SY88422L

Electrical Evaluation Board

General Description

This electrical evaluation board allows for checking the performance of the SY88422L while driving a passive load.

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

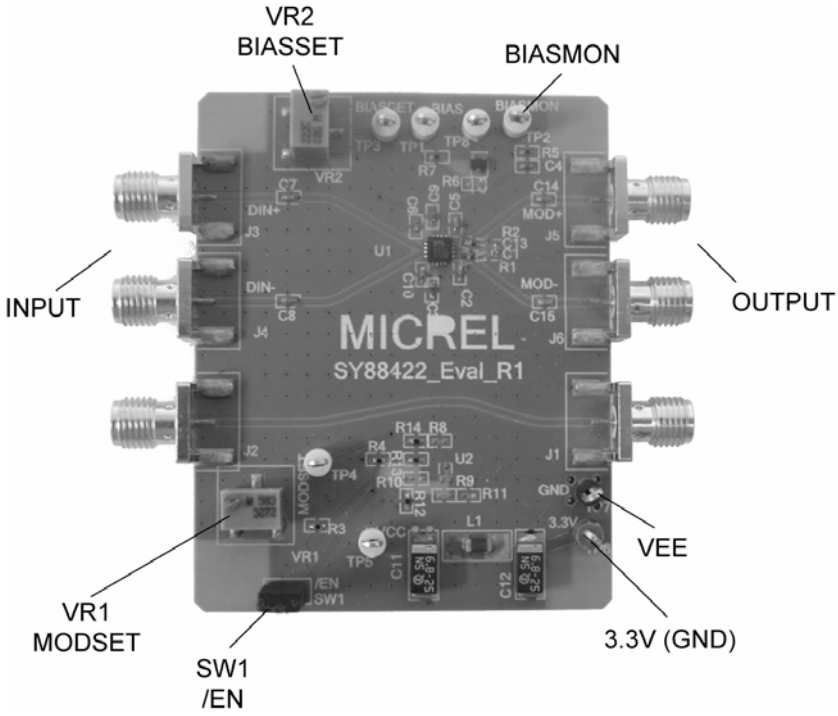
Features

- Open loop or close-loop operation
- Manual modulation and bias-current setting

Related Support Documentation

- SY88422L Datasheet

Evaluation Board



Evaluation Board Setting

1. Install a jumper on SW1 to enable the driver.
2. Adjust potentiometers VR1 (MODSET) and VR2 (BIASSET) completely counterclockwise to set bias and modulation currents to zero “0” before powering the board.
3. Connect 3.3V to TP6 (red) and GND to TP7 (black) to power the board. Connect output of pattern to J3 (DIN+) and J4 (DIN-).
4. Hook up the output to the scope.
5. Turn VR2 clockwise/counterclockwise to increase/decrease the bias current, which can be deduced from the voltage across R7 between TP1 and TP8:

$$I_{BIAS} = (V_{TP8} – V_{TP1}) / R7$$

6. Turn VR1 clockwise/ counterclockwise to increase/ decrease modulation current which is proportional to the amplitude of the eye diagram:

$$V_{EYE} = R_{LOAD} \times I_{MOD}$$

Performance

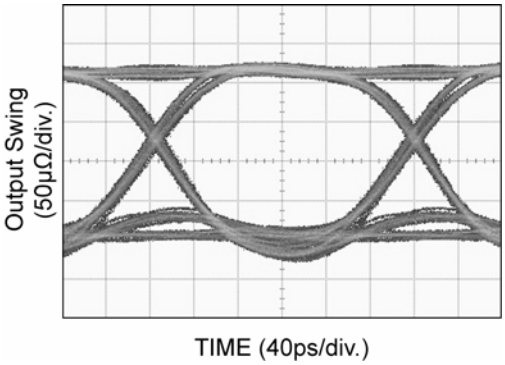


Figure 1. Electrical Eye Diagram
4.25Gbps, PRBS 2^{23}-1, 25Ω Load, 60mA Modulation

