

## FEATURES

- DC-coupled and terminated CML inputs
- DC-coupled CML outputs
- Positive ground
- Selects set through on-board DIP switch
- All data and select inputs and all outputs accessible via SMA connectors

## EVALUATION BOARD COMPONENTS

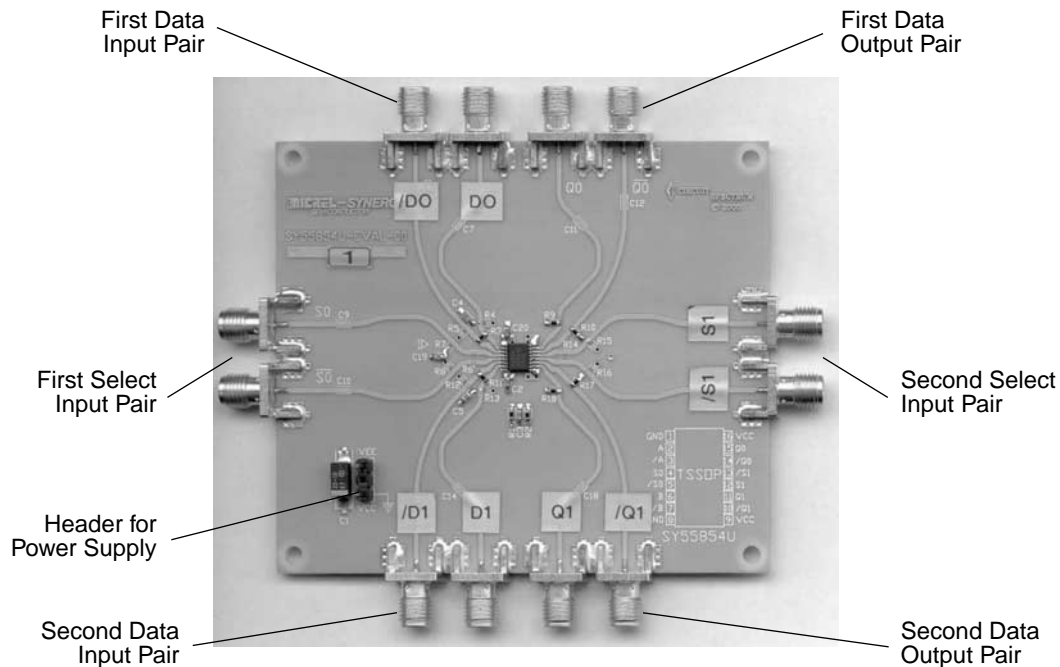
- SY55854U evaluation board
- SY55854U data sheet and this document
- Various pairs of length-matched SMA cables (user supplied)

## DESCRIPTION

The SY55854U is a 2 × 2 crosspoint switch optimized for high-speed data and/or clock applications (up to 2.5Gbps or 2.5GHz) where low jitter and skew are critical. Each of the SY55854U inputs routes to any output, and thus can distribute or multiplex a clock or data stream.

This document provides a detailed description of the evaluation board, and how to use it. Complete information in this document includes:

1. Measuring an eye
2. Board schematic
3. Bill of materials



**EVALUATION PROCEDURE**

**Measuring an Eye with SY55854U**

This section describes how to obtain an eye diagram using the SY55854U evaluation board.

You will need:

- An SY55854U evaluation board
- A power supply
- A digital signal source capable of generating pseudo-random patterns at up to 2.5Gbps
- An oscilloscope capable of showing eye patterns
- Two pairs of length-matched SMA cables
- Four 50Ω termination SMA

The following steps allow the user to generate an eye diagram using the SY55854U evaluation board.

1. *Connect Power Source:* The power supply must be set to about 3.3V. Current consumption will be under 100mA. Connect the positive power supply to the bottom pin of the power supply header, marked “V<sub>CC</sub>,” and having a ground symbol. Connect the negative power supply to the top pin of the power supply header.

2. *Connect Data Source:* Set your data source to generate a pseudo-random data stream. Any pattern 2<sup>7</sup>–1 PRBS or better will do. If there is a choice, use 2<sup>23</sup>–1 PRBS. Set the data rate to 2.5Gbps. Set the output high level to be +0V, and the output low level to be –400mV.

Using one pair of length matched SMA cables, connect the differential output of the signal generator to the “D0” and the “/D0” SMA connectors.

3. *Connect Data Output:* Using another pair of length matched SMA cables, connect “Q0,” and “/Q0” SMA connectors to the oscilloscope. Connect a trigger output from the digital generator to the trigger input of the oscilloscope.

4. *Terminate Unused Inputs and Outputs:* Cap the “D1,” “/D1,” “Q1,” and “/Q1” SMA connectors with 50Ω terminators.

