EV279XX-XX-Y-00A

5kV$_{RMS}$, Six-Channel Digital Isolator Evaluation Board

DESCRIPTION

The EV279XX-XX-Y-00A is an evaluation board designed to demonstrate the capabilities of the MP279xx family, a high-performance, six-channel digital isolator. The EV279XX-XX-Y-00A has several versions (see Table 1 on page 3). Throughout the datasheet, any mention of the EV279XX-XX-Y-00A applies to all versions, unless otherwise noted.

The MP279xx is available in a SOIC wide-body (WB) package and adopts capacitive isolation technology to support an insulation voltage rating up to 5kV$_{RMS}$.

This isolator offers a compact solution with low power consumption and improved reliability compared to traditional optocoupler isolators. A Schmitt trigger input and isolation encoding/decoding are provided for high immunity in noisy environments.

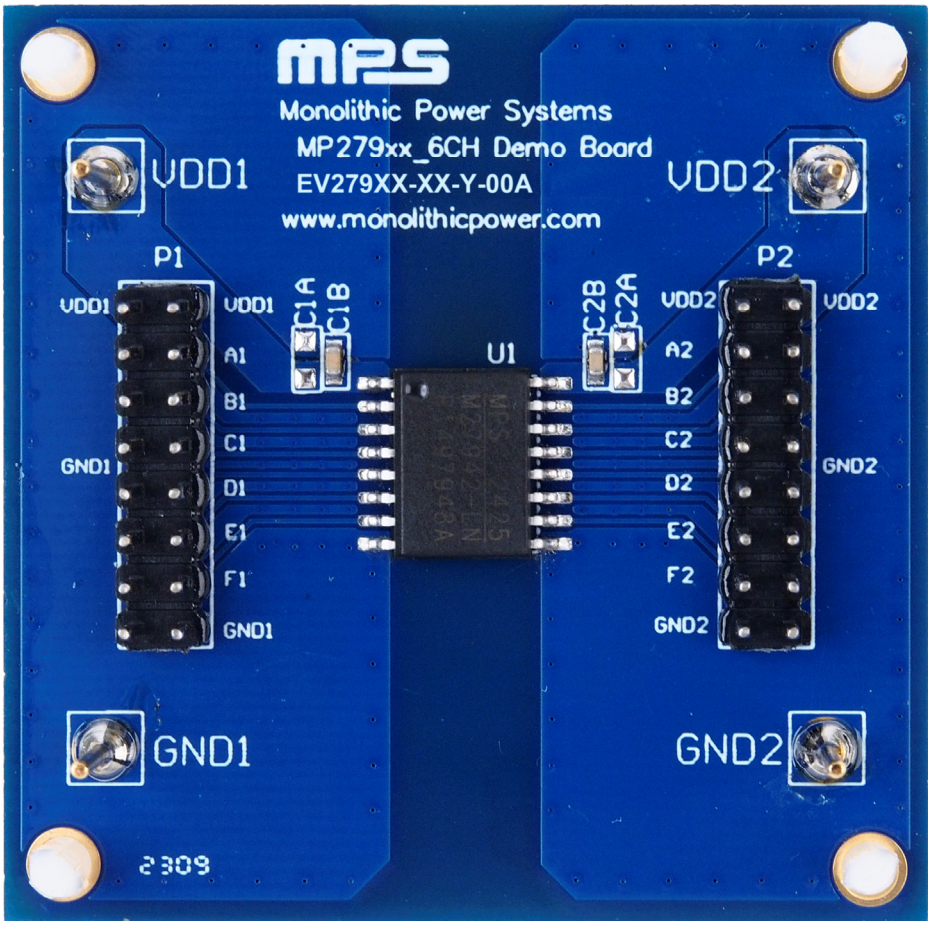
It is recommended to read the datasheets of MP27960, MP27951, MP27942, MP27933, MP27960-N, MP27951-N, MP27942-N, or MP27933-N prior to making any change to the EV279XX-XX-Y-00A.

PERFORMANCE SUMMARY

Specifications are at T_A = 25°C, unless otherwise noted.