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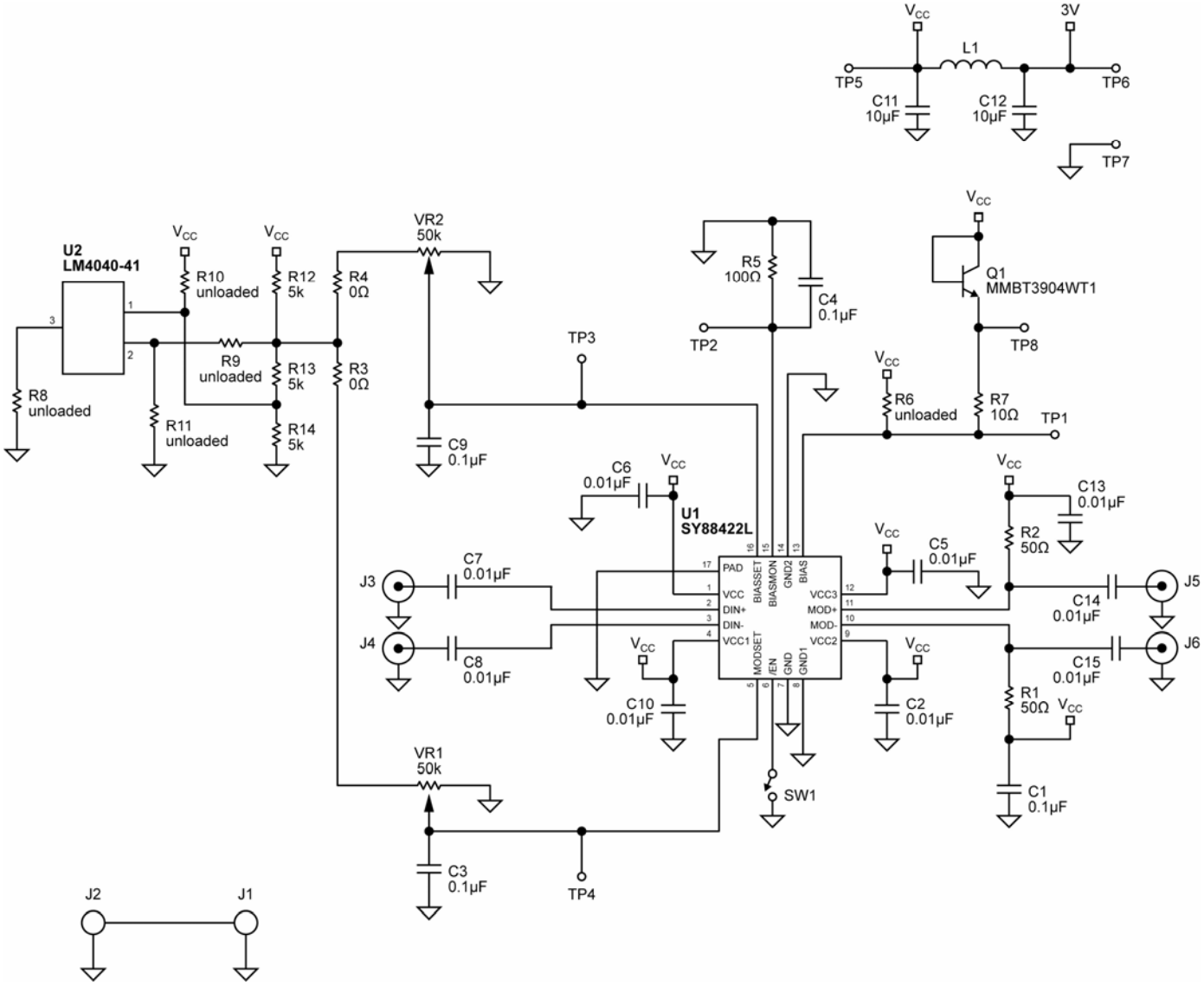
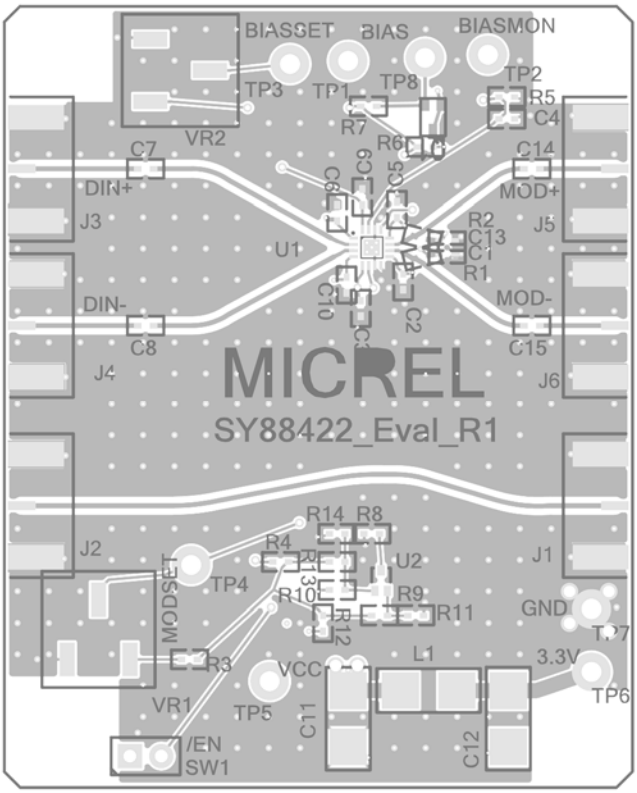
Evaluation Board Schematics



