



PECL Amplifier with Low Gain Feedback

SY89207L Evaluation Board

General Description

The SY89207L evaluation board is designed for convenient setup and quick evaluation of the SY89207L. The boards are optimized to interface directly to a 50Ω oscilloscope.

The default evaluation board I/O configuration is AC-coupled. For applications that require a DC-coupled configuration, step-by-step instructions for modifying the board are included.

The board is fully assembled and tested and is accompanied with all necessary documentation.

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

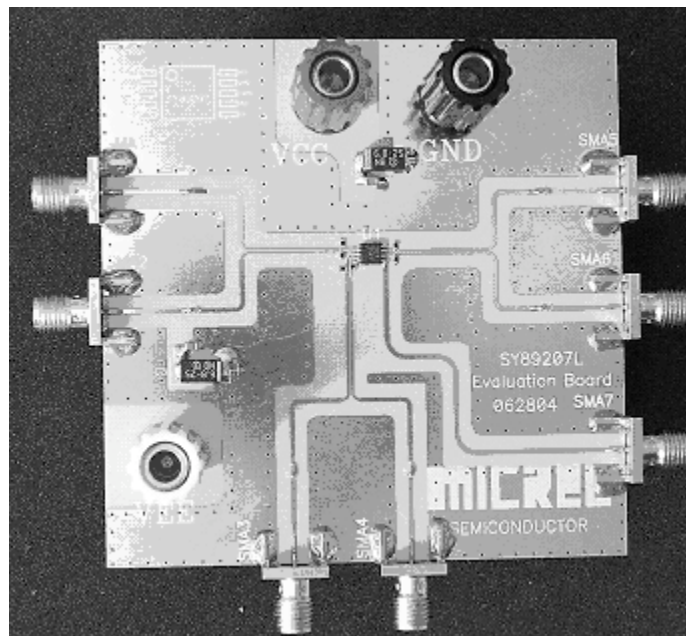
Features

- SY89207L
- +3.3V power supply
- AC-coupled configuration for ease-of-use
- Can be reconfigured for DC-coupled operation

Related Documentation

- SY89207L, 3.3V 800MHz Precision PECL Amplifier with Low-Gain Feedback Data Sheet

Evaluation Board



Evaluation Board Description

The SY89207L evaluation board is designed to operate at 3.3V without modification.

The default configuration is AC-coupled configuration. The evaluation board can be reconfigured in Dc-coupled configuration; therefore the choice between two configurations offers the user flexibility for specific application.

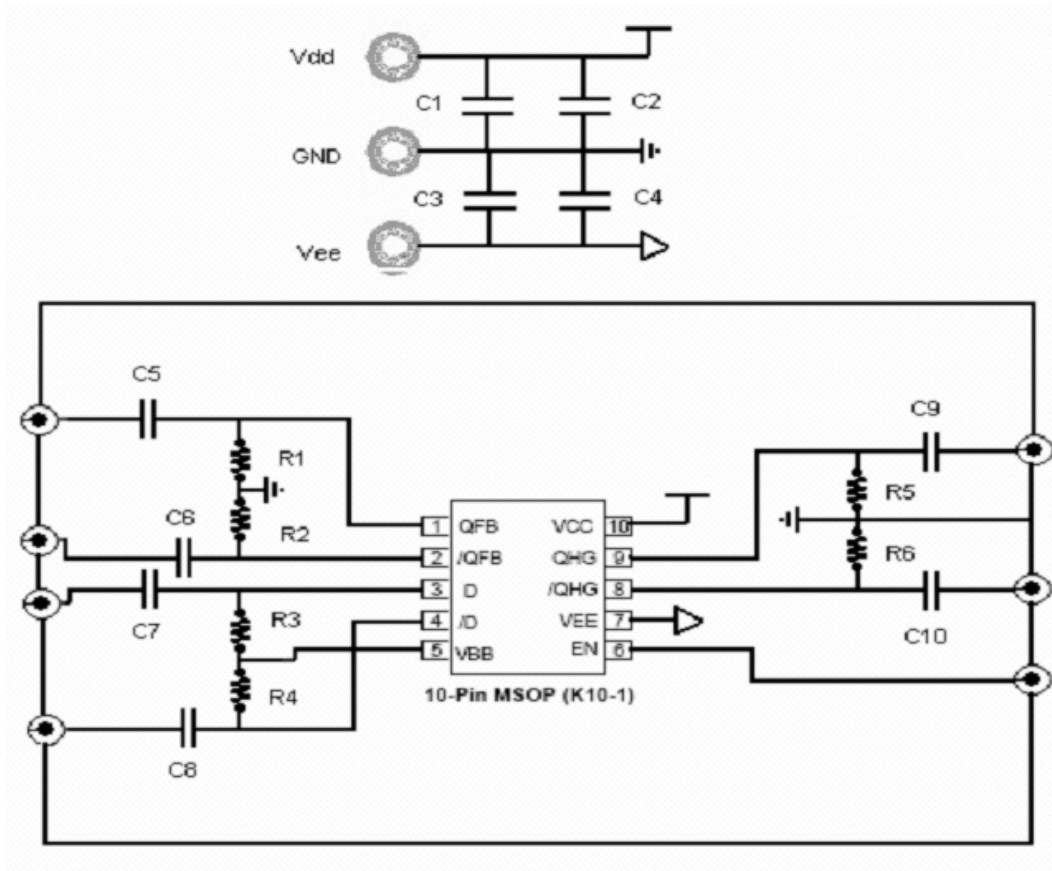
AC-Coupled Evaluation Board

The AC-coupled configuration is suited for 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 over the +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



