EV4865A-BD-00A

180V, 64-Channel Analog Switch with 5.0V Bias Evaluation Board

DESCRIPTION

The EV4865A-BD-00A is an evaluation board designed for the MP4865A, a high-voltage, 64-channel analog switch. The MP4865A is designed for medical ultrasound applications. It can also be used for non-destructive tests (NDTs), as the application is very similar to medical ultrasound applications.

The high-voltage analog switches are used to multiplex the transmitter and receiver circuitries to different piezoelectric transducer (PZT) elements. The MP4865A has a resistor that is connected from the ground to the output pins (SWOUTx). This ensures that a significant DC voltage does not build up across the PZT element. The switches can be turned on/off via a serial 64-bit shift register. The serial control interface minimizes the number of I/O connections.

The MP4865A is available in a BGA-144 (10mmx10mm) package.

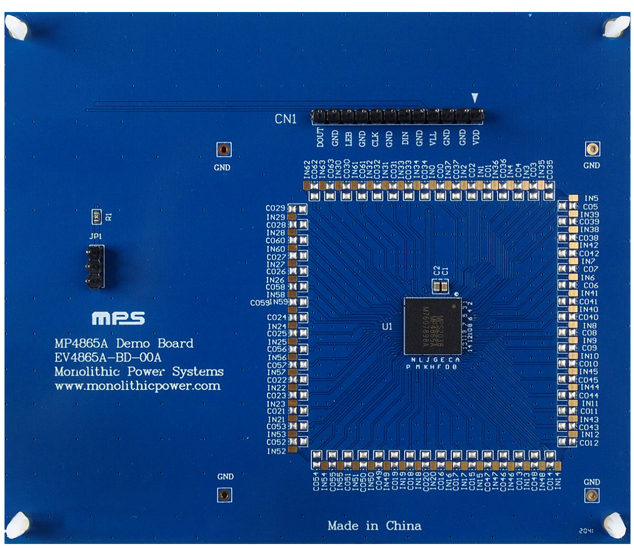
FEATURES

- 64 Channels
- No High Voltage Bias Required
- Up to ±90V Analog Signal
- 5.0V Bias
- 14Ω Typical Switch Resistance
- ±1.8A Typical Switch Peak Current
- 60MHz Clock Frequency at V_{LL} = 5.0V
- 30MHz Clock Frequency at V_{LL} = 3.3V
- Integrated Bleed Resistors
- Available in a BGA-144 (10mmx10mm) Package)

APPLICATIONS

- Medical Ultrasounds
- Industrial NDTs

EV4865A-BD-00A EVALUATION BOARD



LxWxH (11.94cmx9.65cmx0.16cm)

Board Number	MPS IC Number
EV4865A-BD-00A	MP4865AGBD

QUICK START GUIDE

1. Only two low-voltage DC supplies are required for this application: V_{LL} and V_{DD}.
   a. Set the logic interface (V_{LL}) to be between 2.7V and 5.5V
   b. Set the internal translator (V_{DD}) to be between 4.5V to 5.5V

   Connections to V_{LL} and V_{DD} can be made through the 12-pin header on the board.
2. The analog switches are controlled by a 64-bit serial shift register. A logic high closes the switch, while a logic low opens the switch.

   There are four logic control pins; CLK, DIN, DOUT, and LE_BAR. Connections to these pins can be made through the 12-pin header on the board.
3. Pads are available for the 64 analog switches.
   a. Connect the pulser (transmitter) to the IN0 to IN63 pads.
   b. Connect the piezoelectric transducers to the C0 to C63 pads.
   c. C0 to C63 are optional pads for a 0805 pattern. This allows for a 330pF chip capacitor to be used as a reference load.

      For more details, refer to the MP4865A datasheet.

