Precision Low Jitter 4x4 LVDS Crosspoint Switch with Internal Termination

SY89540U Evaluation Board

General Description

The SY89540U evaluation board is designed for convenient setup and quick evaluation of the SY89540U. The board is optimized to interface directly to 50Ω oscilloscope. The default evaluation board I/O configuration is AC-coupled.

All data sheets and support documentation can be found on Micrel's web site at: www.micrel.com.

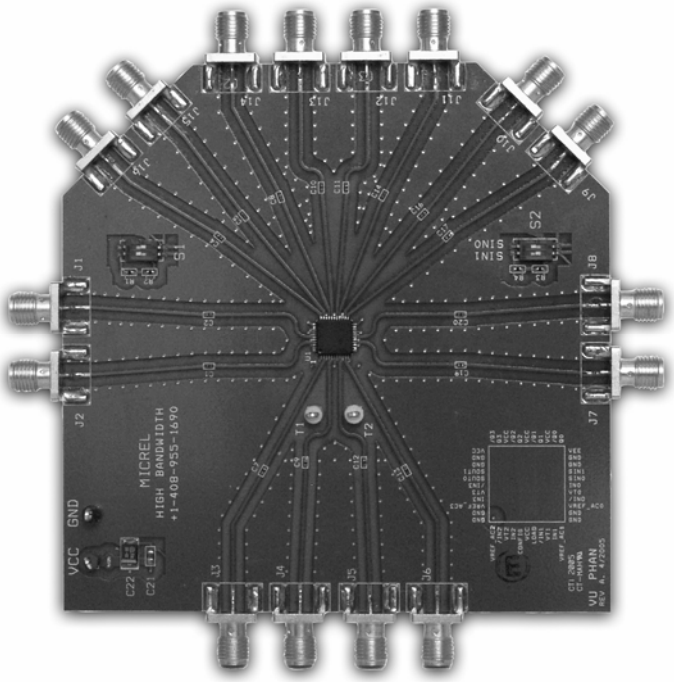
Features

- SY89540U
- +2.5V or +3.3V power supply
- AC-coupled configuration
- I/O interface includes on-board termination

Related Documentation

- SY89540U, Precision Low Jitter 4X4 LVDS Crosspoint Switch with Internal Termination Data Sheet

Evaluation Board



Evaluation Board Description

The SY89540U evaluation board is designed to operate at 2.5V or 3.3V. The default configuration for the board is AC-coupled inputs and outputs.

AC-Coupled Inputs

AC-coupled input is suited for most applications and is preferred because of its ease-of-use. It requires a single power supply and offers flexibility in interfacing to a variety of signal sources. Each input contains AC-coupling capacitors and the DC-operating point is set to V_{CC}–1.3V.

AC-Coupled Outputs

The outputs of the SY89540U are AC-coupled and directly interfaces with 50Ω systems.

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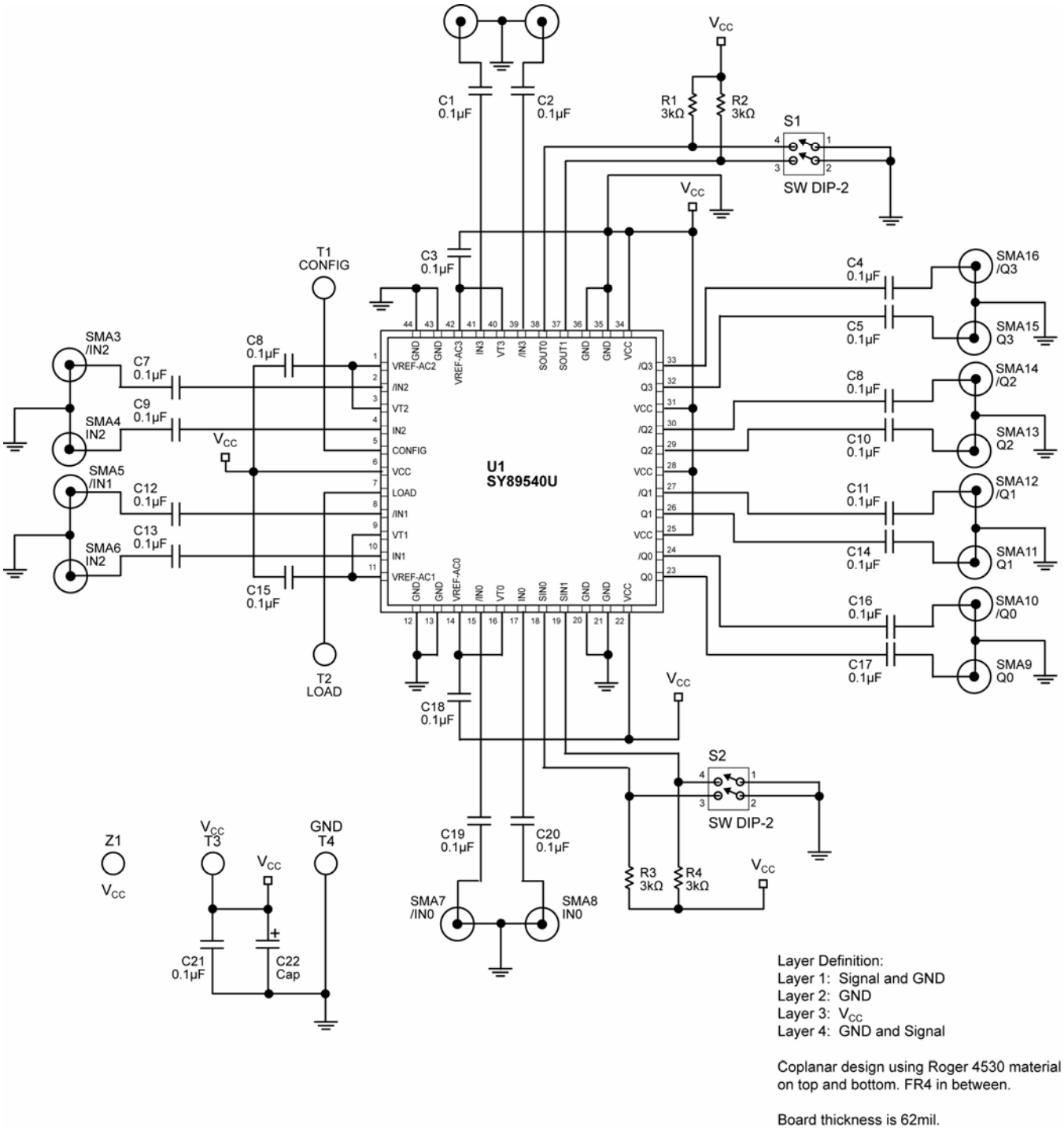
Evaluation Board