Parameters	Conditions	Value
Supply voltage range (V_{DD1} - V_{GND1}) or (V_{DD2} - V_{GND2})		2.5V to 5.5V
Default logic output	MP279xx	High
	MP279xx-L	Low
Forward/reverse channel number	MP27960	6 forward, 0 reverse
	MP27951	5 forward, 1 reverse
	MP27942	4 forward, 2 reverse
	MP27933	3 forward, 3 reverse

EV279XX-XX-Y-00A EVALUATION BOARD



LxWxH (5.08cmx5.08cmx1.6mm)
2 Layers, 1oz/1oz

Board Number	MPS IC Number
EV279XX-XX-Y-00A	MP279xx-xxGY

EVALUATION BOARD BASIC INFORMATION

Table 1: EV279XX-XX-Y-00A Basic Information

Evaluation Board Part Number (1) (2)	Number of Channels	Forward Channels	Reverse Channels	Default Output Logic	IC Package Type
EV27960-Y-00A	6	6	0	High	SOIC-16 WB
EV27960-L-Y-00A				Low	
EV27951-Y-00A		5	1	High	
EV27951-L-Y-00A				Low	
EV27942-Y-00A		4	2	High	
EV27942-L-Y-00A				Low	
EV27933-Y-00A		3	3	High	
EV27933-L-Y-00A				Low	
EV27960-N-Y-00A	6	6	0	High	SOIC-16 WB
EV27960-LN-Y-00A				Low	
EV27951-N-Y-00A		5	1	High	
EV27951-LN-Y-00A				Low	
EV27942-N-Y-00A		4	2	High	
EV27942-LN-Y-00A				Low	
EV27933-N-Y-00A		3	3	High	
EV27933-LN-Y-00A				Low	

Notes:

1) Contact MPS sales or an MPS distributor regarding the availability of the ordering part numbers.
2) These evaluation boards can only be ordered as customized boards though the MPS CSR team.

QUICK START GUIDE

1. Prepare DC power supply A and DC power supply B, and ensure that their outputs are insulated from each other.
2. Preset DC power supply A to 2.5V ≤ V_{DD1} - V_{GND1} ≤ 5.5V. If the chip's side 1 is controlled by external signals, ensure that V_{GND1} is the ground reference of these signals and V_{DD1} is not below the high level of any signal. Then turn DC power supply A off.
3. Preset DC power supply B to 2.5V ≤ V_{DD2} - V_{GND2} ≤ 5.5V. If the chip's side 2 is controlled by external signals, ensure that V_{GND2} is the ground reference of these signals and V_{DD2} is not below the high level of any signal. Then turn DC power supply B off.
4. Connect DC power supply A's outputs to:
   a. Positive (+): VDD1
   b. Negative (-): GND1
5. Connect DC power supply B's outputs to:
   a. Positive (+): VDD2
   b. Negative (-): GND2
6. Connect the digital input control signals to the corresponding channels' INx pins.
7. Connect the data reading device/monitor to the corresponding channels' OUTx pins.
8. Float the unused I/O channel pins.
9. After making the connections, turn DC power supply A and DC power supply B on. The board should automatically start up.
10. If necessary, enable the external control signals.

Figure 1 shows the measurement equipment set-up.

