



SY58037/8/9U Evaluation Board

8:1 MUX w/Dual Output CML/LVPECL
Fanout Buffer

General Description

The SY58037/8/9U evaluation board is designed for convenient setup and quick evaluation of the SY58037/8/9U.

The evaluation board standard configuration is AC-coupled for direct interface to a 50 Ω compatible oscilloscope without split supplies. 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.

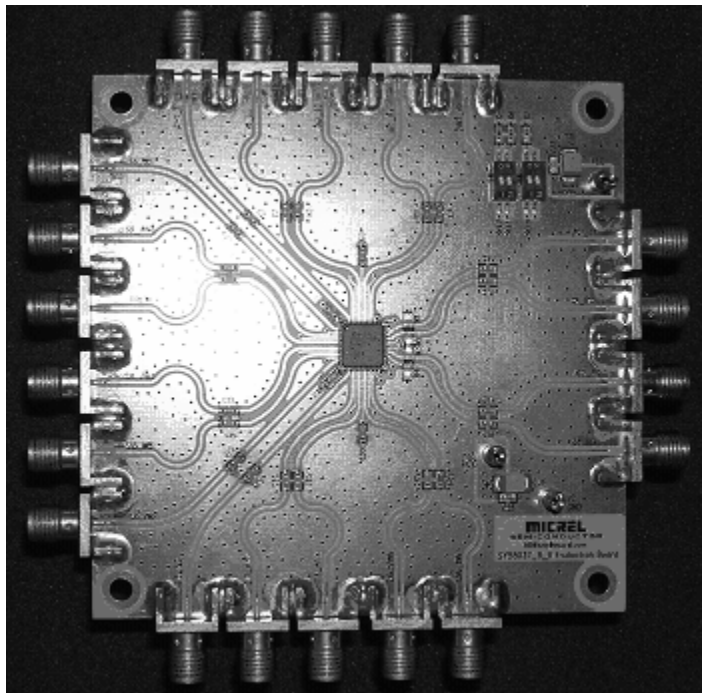
Features

- SY58037U, SY58038U, SY58039U
- +2.5V or +3.3V power supply
- AC-coupled configuration for ease-of-use
- Fully Assembled and Tested

Related Documentation

- SY58037, Ultra Precision 8:1 MUX with Dual CML Output Buffers and Internal Termination Data Sheet
- SY58038, Ultra Precision 8:1 MUX with Dual LVPECL Output Buffers and Internal Termination Data Sheet
- SY58039, Ultra Precision 8:1 MUX with Dual 400mV LVPECL Output Buffers and Internal Termination Data Sheet

Evaluation Board



Evaluation Board Description

The SY58037U and SY58038/9U evaluation board are designed to operate at 2.5V or 3.3V without modification.

The default evaluation board I/O configuration is AC-coupled. The option to reconfigure the board for DC-coupled I/O provides the flexibility to interface to systems or I/O other than oscilloscopes.

