



## Differential LVPECL-to-LVTTL Translator

SY89321L Evaluation Board

### General Description

The SY89321L evaluation board is designed for convenient setup and quick evaluation of the SY89321L. The boards are optimized to interface directly to a 50 $\Omega$  oscilloscope.

The default evaluation board I/O configuration is AC-coupled.

Data sheets and support documentation can be found on Micrel's web site at [www.micrel.com](http://www.micrel.com).

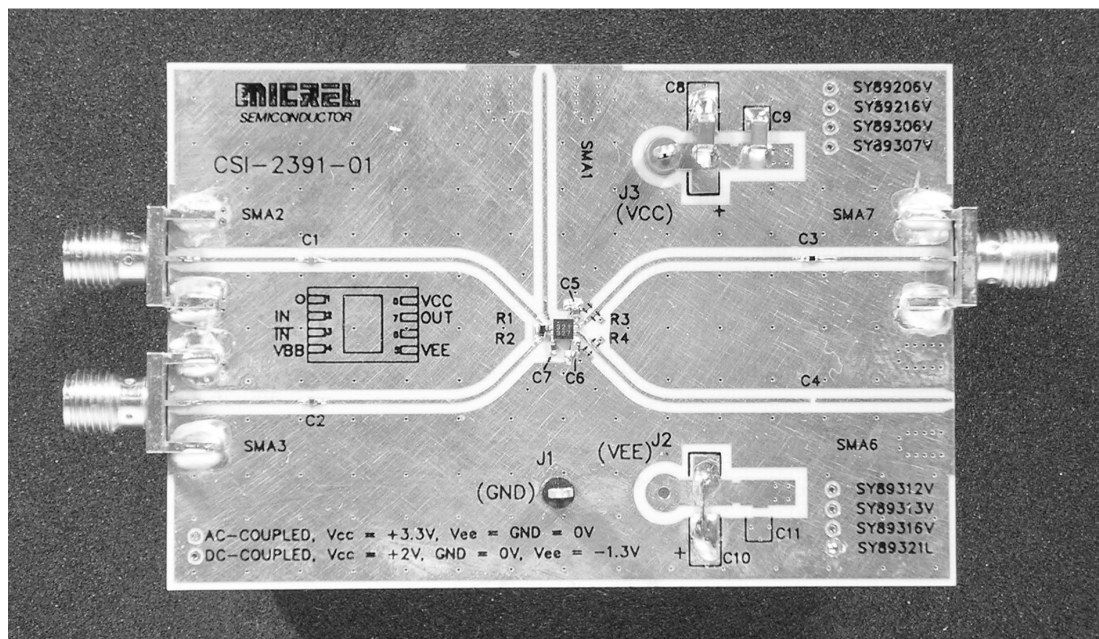
### Features

- SY89321L
- Single +3.3V power supply
- AC-coupled configuration for ease-of-use
- I/O interface includes on-board terminations
- Fully assembled and tested

### Related Documentation

- SY89321L, 3.3V Differential LVPECL-to-LVTTL Translator Data Sheet

### Evaluation Board



## Evaluation Board Description

The default configuration for the boards is AC-coupled inputs and AC-coupled outputs.

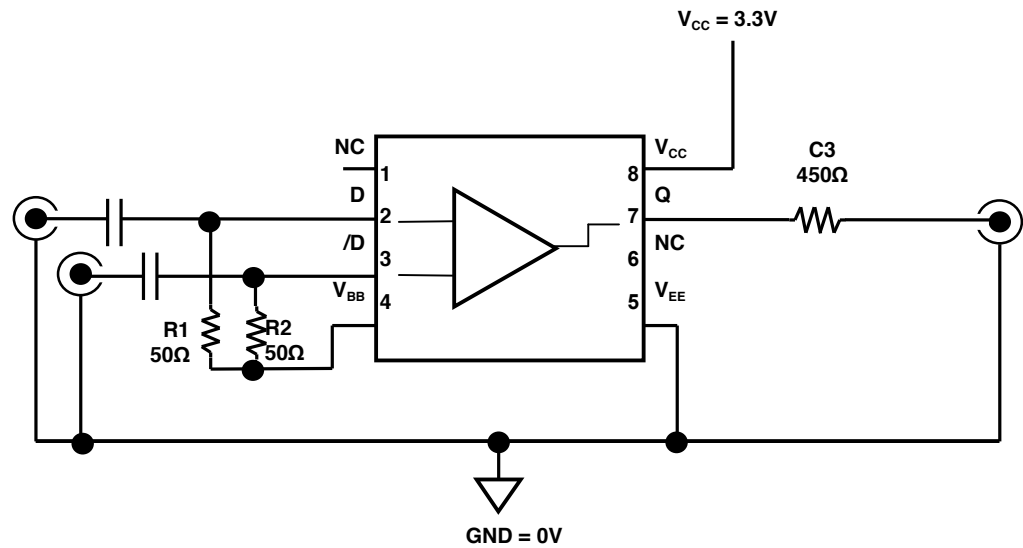
The AC-coupled configuration is suited to most customer applications and is preferred by the majority of users because of its ease-of-use. It requires only a single power supply of 3.3V  $\pm 10\%$  and offers the most flexibility in interfacing to a variety of signal sources.

