



2.5V, Low Jitter, Low Skew 1:12 LVDS Fanout Buffer with 2:1 Input MUX Internal Termination

SY89113U Evaluation Board

General Description

The SY89113U evaluation board is a 2.5V, low jitter, low skew 1:12 LVDS fanout buffer with 2:1 input MUX and internal termination. The board is designed for convenient setup and quick evaluation of the device. The evaluation board is designed to interface directly to 50Ω test equipment.

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

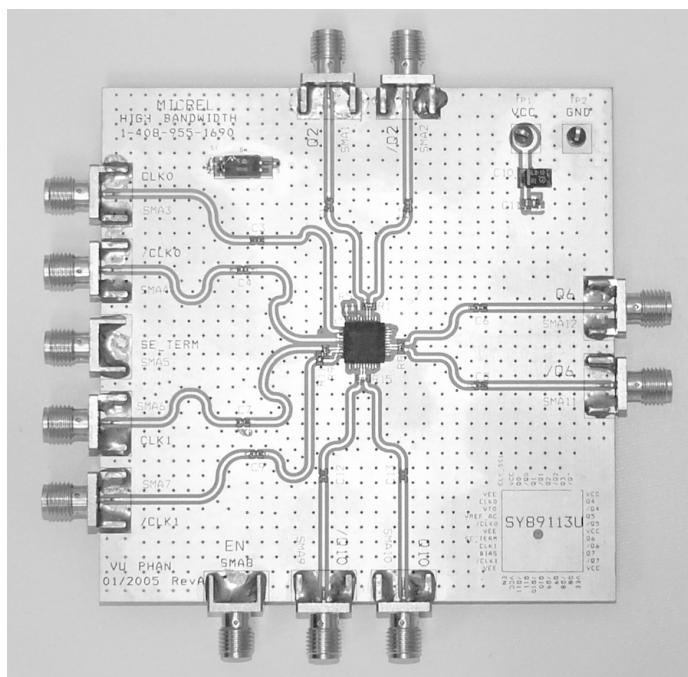
Features

- Evaluation board for the SY89113U 2.5V, low jitter, low skew 1:12 LVDS fanout buffer with 2:1 input MUX and internal termination
- Single +2.5V power supply
- AC-coupled configuration directly interfaces to 50Ω equipment
- On-board channel selection dip-switch

Related Documentation

- SY89113U 2.5V, Low Jitter, Low Skew 1:12 LVDS Fanout Buffer with 2:1 Input MUX and Internal Termination Data Sheet

Evaluation Board



AC-Coupled Evaluation Board Description

The SY89113U is packaged in a 44-pin MLF™. The SY89113U evaluation board is designed to operate from a single 2.5V+5% power supply and is configured in AC-coupled input and output mode.

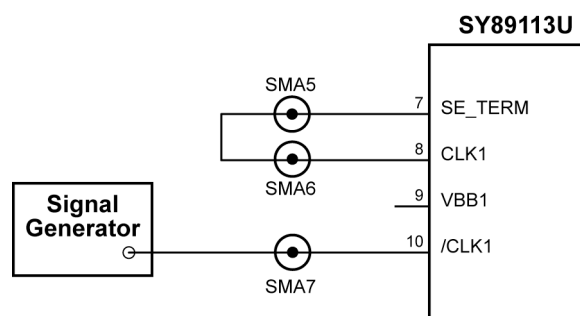
AC-Coupled Input

CLK0 Inputs

CLK0 is configured in AC-coupled mode. In AC-coupled mode, signals automatically bias to the DC-operating point set by VT0 driven by $V_{REF-AC0}$. CLK0 accepts standard CML, PECL, LVPECL, and differential signals as small as 100mV (200mV_{pp}) without level shifting or added termination resistors in the signal path.