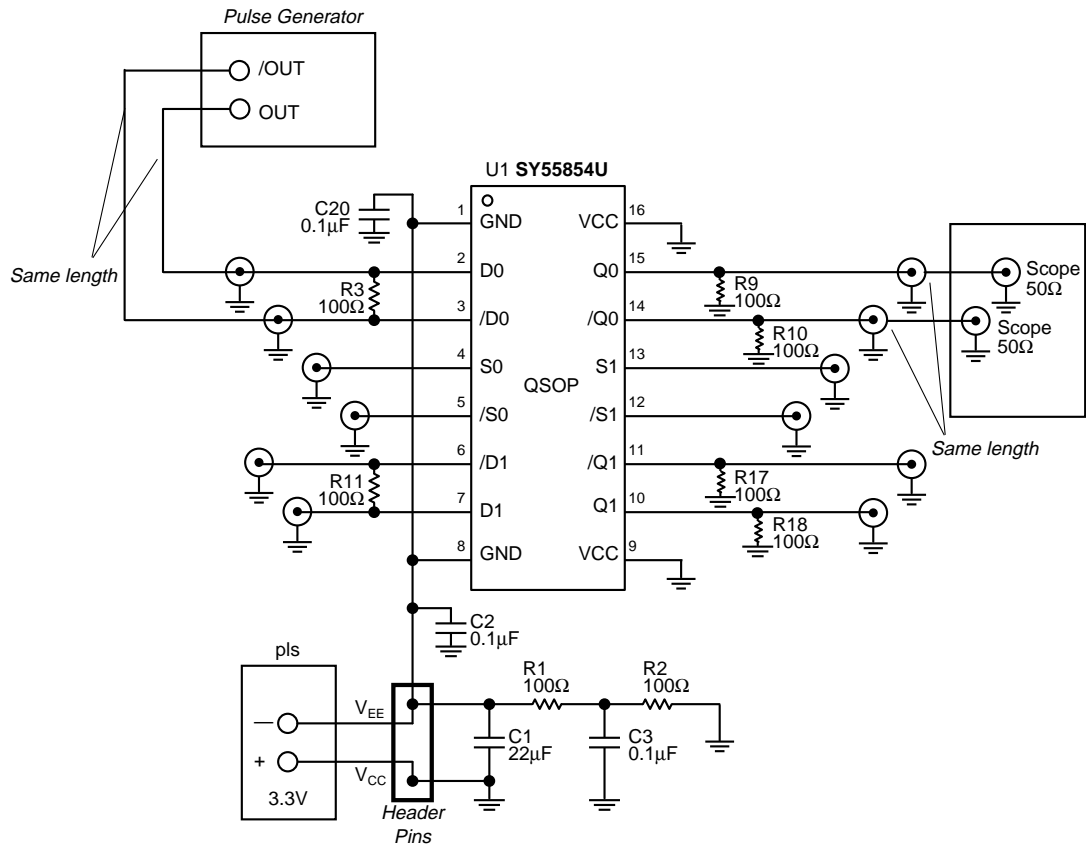
5. *Configure the SY55854U Evaluation Board:* Ensure that the “S0,” and “/S0,” SMA connectors are open. For further information regarding how to select various inputs, please refer to Table 1.

6. *View the Eye:* Adjust the oscilloscope to show the eye diagram.

V <sub>CC</sub>	Connection	Function
2.3V to 3.0V	“S0” open and “/S0” has a 50Ω cap	“Q0” sources “D0”
3.0V to 5.7V	“S0” open and “/S0” open	“Q0” sources “D0”
2.3V to 5.7V	“S0” has a 50Ω cap and “/S0” open	“Q0” sources “D1”
2.3V to 3.0V	“S1” open and “/S1” has a 50Ω cap	“Q1” sources “D0”
3.0V to 5.7V	“S1” open and “/S1” open	“Q1” sources “D0”
2.3V to 5.7V	“S1” has a 50Ω cap and “/S1” open	“Q1” sources “D1”

**Table 1. Select Settings**

**EVALUATION BOARD SCHEMATICS**



**Figure 1. SY55854U Evaluation Board Schematic**

**BILL OF MATERIALS**

Item	Part Number	Manufacturer	Description	Qty.
C1			22 $\mu$ F, 16V Size "C" Tantalum Electrolytic Capacitor	1
C2–C6, C19, C20			100nF, 10V X7R, Size 0603 Ceramic Capacitor	7
No Designator			3-Pin 0.1 Inch Header with Ceramic Pin Removed	1
No Designator			SMA Edge Launch Connector	12
R1–R3, R9–R11 R17, R18			100 $\Omega$ , 1% Size 0603, 1/10W Resistor	8
U1	<b>SY55854U</b>	<b>Micrel Semiconductor</b>	2.5Gbps 2 $\times$ 2 Crosspoint Switch	1

**TECHNICAL SUPPORT INFORMATION**

Telephone Number	1 (408) 914-7671
Email	hbwhelp@micrel.com

**ORDERING INFORMATION**

Evaluation Board Part#	IC Package	Operating Range
SY55854U-EVAL	TQFP	–40°C to +85°C

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