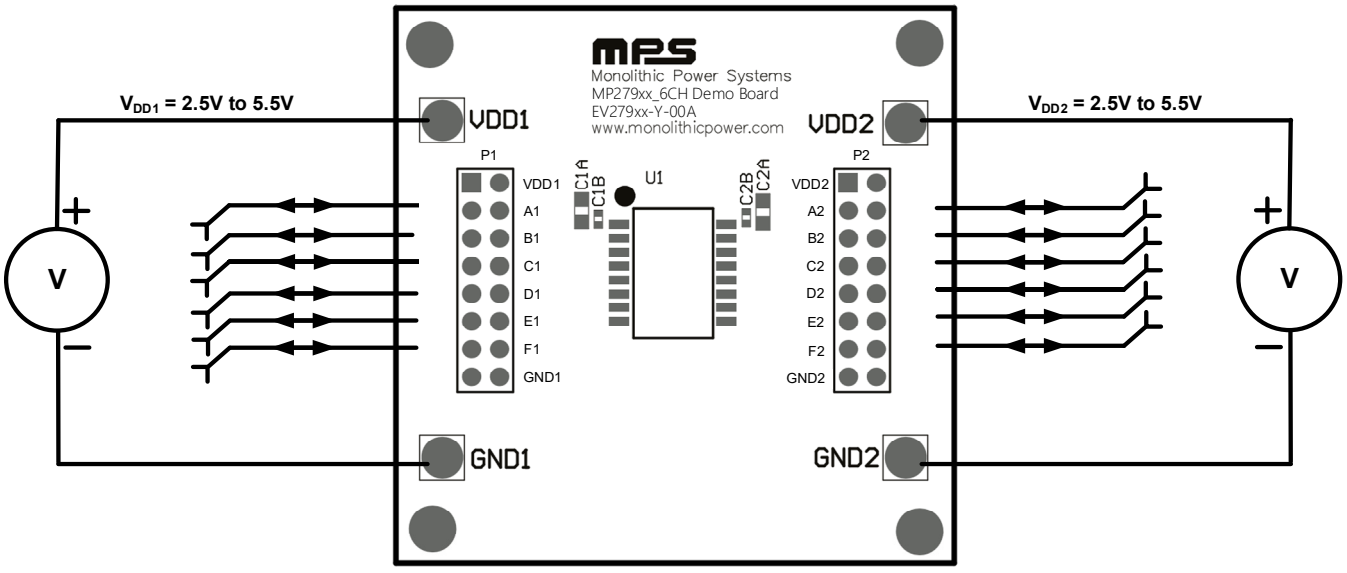


Figure 1: Measurement Equipment Set-Up

EVALUATION BOARD SCHEMATIC

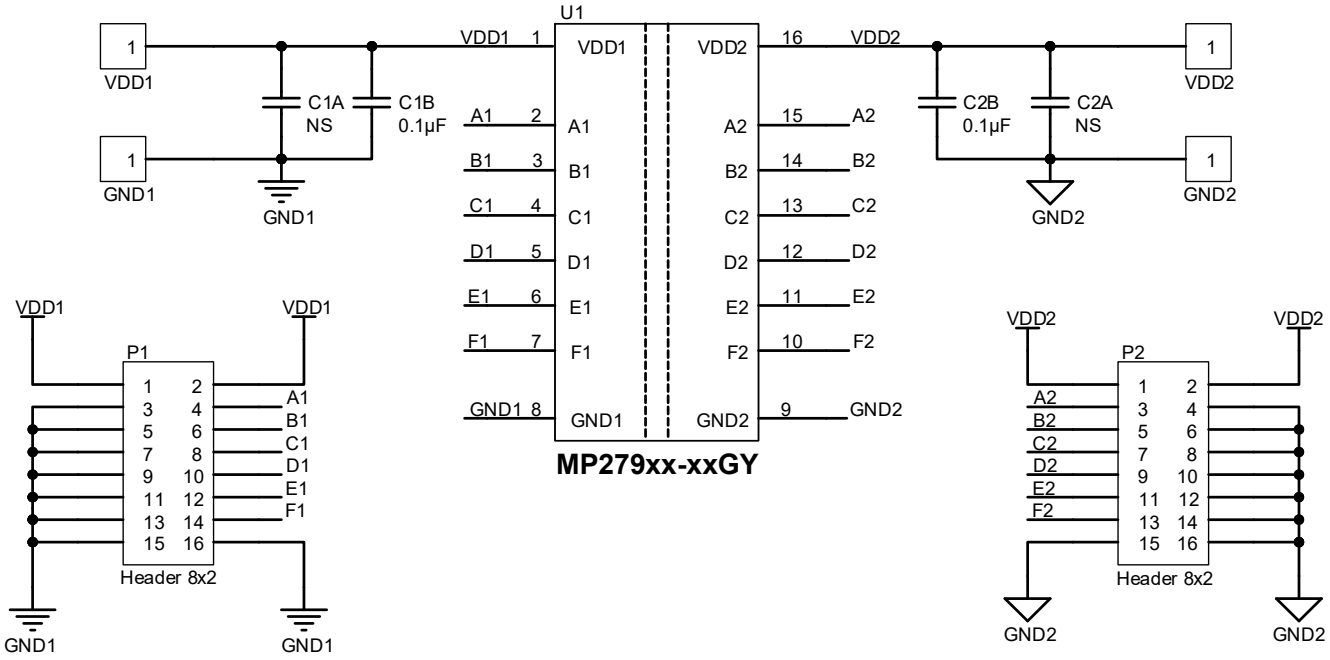


Figure 2: Evaluation Board Schematic

EV279XX-XX-Y-00A BILL OF MATERIALS

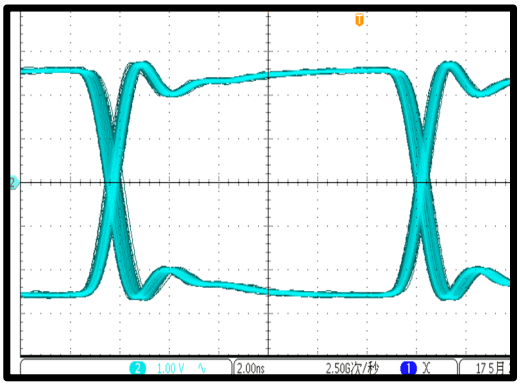
Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
0	C1A, C2A	NS				
2	C1B, C2B	0.1µF	Ceramic capacitor, 25V, X7R	0603	Murata	GRM188R71E104KA01D
4	VDD1, GND1, VDD2, GND2	1mm	Copper pin	DIP	Any	
2	P1, P2	2 x 8-pin	Straight test pin	DIP	Wurth	61301621121
1	U1	MP279xx	Six-channel digital isolator	SOIC-16 WB	MPS	MP279xx-xxGY-Z

EVB TEST RESULTS

Performance waveforms are tested on the evaluation board. All channels are switching with 40MHz square wave clock input, no load, T_J = 25°C, all voltages with respect to the corresponding ground(s), unless otherwise noted.