SY89540U Evaluation Board

AC-Coupled Evaluation Board Setup

The following steps describe the procedure for setting up the evaluation board:

Buffer Mode

1. Connect V_{CC} to 2.5V.
2. Connect GND to 0V.
3. Set the dipswitches to select input and output channels.

Input Channel			Output Channel		
SIN1	SIN0	Input	SOUT1	SOUT0	Output
0	0	IN0	0	0	Q0
0	1	IN1	0	1	Q1
1	0	IN2	1	0	Q2
1	1	IN3	1	1	Q3

Table 2. Input/Output Channel

4. Using a differential signal source, set the amplitude of each input to 350mV ($700mV_{PP}$). Set the offset to a positive value, the value of the offset is not critical, since the inputs will automatically bias to the correct offset.
5. Using equal length 50Ω impedance coaxial cables, connect the outputs to an oscilloscope.

Crosspoint Switch Mode

1. Follow steps #1-5 (Buffer Mode).
2. Program SIN with an input address.
3. Program SOUT with an output address.
4. Pulse the LOAD signal with a Low to High to Low signal to latch SIN and SOUT.
5. Pulse CONFIG with a Low to High to Low signal to load the latched signal.
6. Monitor the outputs.

Evaluation Board Layout

PCB Board Layout

The evaluation board is constructed with Rogers 4003 material, coplanar in design, fabricated to minimize noise, achieve high bandwidth and minimize crosstalk.

Layer	SY89540U
L1	Signal and GND
L2	GND
L3	V_{CC}
L4	GND and Signal

Table 3. Layer Stack

Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1–C21	VJ0402Y104KXXAT	Vishay[1]	0.1µF, 25V, 10% Ceramic Capacitor, Size 0402, X7R Dielectric	21
C22	293D685X0025C2T	Vishay[1]	6.8µF, 20V, Tantalum Electrolytic Capacitor, Size B	1
R1–R4	CRCW04023001F	Vishay[1]	3kΩ Resistors, Size 0402	4
S1, S2	CKN3054-ND	Panasonic[2]	Switch Dip-2	2
SMA1–SMA16	142-0701-851	Johnson Components[3]	Jack Assembly End Launch SMA	16
U1	**SY89540U**	**Micrel[4]**	Precision Low Jitter 4x4 LVDS Crosspoint Switch with Internal Termination	1

Notes:

1. Vishay: www.vishay.com.
2. Panasonic: www.panasonic.com.
3. Johnson Components: www.johnsoncomponents.com.
4. **Micrel, Inc.: www.micrel.com**.

HBW Support

Hotline: 408-955-1690

Email Support: HBWHelp@micrel.com

Application Hints and Notes

For application notes on high-speed termination on PECL and LVPECL products, clock synthesizer products, SONET jitter measurement, and other High Bandwidth products, go to Micrel Inc., website at: http://www.micrel.com/. Once in Micrel's website, follow the steps below:

1. Click on "Product Info."
2. In the Applications Information Box, choose "Application Hints and Application Notes."

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