



LVPECL Programmable Delay

SY89295/296U Evaluation Board

General Description

The SY89295U and SY89296U evaluation boards are designed for convenient setup and quick evaluation of the respective devices. The boards are optimized to interface directly to a 50Ω oscilloscope.

For best AC performance, the boards are configured in AC-coupled configuration.

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

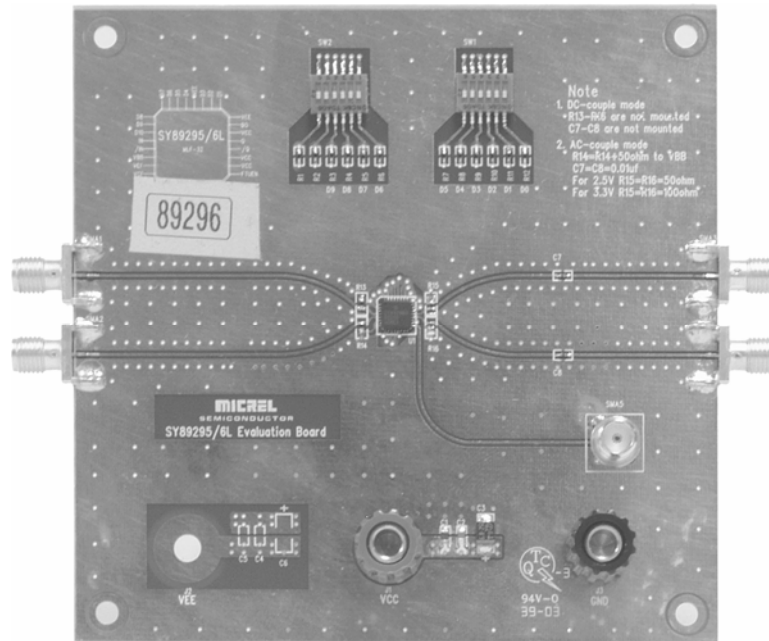
Features

- SY89295U, SY89296U
- +2.5V or +3.3V power supply
- AC-Coupled configuration for performance

Related Documentation

- SY89295U, 3.3V/5V 1.5GHz LVPECL Programmable Delay Datasheet
- SY89296U, 3.3V/5V 1.5GHz LVPECL Programmable Delay w/Analog Fine Tune Datasheet

Evaluation Board



Evaluation Board Description

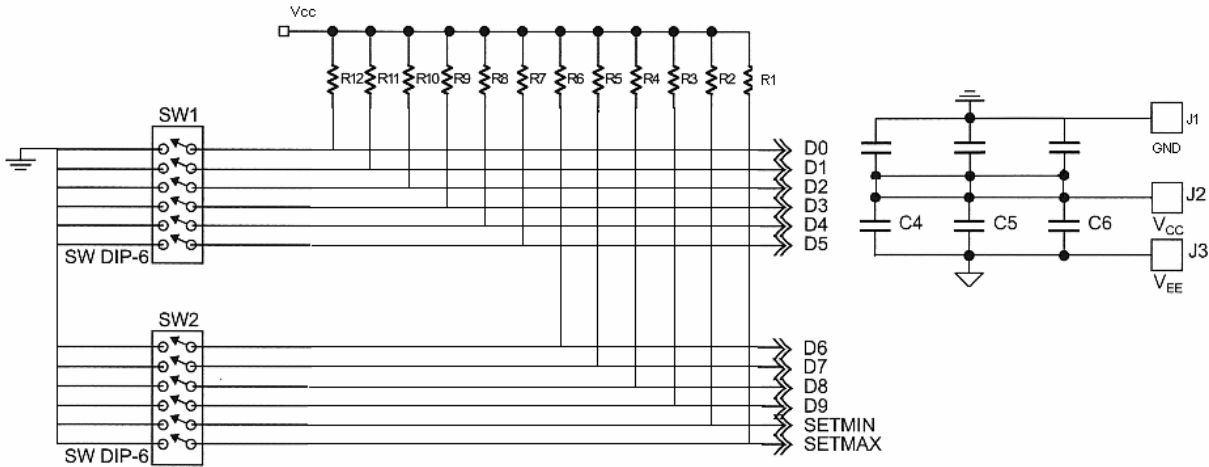
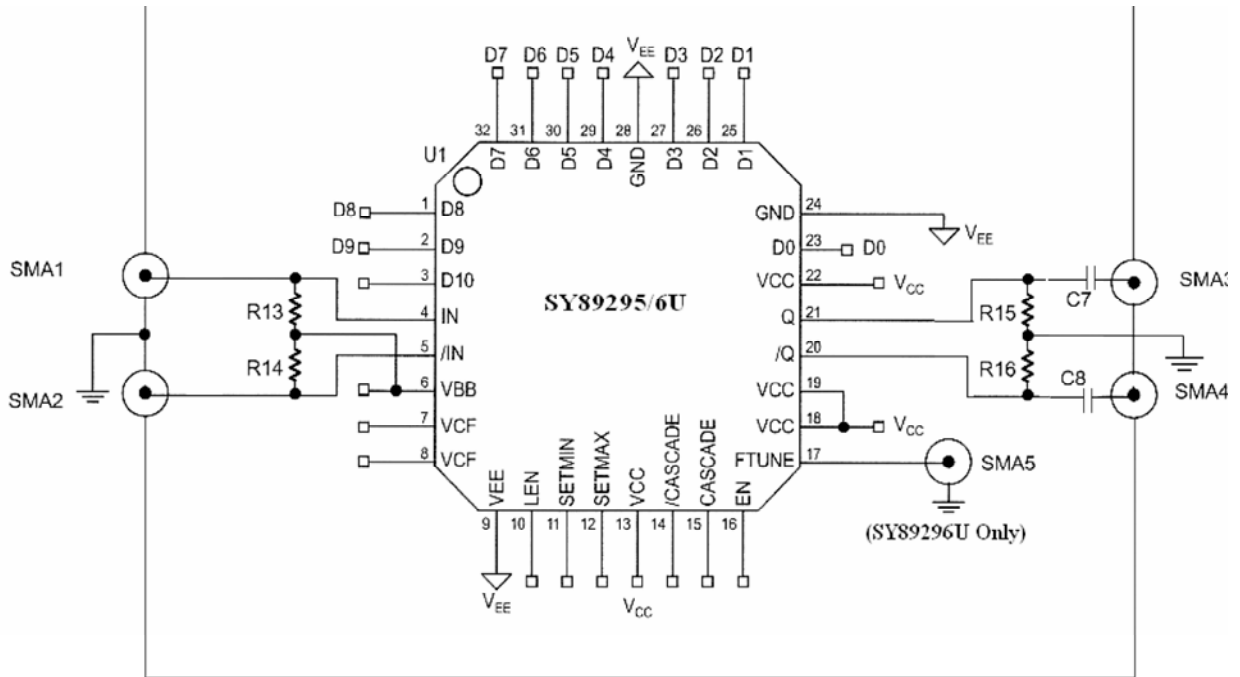
The SY89295U is a LVPECL evaluation board and the SY89296U is a LVPECL evaluation board sharing the same design. The default configuration for these boards is AC-coupled configuration.