CLK1 Inputs

CLK1 accepts virtually any logic standard including single-ended TTL/CMOS, and LVPECL, and differential LVPECL, LVDS, CML, and HSTL. The board is designed with on-board 50Ω resistors from the CLK1 inputs to VBB1 to set the DC-operating point. CLK1 also includes AC-coupling capacitors for ease of use. When single-end TTL/CMOS input is used, the AC-coupled capacitors and termination resistors should be removed and the signal SE-TERM should be connected to the unused complimentary input, see "SY89113 Single-Ended Configuration" figure for more details.



SY89113 Single-Ended Configuration

AC-Coupled Output

The SY89113U is configured with AC-coupled outputs allowing the board to interface directly to 50Ω lab equipment.

Unused Output

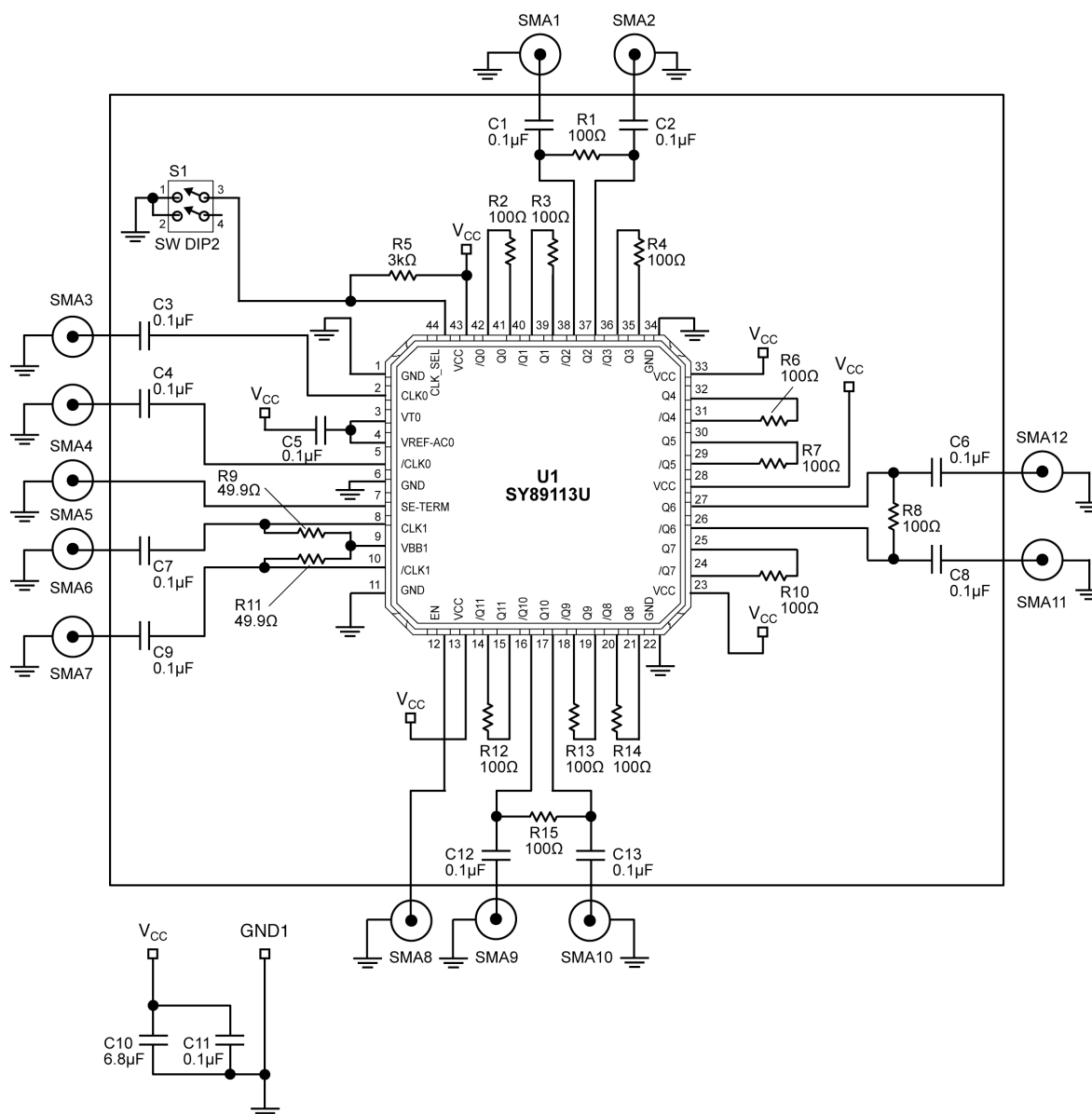
Single-ended outputs

Unused compliment outputs should be terminated into 50Ω-to-ground.

Unused output pairs

Unused out pairs should be terminated to 100Ω across the pair.

Evaluation Board



LVDS AC-Coupled Evaluation Board

I/O	Power Supply	V _{CC}	GND	V _{EE}
AC-Coupled Input/AC-Coupled Output	+2.5V	+2.5V	0V	0V

Table 1. AC-Coupled Evaluation Board Power Supply Connections

AC-Coupled Evaluation Board Setup

Setting up the SY89113U AC Evaluation Board

1. Set the voltage supply to:
 - V_{CC} : 2.5V
 - GND: 0V
2. CLK0 Inputs:
Drive CLK0 with a CML, PECL, LVDS, or drive CLK0 with a signal that has amplitude greater than or equal to 100mV (200mVPP)
3. CLK1 Inputs:
Differential Mode
Drive CLK1 with a differential LVPECL, LVDS, CML, and HSTL signal or drive CLK1 with a signal that has amplitude greater than or equal to 100mV (200mV_{PP}).
