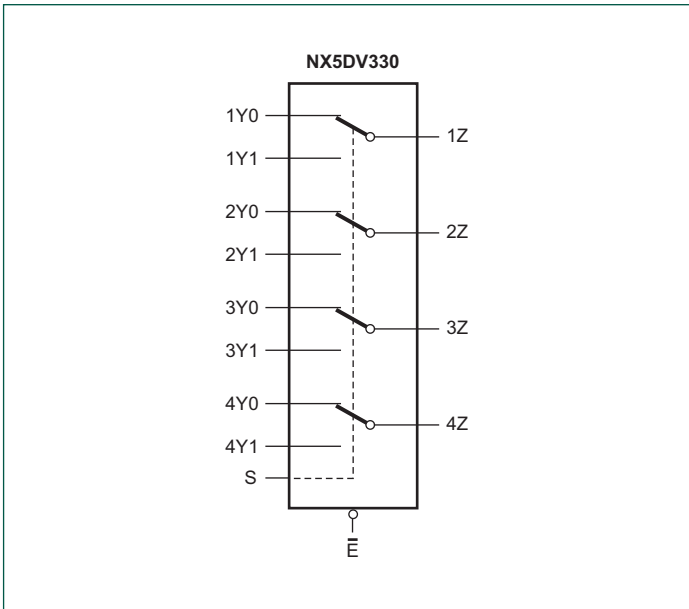
Key features and benefits

- ▶ Higher signal bandwidth for more details and high fidelity in images
- ▶ Schmitt trigger at control inputs to better tolerate slow edges
- ▶ Low Ron ($5\ \Omega$ typ) for high-quality colors with higher dynamic range
- ▶ Low Ron for low voltage drop across the switch and reduced signal attenuation
- ▶ Low Ron flatness for reduced total harmonic distortion
- ▶ Low leakage current and high isolation for noise-free images
- ▶ Low cross-talk for low interference between active and idle display terminals
- ▶ Bidirectional design results in easy PCB layout for mux/demux applications
- ▶ Low supply current for lower power consumption
- ▶ Low differential phase offset for low output skew
- ▶ TTL-compatible inputs for mixed CMOS/TTL designs
- ▶ High isolation between I/O pins to prevent false switching
- ▶ Available in very small 16-pin leadless DQFN package

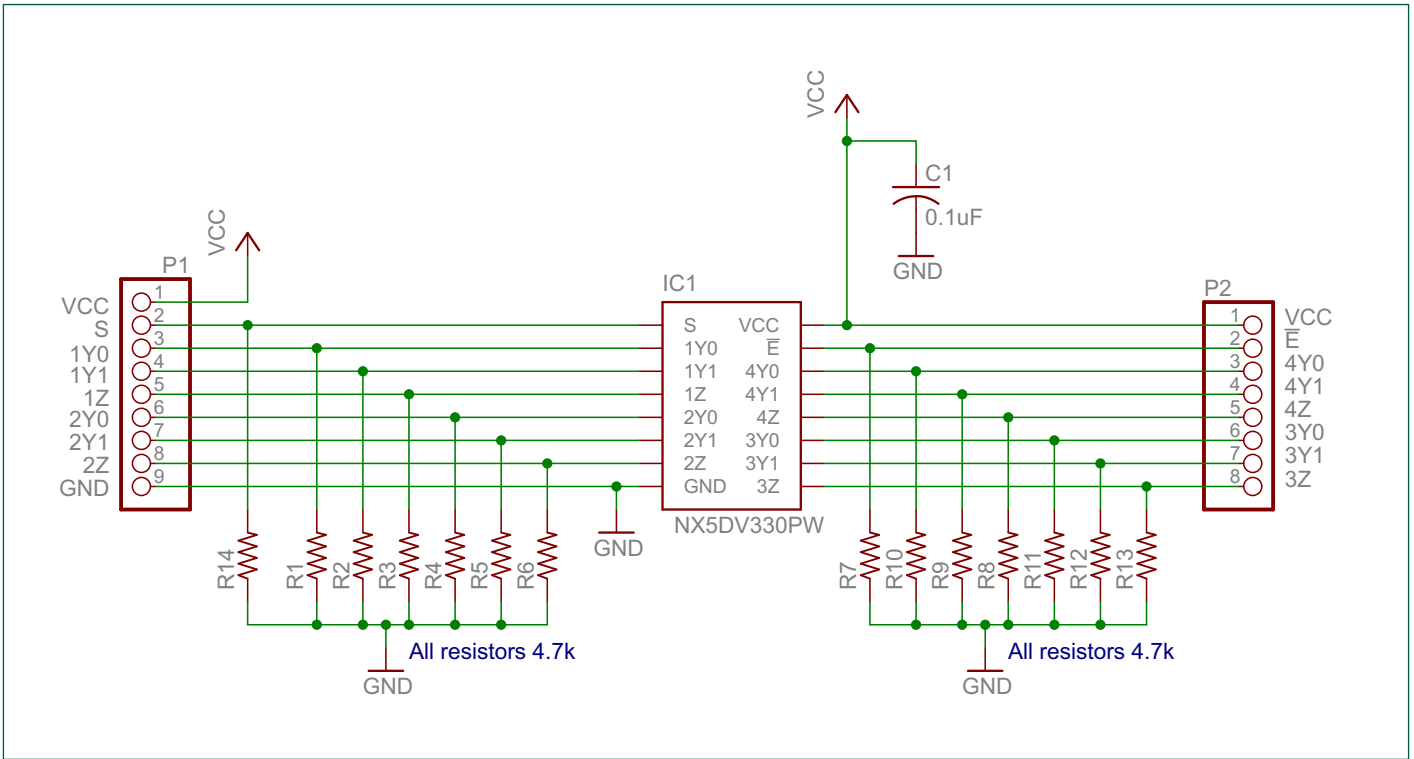
The low ON resistance of the NX5DV330 allows inputs to be connected to outputs without adding propagation delay or generating additional ground bounce noise. It has a digital select input (S), four independent inputs/outputs (nY0, nY1), a common input/output (nZ) and an active LOW enable input (\bar{E}). When pin \bar{E} is HIGH, the switch is turned off.