FUNCTIONAL BLOCK DIAGRAM

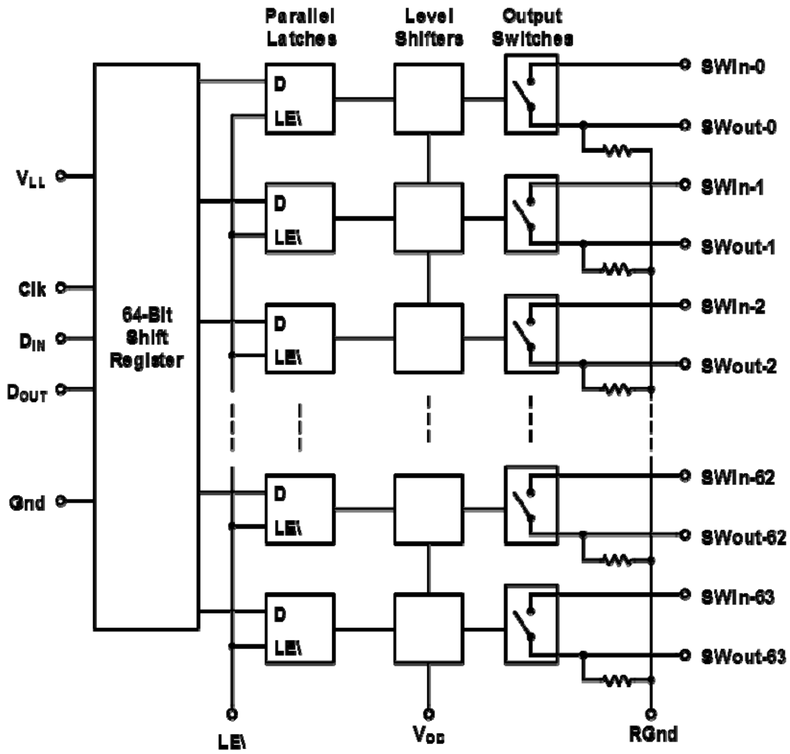


Figure 1: Functional Block Diagram

EVALUATION BOARD SCHEMATIC

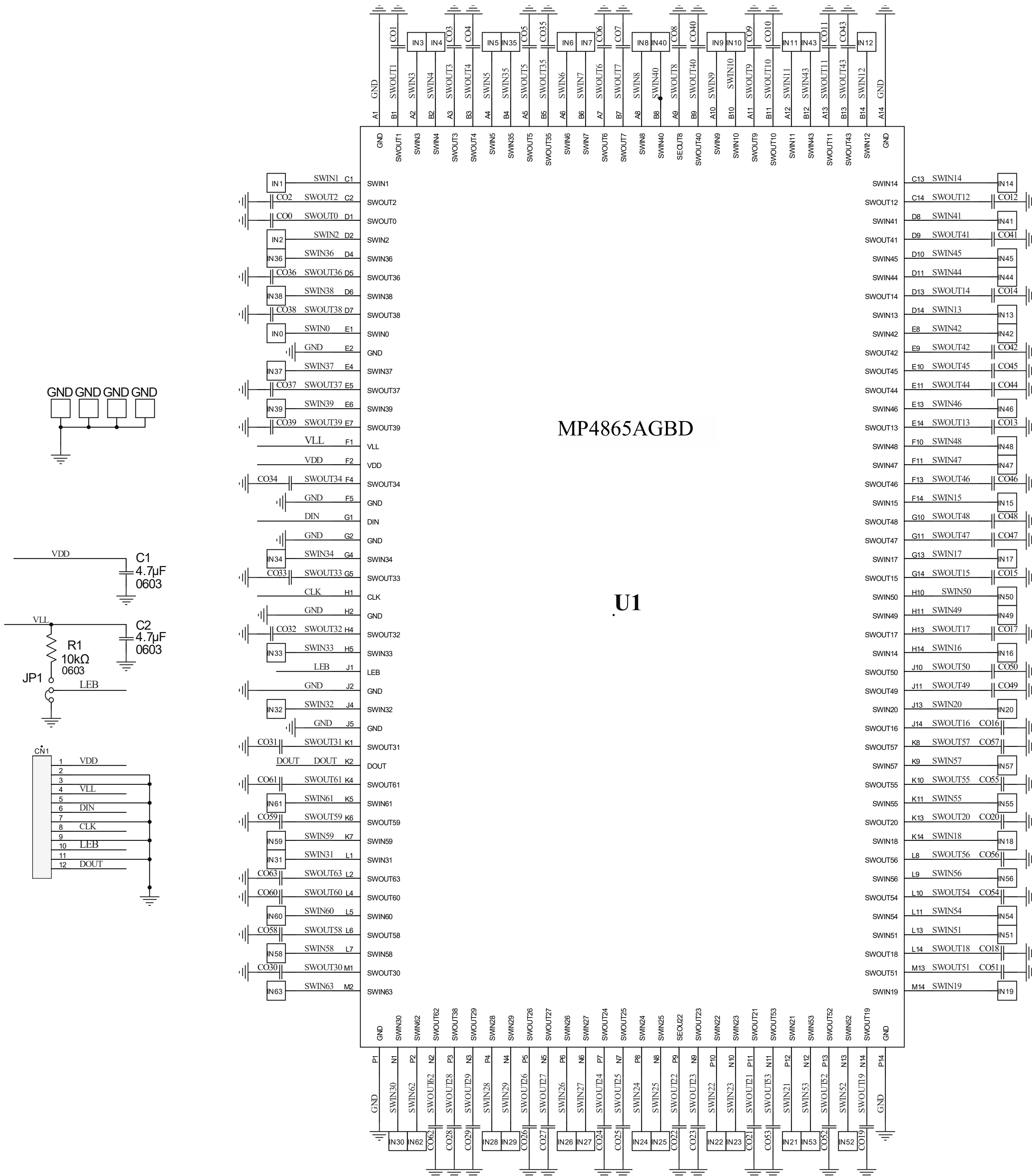


Figure 2: Evaluation Board Schematic

EV4865A-BD-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1, C2	4.7uF	Ceramic capacitor, 16V, 0603, X5R	CAP0603	Murata	GRM188R61C475KAAJD
64	CO0 to CO63	NS	Optional load capacitor	CAP0805	Murata	
1	R1	10kΩ	Film resistor	RES0603	Yageo	RC0603FR-0710KL