Single-Ended Mode
CLK1 can be driven by a TTL/CMOS signal by following the steps:
 - a. Replace the AC-coupled capacitors C7 and C8 with 0Ω resistors.

- b. Remove the input termination resistors R9 and R11.
 - c. Connect SE-TERM to the unused CLK1 input.
4. Select the MUX input CLK0 or CLK1 by setting the dipswitch.
5. The outputs are synchronized to EN, therefore, set EN to HIGH.

Evaluation Board Layout

PC Board Layout

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

L1	GND and Signal
L2	GND
L3	V_{CC}
L4	GND

Table 2. Layer Stack

Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1–C9, C11–C13	VJ0402Y104KXXAT	Vishay ⁽¹⁾	0.1μF, 25V, 10% Ceramic Capacitor, Size 0402, X7R Dielectric	12
C10	293D685X0025B2T	Vishay ⁽¹⁾	6.8μF, 16V, Tantalum Electrolytic Capacitor, Size B	1
R1–R4, R6–R15	CRCW04021000F	Vishay ⁽¹⁾	100Ω, 1/16W, 1% Thick-film Resistor, Size 0402	14
R5	CRCW04023001F	Vishay ⁽¹⁾	3kΩ, 1/16W, 1% Thick-film Resistor, Size 0402	1
R9, R11	CRCW040249R9F	Vishay ⁽¹⁾	49.9Ω, 1/16W, 1% Thick-film Resistor, Size 0402	2
SMA1–SMA12	142-0701-851	Johnson Components ⁽²⁾	Jack Assembly End Launch SMA	12
SW1	CKN3054-ND	Panasonic ⁽³⁾	2-Dip Switch	1
U1	SY89113U	Micrel⁽⁴⁾	2.5/3.3V, 1:12 LVPECL Fanout Buffer with 2:1 Input MUX Internal 50Ω Input Termination	1

Notes:

1. Vishay: www.vishay.com.
2. Johnson Components: www.johnsoncomponents.com.
3. Panasonic: www.panasonic.com.
4. Micrel, Inc.: www.micrel.com.

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

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 products 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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