Schmitt-trigger action at the enable input (\bar{E}) and select input (S) makes the circuit tolerant to slower input rise and fall times across the entire V_{CC} range of 4.0 to 5.5 V. The NX5DV330 is characterized for operation from -40 to $+85\ ^\circ\text{C}$.





Schematics of the NX5DV330 demo board are shown below. A supply voltage of 4 to 5.5 V can be used for the board. Video and data signals with amplitude in the range of 0 V to V_{CC} can be connected to pins nZ and switched between pins nY0 and nY1 with minimal loss, based on the logic level of select pin S. Similarly, the voltage signals from two sources can be connected to pins nY0 and nY1 and pins nZ will multiplex the signals based on the logic level of select pin S. There are four channels in the NX5DV330 switch. The maximum input frequency for each channel can be as high as 300 MHz. By default, the Enable pin (active low) is pulled LOW to enable the switch. All four of the switch's channels can be turned off (inputs and outputs in high impedance), if a logic high signal is connected to the Enable pin.



Circuit schematics of NX5DV330 demo board

Test results

The figures below present the results of tests done on the NX5DV330 demo board. In Figure 1, the purple waveform is a 500 kHz square wave input with amplitude of 3.86 V applied at pin1Z and the green waveform is a 3.76 V switch output at 1Y0 pin, keeping the select pin S at GND.

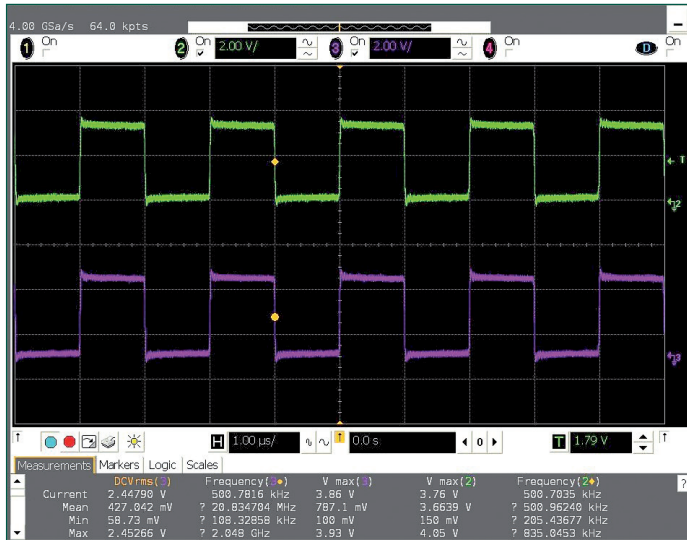


Figure 1

Figure 2 shows the output at pin 1Y0 in purple waveform and input at pin 1Z in green, when the select pin S is connected to V_{CC} . Figures 3 and 4 show the same test results for pins 4Z and 4Y0 but the frequency of input signal is increased to 5 MHz. The purple waveforms show the input signals and the green waveforms show the switch output signals.