AC-Coupled Evaluation Board

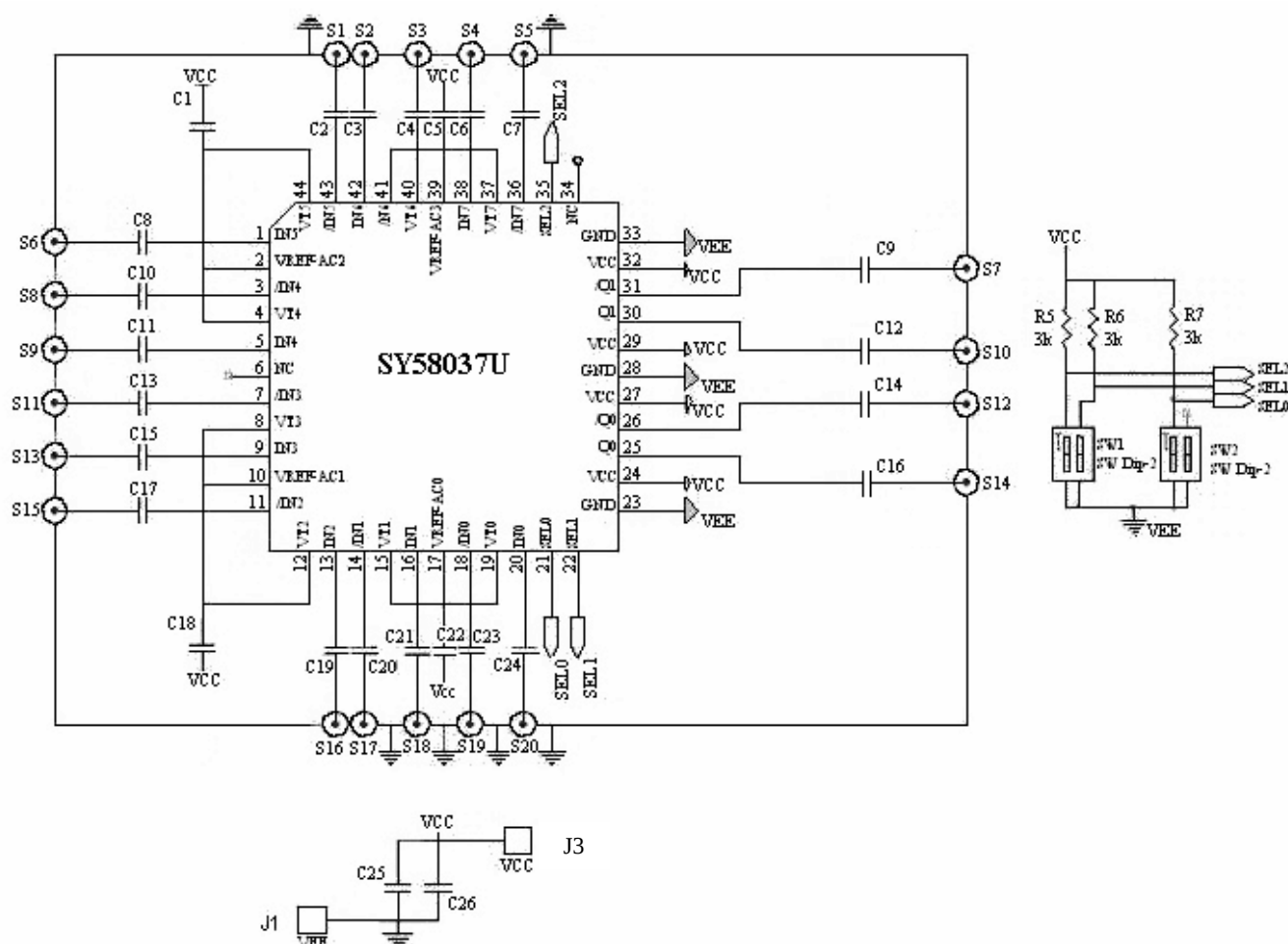
The AC-coupled configuration is suited to most customer applications and is preferred by the majority of users because of its ease-of-use. It requires only a single power supply and offers the most flexibility in interfacing to a variety of signal sources.

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.

Any-Input Interface

The unique internal termination and input common mode voltage of all devices easily interfaces to any differential signal over the supply voltage without modifying the evaluation board.