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. 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.

The 450 $\Omega$  series resistor in location C3 is to limit the output current when connected to a scope with a 50 $\Omega$  termination to ground. This 450 $\Omega$  resistor along with the 50 $\Omega$  scope termination forms a 1:10 voltage divider that attenuates the voltage that will be seen by the scope. This 450 $\Omega$  resistor is necessary only on the evaluation board and not in a system. For normal system use, the output would be connected directly to the next input.

Evaluation Board



SY89321L AC-Coupled Evaluation Board

AC-Coupled Evaluation Board Power Supply Connections				
Power Supply	V <sub>CC</sub>	GND	V <sub>EE</sub>	I/O
3.3 Volt System	+3.3V	0V	0V	AC-Coupled Input/AC-Coupled Output

Table 1. SY89321L AC-Coupled Configuration

## AC-Coupled Evaluation Board Setup

### Setting up the AC-Coupled Evaluation Board

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

1. Set the voltage setting for a DC supply to 3.3V and turn off the supply.
2. Connect the GND terminal to the negative side of a DC power supply. This is the 0V ground potential.
3. Connect the  $V_{CC}$  terminal to the positive side of a DC power supply
4. Turn on the power supply and verify that the power supply current is <100mA.
5. Turn off the power supply.
6. Using a differential signal source set the amplitude of each side of the differential pair to be 800mV (1600mV measured differentially). Set the offset to be a positive value, the value of this offset is not critical, as the AC-coupled inputs will be automatically biased to the correct offset. Turn off or disable the outputs of the signal source.
7. Using equal length 50 $\Omega$  impedance coaxial cables, connect the signal source to the inputs on the evaluation board (SMA2 and SMA3).
8. Using a 50 $\Omega$  impedance coaxial cables, connect the output of the evaluation board (SMA7) to the oscilloscope or other measurement device that has an internal 50 $\Omega$  termination.
9. Turn on the power and verify the current is <100mA.
10. Enable the signal source and monitor the outputs.

## Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1, C2, C7	VJ0402Y104KXXAT	Vishay <sup>(1)</sup>	0.1 $\mu$ F, 25V, 10% Ceramic Capacitor, Size 0402, X7R Dielectric	3
C3	CRCW04025400F	Vishay <sup>(1)</sup>	Replace capacitor with 540 $\Omega$ , 1/16W, 5% Thick-film Resistor, Size 0402	1
C5, C6	VJ0402Y103KXXAT	Vishay <sup>(1)</sup>	0.01 $\mu$ F, 25V, 10% Ceramic Capacitor, Size 0402, X7R Dielectric	2
C8	293D685X0025B2T	Vishay <sup>(1)</sup>	6.8 $\mu$ F, 20V, Tantalum Electrolytic Capacitor, Size C	1
C9	VJ0805Y103KXXAT	Vishay <sup>(1)</sup>	0.01 $\mu$ F, 25V, 10% Ceramic Capacitor, Size 0805	1
R1, R2	CRCW0402500F	Vishay <sup>(1)</sup>	50 $\Omega$ , 1/16W, 5% Thick-film Resistor, Size 0402	2
J1	5011K-ND	Johnson Components <sup>(2)</sup>	PC Test point Multi-purpose Black	1
J3	5010K-ND	Johnson Components <sup>(2)</sup>	PC Test point Multi-purpose Red	1
SMA2, SMA3, SMA7	142-0701-851	Johnson Components <sup>(2)</sup>	Jack Assembly End Launch SMA	3
U1	<b>SY89321L</b>	<b>Micrel<sup>(3)</sup></b>	SY89321L	1

### Notes:

1. Vishay: [www.vishay.com](http://www.vishay.com)
2. Johnson Components: [www.johnsoncomponents.com](http://www.johnsoncomponents.com)
3. Micrel: [www.micrel.com](http://www.micrel.com)

## Evaluation Board Layout

### PC Board Layout

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

Layer	SY89321L
L1	GND and Signal
L2	Impedance GND
L3	V <sub>CC</sub> and V <sub>EE</sub>
L4	GND and Signal

**Table 2. Layer Stack**

## Micrel Cross Reference

To find an equivalent Micrel part, go to Micrel's website at <http://www.micrel.com> and follow the steps below:

1. Click on Dynamic Cross Reference
2. Enter competitor's part number in the Dynamic Cross Reference field
3. To download a PDF version of this information, click on the Cross Reference PDF tab

## HBW Support

Hotline: 408-955-1690

Email Support: [HBWHelp@micrel.com](mailto: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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