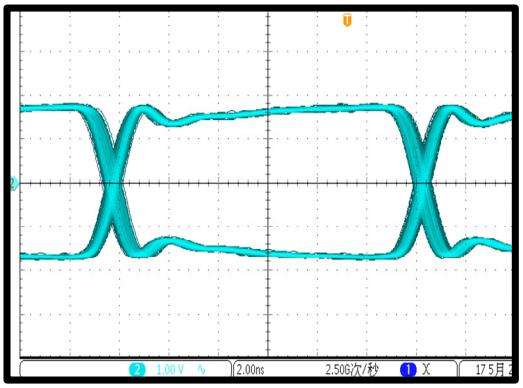
Eye Diagram at 80Mbps

V_{DD1} - V_{GND1} = V_{DD2} - V_{GND2} = 5V



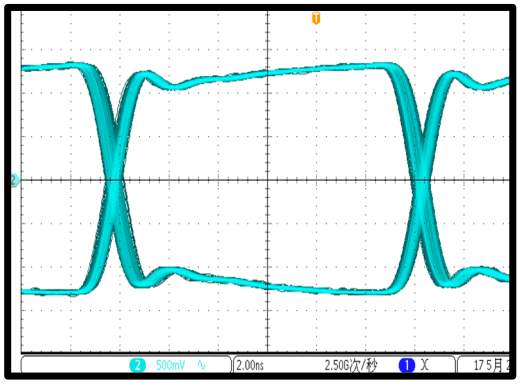
Eye Diagram at 80Mbps

V_{DD1} - V_{GND1} = V_{DD2} - V_{GND2} = 3.3V



Eye Diagram at 80Mbps

V_{DD1} - V_{GND1} = V_{DD2} - V_{GND2} = 2.5V



PCB LAYOUT

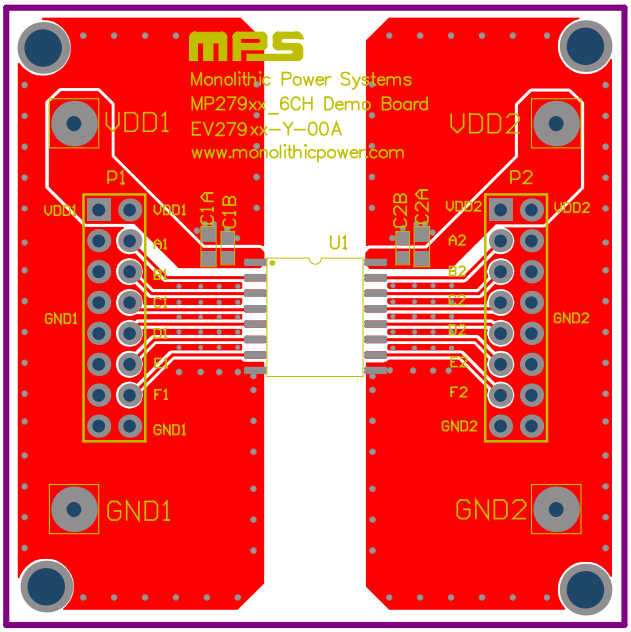


Figure 3: Top Silk and Top Layer

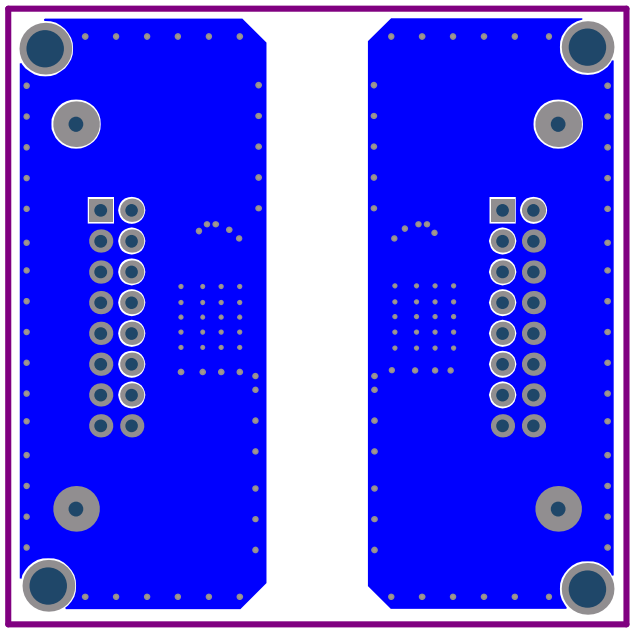


Figure 4: Bottom Layer and Bottom Silk

REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	9/3/2024	Initial Release	-