SY89207L PECL Evaluation Board

I/O	C7-C8	C5-C6, C9-C10	R1-R2, R5-R6	R3-R4	V _{DD}	GND	V _{EE}
AC-Coupled Input/AC-Coupled Output ⁽¹⁾	0.1µF	0.1µF	100Ω	50Ω	+3.3V	0	0
AC-Coupled Input/DC-Coupled Output ⁽²⁾	0.1µF	0Ω	NC	50Ω	+2V	0	-1.3V
DC-Coupled Input/DC-Coupled Output ⁽³⁾	0Ω	0Ω	NC	NC	+2V	0	-1.3V

Table 1. SY89207L Configuration

Note:

1. The default setting.
2. Replace C5-C6 and C9-C10 capacitors with 0Ω 0402 resistors, and remove R1-R2 and R5-R6 resistors.
3. Replace C5-C10 with 0Ω 0402 resistors and remove R1-R2, R3-R4, and R5-R6 resistors

AC-Coupled Evaluation Board Setup

The follow 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. Using a differential signal source set the amplitude of each side of the differential pair to 800mV (1600mV measured differentially). Set the offset to a positive value. The value of this offset is not critical, since the AC-coupled inputs will be automatically biased to the correct offset. Turn off or disable the outputs of the signal source.
5. Using equal length 50 Ω impedance coaxial cables connect the signal source to the inputs on the evaluation board.
6. Using equal length 50 Ω impedance coaxial cables, connect the outputs of the evaluation board to the oscilloscope or other measurement device that has an internal 50 Ω termination.
7. Enable the signal source and supply voltage and monitor the outputs.

Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1,C3,C5-C10	VJ0402Y104KXXAT	Vishay ⁽¹⁾	0.1 μ F, 25V, 10% Ceramic Capacitor, Size 0402, X7R Dielectric	8
C2, C4	293D685X0025C2T	Vishay ⁽¹⁾	6.8 μ F, 20V, Tantalum Electrolytic Capacitor, Size C	2
R3-R4	CRCW0402500F	Vishay ⁽¹⁾	50 Ω , 1/16W, 5% Thick-film Resistor, Size 0402	2
R1-R2, R5-R6	CRCW04021000F	Vishay ⁽¹⁾	100 Ω , 1/16W, 5% Thick-film Resistor, Size 0402	4
GND	111-0703-001	Johnson Components ⁽²⁾	Black Banana Jack	1
V _{DD}	111-0702-001	Johnson Components ⁽²⁾	Red Banana Jack	1
V _{EE}	111-0701-001	Johnson Components ⁽²⁾	White Banana Jack	1
SMA1-SMA7	142-0701-851	Johnson Components ⁽²⁾	Jack Assembly End Launch SMA	7
U1	SY89207L	Micrel ⁽³⁾	PECL Amplifier with Low Gain Feedback	1

Additional Components for AC-Coupled Outputs

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

Notes:

1. Vishay: www.vishay.com
2. Johnson Components: www.johnsoncomponents.com
3. Micrel, Inc.: 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	SY89207L
L1	GND and Signal
L2	GND
L3	V _{CC} and V _{EE}
L4	GND

Table 2. Layer Stack

DC-Coupled Evaluation Board

AC-Coupled Inputs/DC-Coupled Outputs

1. Replace C5-C6 and C9-C10 with 0 Ω 0402 resistors.
2. Remove resistors R1-R2 and R5-R6.

DC-Coupled Inputs/DC-Coupled Outputs

1. Replace C5-C10 with 0 Ω 0402 resistors.
2. Remove R1-R2, R3-R4, and R5-R6 resistors.

Micrel Cross Reference

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

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."

MICREL, INC. 1849 FORTUNE DRIVE SAN JOSE, CA 95131 USA
TEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB <http://www.micrel.com>

The information furnished by Micrel in this data sheet is believed to be accurate and reliable. However, no responsibility is assumed by Micrel for its use. Micrel reserves the right to change circuitry and specifications at any time without notification to the customer.

Micrel Products are not designed or authorized for use as components in life support appliances, devices or systems where malfunction of a product can reasonably be expected to result in personal injury. Life support devices or systems are devices or systems that (a) are intended for surgical implant into the body or (b) support or sustain life, and whose failure to perform can be reasonably expected to result in a significant injury to the user. A Purchaser's use or sale of Micrel Products for use in life support appliances, devices or systems is a Purchaser's own risk and Purchaser agrees to fully indemnify Micrel for any damages resulting from such use or sale.

© 2004 Micrel, Incorporated.