AC-Coupled Output

The AC-coupled configuration is suited to most customer applications and is preferred by the majority of users because of its ease-of-use. It requires only a single power supply and offers the most flexibility in interfacing to a variety of signal sources.

The DC-bias levels and AC-coupling capacitors are supplied on-board for each input, making it unnecessary to vary the offset voltage or change any components on the board as the power supply voltage varies over the $+2.5V \pm 5\%$ and $+3.3V \pm 10\%$ operating range. The user needs only to supply a minimum input voltage swing and the bias voltage will automatically adjust the input to the correct level as the power supply voltage varies.

Evaluation Board Schematic



SY89295/6U LVPECL Evaluation Board

I/O	Power Supply	V _{CC}	GND	V _{EE}	R15-R16	C7-C8
DC-In/AC-Out	2.5V	+2.5V	0	0	50Ω	0.1μF
DC-In/AC-Out	3.3V	+3.3V	0	0	100Ω	0.1μF

Table 1. SY89295/6U Configuration

Note: DC-In/DC-Out is the default configuration

AC-Coupled Evaluation Board Setup

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

1. Set the voltage setting for a DC supply to either 2.5V or 3.3V, depending upon your application.
2. Signal Generator: Using a differential signal source, set the amplitude of each side of the differential pair to 400mV (800mV measured differentially), with a common mode voltage of $V_{CC} - 1.3$. Turn off or disable the outputs of the signal source.
3. I/O Cable Interface: Using equal length 50Ω impedance coaxial cables connect the signal source to the inputs on the evaluation board. Using equal length 50Ω impedance coaxial cables connect the outputs of the evaluation board to the oscilloscope or other measurement device that has an internal 50Ω termination. Unequal length cables are not recommended since they introduce duty cycle distortion and unwanted signal delays.
4. Connect the trigger input of the scope to the trigger output of the signal generator.
5. Program the Delay Register (D-Register) using the evaluation board dipswitches for the desired delay.
6. Enable the signal source and monitor the outputs.

Evaluation Board Layout

PC Board Layout

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

Layer	SY89295/6U
L1	GND and Signal
L2	GND
L3	V_{CC} and V_{EE}
L4	GND

Table 2. Layer Stack

Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1,C2, C4, C5	VJ0402Y104KXXAT	Vishay ⁽¹⁾	0.1uF, 25V, 10% Ceramic Capacitor, Size 0402, X7R, Dielectric	4
C7, C8	CRCW0402000Z	Vishay ⁽¹⁾	0Ω, 1/16W Resistor SMD, Size 0402	2
C3, C6	293D685X0025B2T	Vishay ⁽¹⁾	6.8uF, 20V, Tantalum Electrolytic Capacitor, Size C	1
R1-R12	CRCW04023001F	Vishay ⁽¹⁾	3kΩ, 10%, 1/16W Resistor SMD, size 0402	12
J1,J3	111-0703-001	Johnson Components ⁽²⁾	Black Banana Jack	1
J2	111-0702-001	Johnson Components ⁽²⁾	Red Banana Jack	1
SMA1-SMA4	142-0701-851	Johnson Components ⁽²⁾	Jack Assembly End Launch SMA	4
SW1, SW2	CT2186LPST-ND	DigiKey ⁽³⁾	6-Position Dip	2
U1	SY89295/296U	Micrel, Inc. ⁽⁴⁾	LVPECL Programmable Delay	1

Additional Components for AC-Coupled Outputs

Item	Part Number	Manufacturer	Description	Qty.
C3-C8	VJ0402Y104KXXAT	Vishay ⁽¹⁾	0.1μF, 25V, 10% Ceramic Capacitor, Size 0402, X7R, Dielectric	6

Notes:

1. Vishay: www.vishay.com
2. Johnson Components: www.johnsoncomponents.com
3. DigiKey: www.digikey.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 product go to Micrel's 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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