1	JP1	3-pin	3-pin jumper	Any	Any	
1	CN1	12-pin	12-pin connector	Any	Any	
1	U1	MPQ4865A	180V, 64-channel analog switch	BGA-144 (10mmx10mm)	MPS	MP4865AGBD
4	TP1, TP2, TP3, TP4	NS	Test point for GND	Any	Any	

PCB LAYOUT

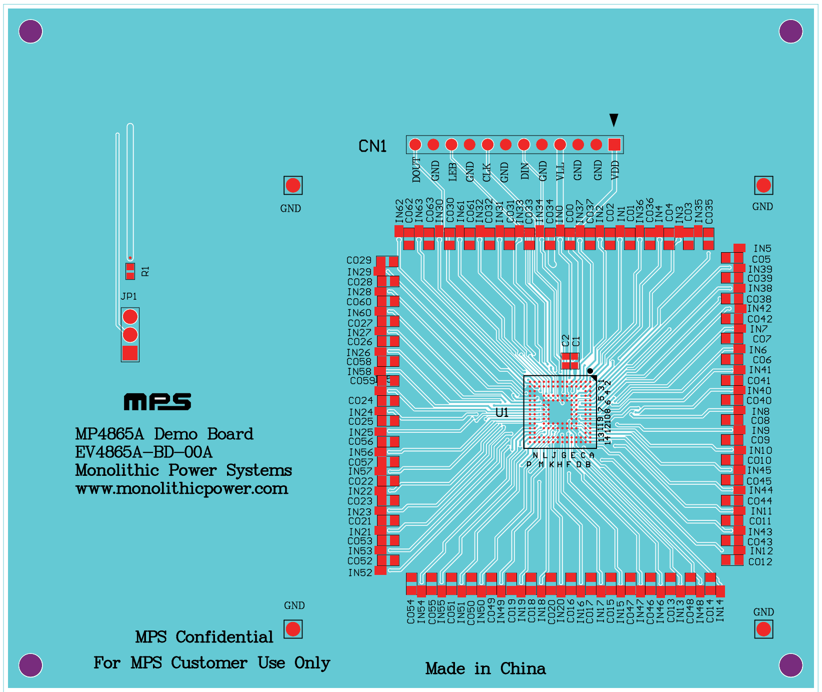


Figure 3: Top Silk Layer

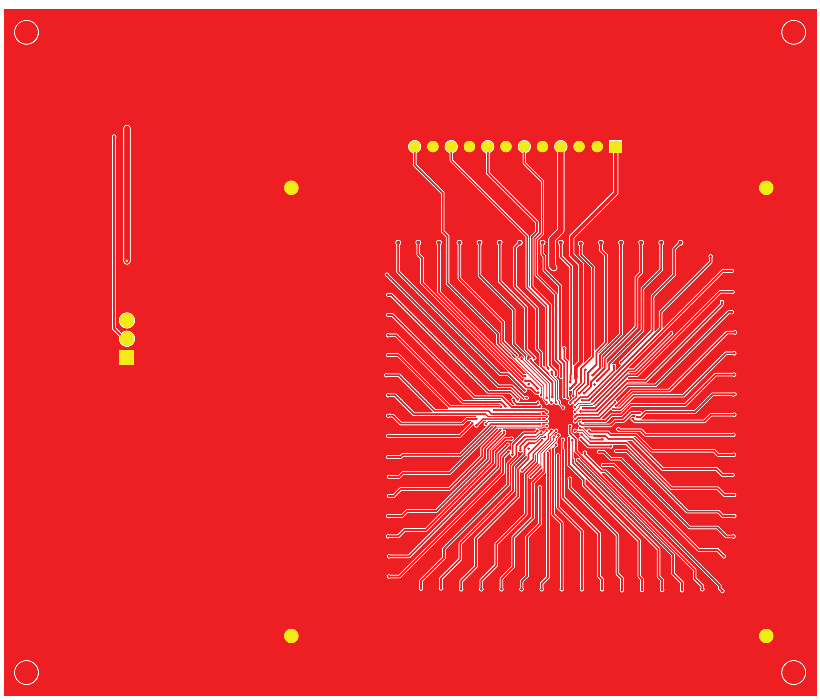


Figure 4: Bottom Layer

REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	3/26/2021	Initial Release	-