LM4040:
Install R12, R13 = 0, R15 = 0
Remove R10-R11, R14, R16

LM4041:
Install R10, R11, R14, R15 = 1k, R16
Remove R12, R13

PCB Layout/Assembly



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Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1-10, C13-15		Vishay[1]	0.1μF, 0402, Ceramic Capacitor	13
C11, C12	ECSH0GY106R	Panasonic[2]	10μF, Y, Tantalium Solid Electrolytic Capacitor	2
J3, J4, J5, J6	142-0701-851	Johnson Components[3]	SMA End Launch Receptacle Connector	4
L1	IMC 0805 RK 122 J 01	Vishay	1.2μH Ferrite Bead Inductor	1
Q1	MMBT3904WT1	ON-Semiconductor[4]	NPN Transistor	1
R1, R2	CRCW040250R0F	Vishay[1]	50Ω Resistor	2
R3, R4	CRCW04020R00F	Vishay[1]	0Ω Resistor	2
R5	CRCW04021000F	Vishay[1]	100Ω Resistor	1
R7	CRCW040210R0F	Vishay[1]	10Ω Resistor	1
R12-14	CRCW04025001F		5kΩ Resistor	3
SW1	TSW-1-2-07-G-S	Samtec[5]	Header, 2 Positions	1
TP1-TP5, TP8	5014	Keystone[6]	Color Coded PCB Test Point, Yellow	6
TP6	5010	Keystone[6]	Color Coded PCB Test Point, Red	1
TP7	5011	Keystone[6]	Color Coded PCB Test Point, Black	1
U1	**SY88422L**	**Micrel, Inc.[7]**	4G Laser Driver	1
U2	**LM4040-41**	**Micrel, Inc.[7]**	Precision Micropower Shunt-Voltage Reference	1
VR1,VR2	3269 W-1-503 GLF	Bourns[8]	50k SMD Trimming Potentiometer	2

Notes:

1. Vishay: www.vishay.com.
2. Panasonic: www.panasonic.com.
3. Johnson-Components: www.johnsoncomponents.com.
4. On Semiconductor: www.onsemi.com.
5. Samtec: www.samtec.com.
6. Keystone: www.keystone.com.
7. **Micrel, Inc.: www.micrel.com.**
8. Bourns: www.bourns.com.

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