Evaluation Board

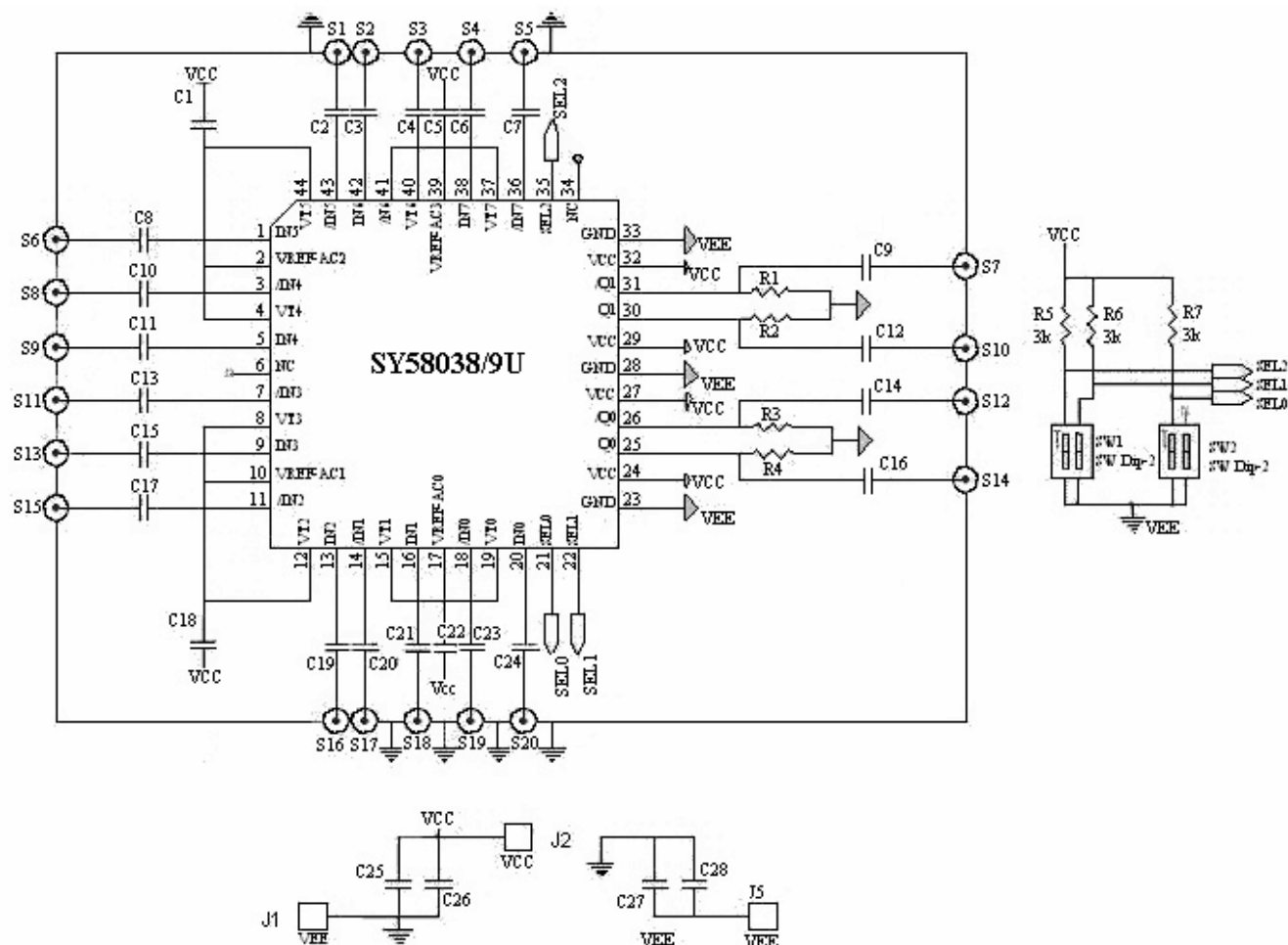


SY58037U CML Evaluation Board

I/O	C9, C12, C14, C16
AC-Coupled Input/AC-Coupled Output	0.1μF
AC-Coupled Input/DC-Coupled Output	0Ω

Table 1. SY58037U Configuration

Note: The default configuration is AC-In/AC-Out.



SY58038/9U LVPECL Evaluation Board

I/O	R1-R4	C9, C12, C14, C16
AC-Coupled Input/AC-Coupled Output	82Ω	0.1μF
AC-Coupled Input/DC-Coupled Output	Remove Resistor	0Ω

Table 2. SY58038/9U Configuration

Note: The default configuration is AC-In/AC-Out.

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 be either 2.5V or 3.3V depending on your application 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. Set the dip-switch to select the appropriate channel.
5. 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.
6. Using equal length 50 Ω impedance coaxial cables, connect the signal source to the inputs on the evaluation board.
7. 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.
8. Enable the signal source and monitor the outputs.