Figure 2

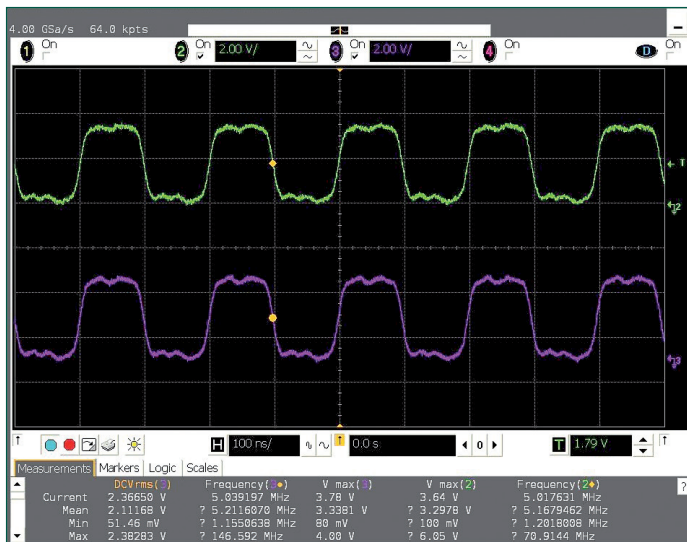


Figure 3

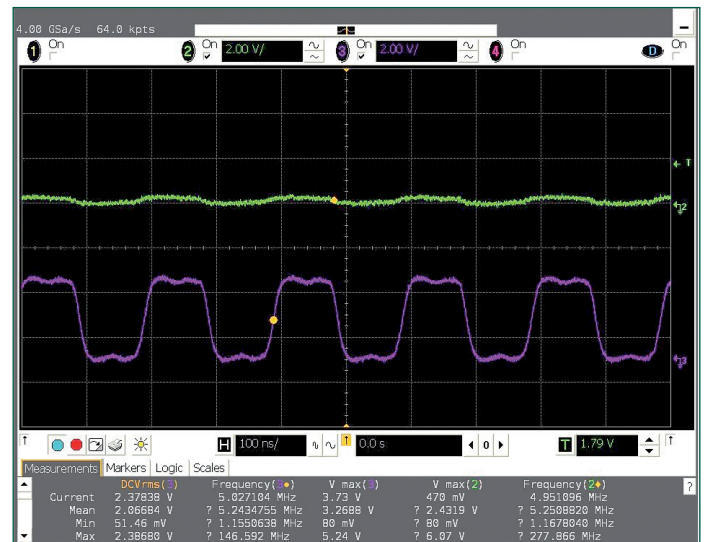
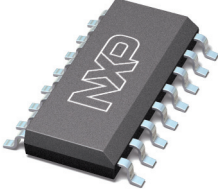
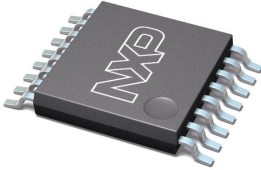
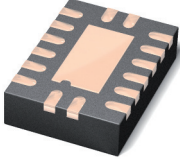
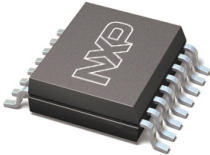


Figure 4

Packages

The NX5DV330 switch is available in 16-pin SO, SSOP/QSOP, TSSOP and leadless DQFN packages.

Package suffix	D	PW	BQ	DS
				
	SOT109-1	SOT403-1	SOT763-1	SOT519-1
	16-pin	16-pin	16-pin	16-pin
Width (mm)	6.0	6.4	2.5	6
Length (mm)	9.9	5.0	3.5	4.9
Pitch (mm)	1.27	0.65	0.5	0.635

Ordering information

Part number	Package				
	Temp. range	Name	Type	Marking	Material
NX5DV330D	-40 to 85 °C	SO16	Small outline	NX5DV330D	Plastic
NX5DV330DS	-40 to 85 °C	SSOP16	Shrink small outline	X5DV330	Plastic
NX5DV330PW	-40 to 85 °C	TSSOP16	Thin shrink small outline	X5DV330	Plastic
NX5DV330BQ	-40 to 85 °C	DHVQFN16	Dual in-line compatible thermal enhanced very thin quad flat package with no leads	5DV330	Plastic