Bill of Materials

SY58037U Evaluation Board

Item	Part Number	Manufacturer	Description	Qty.
C1-C25,C27	VJ0402Y104KXXAT	Vishay ⁽¹⁾	0.1μF, 25V, 10% Ceramic Capacitor, Size 0402, X7R, Dielectric	26
C26, C28	CRCW0402000Z	Vishay ⁽¹⁾	6.8μF, 20V, Tantalum Electrolytic Capacitor, Size C	2
R5-R7	CRCW04023001F	Vishay ⁽¹⁾	3kΩ, 1/16W, 5% Thick-film Resistor, Size 0402	3
J1	111-0703-001	Digikey ⁽²⁾	Black Banana Jack	1
J2	111-0703-001	Digikey ⁽²⁾	Red Banana Jack	1
SMA1-SMA20	142-0701-851	Johnson Components ⁽²⁾	Jack Assembly End Launch SMA	20
U1	SY58037U	Micrel, Inc. ⁽⁴⁾	8:1 Mux w/Dual Output CML/LVPECL Fanout Buffer	1

Additional Components for DC-Coupled Outputs

Item	Part Number	Manufacturer	Description	Qty.
C9, C12, C14, C16	CRCW0402000Z	Vishay ⁽¹⁾	0Ω, 1/16W, 5% Thick-film Resistor, Size 0402	12

Notes:

1. Vishay tel.: 402-563-6866
2. Johnson Components tel.: 800-247-8256
3. Digikey tel.: 800-344-4539
4. **Micrel, Inc.** tel.: 408-944-0800

SY58038/9U Evaluation Board

Item	Part Number	Manufacturer	Description	Qty.
C1-C25,C27	VJ0402Y104KXXAT	Vishay ⁽¹⁾	0.1 μ F, 25V, 10% Ceramic Capacitor, Size 0402, X7R, Dielectric	26
C26, C28	CRCW0402000Z	Vishay ⁽¹⁾	6.8 μ F, 20V, Tantalum Electrolytic Capacitor, Size C	2
R5-R7	CRCW04023001F	Vishay ⁽¹⁾	3k Ω , 1/16W, 5% Thick-film Resistor, Size 0402	3
R1-R4	CRCW040282R5F	Vishay ⁽¹⁾	82 Ω , 1/16W, 5% Thick-film Resistor, Size 0402	4
J1, J2	111-0703-001	Digikey ⁽²⁾	Black Banana Jack	1
J3	111-0702-001	Digikey ⁽²⁾	Red Banana Jack	1
SMA1-SMA20	142-0701-851	Johnson Components ⁽²⁾	Jack Assembly End Launch SMA	20
U1	SY58038/9U	Micrel, Inc. ⁽⁴⁾	8:1 Mux w/Dual Output CML/LVPECL Fanout Buffer	1

Additional Components for DC-Coupled Outputs

Item	Part Number	Manufacturer	Description	Qty.
C9, C12, C14, C16	CRCW0402000Z	Vishay ⁽¹⁾	0 Ω , 1/16W, 5% Thick-film Resistor, Size 0402	4
Remove R1-R4				

Notes:

1. Vishay tel.: 402-563-6866
2. Johnson Components tel.: 800-247-8256
3. Digikey tel.: 800-344-4539
4. **Micrel, Inc.** tel.: 408-944-0800

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	SY58037U	SY58038/9U
L1	GND and Signal	GND and Signal
L2	GND	GND
L3	V _{CC}	V _{CC} and V _{EE}
L4	GND	GND

Table 3. Layer Stack

Modifying DC-Coupled Outputs for AC-Coupled Operation

SY58037

1. Replace C9, C12, C14, and C16 with 0 Ω 0402 resistors.

SY58038/9U

1. Remove R1-R4.
2. Replace C9, C12, C14, and C16 with 0 Ω 0402 resistors.

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 Semiconductors 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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