TABLE OF CONTENTS

REVISION HISTORY

5/2017—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

SETTING UP THE EVALUATION BOARD

The EVAL-ADM3066EEBZ and EVAL-ADM3066EEB1Z evaluation boards are powered by connecting a 3.0 V or 5.5 V power supply to the J1 screw terminals for V_{CC} and GND at the top of the evaluation board. A 10 µF decoupling capacitor, C3, is fitted at the connector between V_{CC} and GND. The V_{CC} pin of the RS-485 transceiver is fitted with a 100 nF decoupling capacitor, C1, with a second footprint for an optional additional capacitor, C2. V_{IO} can be connected with V_{CC} or a separate 1.8 V power supply.

Corresponding labeled test points allow monitoring of the power supply to the evaluation board and the probe reference to ground.

INPUT AND OUTPUT CONNECTIONS

Digital input and output signals are connected via the J3 screw terminal block, allowing wire connections from the evaluation boards to a signal generator or UART. The EVAL-ADM3066EEBZ and EVAL-ADM3066EEB1Z include connections for data input (DI), receiver output (RO), receiver enable ($\overline{RE}$), and driver enable (DE). Alternatively, jumper connections can drive these inputs and/or connect them to V_{CC} and GND (see Table 1). The EVAL-ADM3066EEBZ and EVAL-ADM3066EEB1Z evaluation boards also have an SMA right angle jack (DI), which is the preferred option for delivering a high speed 50 Mbps signal to the evaluation boards.

Connections to an RS-485 bus are made via a screw terminal block, J5. For the EVAL-ADM3066EEBZ or EVAL-ADM3066EEB1Z half-duplex boards, there are two bus input/output signals, A and B, for noninverting and inverting signals, respectively. The bus cable can also include a common ground connection or shield and can also be connected to the J5 screw terminal block of the evaluation boards. Test points are available on the evaluation boards and are appropriately labeled for all digital and bus input/output signals.

OTHER BOARD COMPONENTS

The EVAL-ADM3066EEBZ and EVAL-ADM3066EEB1Z evaluation boards include footprints for termination resistors, RT1 and RT2, as well as pull-up and pull-down resistors, R1 and R2. Termination resistors of 120 Ω are fitted to the evaluation board; these resistors can be removed or replaced with a different value resistor as needed. Inserting both LK3 and LK4 adds a 60 Ω load to the RS-485 driver.

Biasing Resistors for Bus Idle Fail-Safe

Although the ADM3066E has a built-in receiver fail-safe for the bus idle condition, there are footprints on the evaluation boards for fitting the R2 pull-up resistor to V_{CC} on A, as well as the R1 pull-down resistor to GND on B. These resistors can be fitted if the user is connecting to other devices that require such external biasing resistors on the bus. The exact value required for a 200 mV minimum differential voltage in the bus idle condition depends on the supply voltage (for example, 960 Ω for 3.3 V and 1440 Ω for 5 V).

For more information about the bus idle fail-safe, see the AN-960 Application Note, *RS-485/RS-422 Circuit Implementation Guide*.

Table 1. Jumper Configurations

Link	Connection	Description
LK1	A	Connects the receiver enable ($\overline{RE}$) input of the ADM3066E to V_{CC}. This setting disables the receiver.
	B	Connects the $\overline{RE}$ input of the ADM3066E to GND. This setting enables the receiver.
	C	Connects the $\overline{RE}$ input of the ADM3066E to the J3-2 terminal block connector.
	D	Connects the $\overline{RE}$ input of the ADM3066E to the J3-3 terminal block connector; that is, the input for both $\overline{RE}$ and DE is set by LK1. This setting ensures that when the driver is enabled, the receiver is disabled, or when the driver is disabled, the receiver is enabled.
LK2	A	Connects the DE input of the ADM3066E to V_{CC}. This setting enables the driver.
	B	Connects the DE input of the ADM3066E to GND. This setting disables the driver.
	C	Connects the DE input of the ADM3066E to the J3-2 terminal block connector.
LK3	Inserted	Connects the 120 Ω RT1 termination resistor across the RS-485 A and B pins.
	Not inserted	Disconnects the 120 Ω RT1 termination resistor across the RS-485 A and B pins.
LK4	Inserted	Connects the 120 Ω RT2 termination resistor across the RS-485 A and B pins.
	Not inserted	Disconnects the 120 Ω RT2 termination resistor across the RS-485 A and B pins.
LK6	Inserted	Connects V_{CC} with V_{IO}.
	Not inserted	Disconnects V_{CC} with V_{IO}.

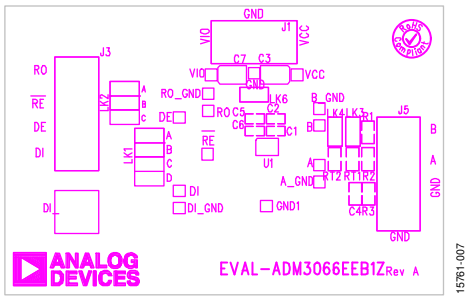

Figure 7. EVAL-ADM3066EEBZ/EVAL-ADM3066EEB1Z Silkscreen

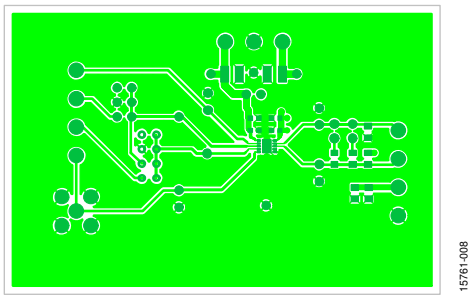

Figure 8. EVAL-ADM3066EEBZ/EVAL-ADM3066EEB1Z Component Side/Layer 1

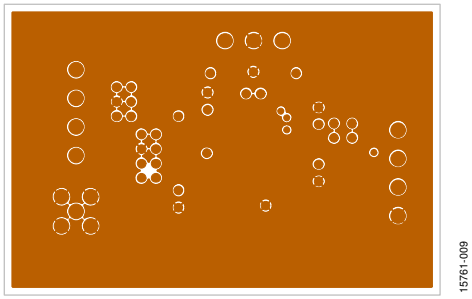

Figure 9. EVAL-ADM3066EEBZ/EVAL-ADM3066EEB1Z Layer 2

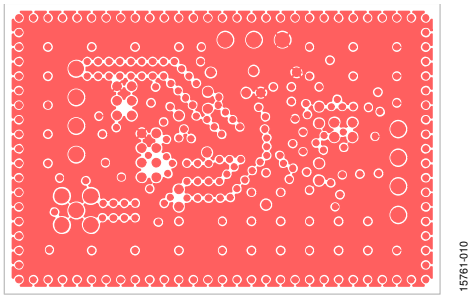

Figure 10. EVAL-ADM3066EEBZ/EVAL-ADM3066EEB1Z Layer 3

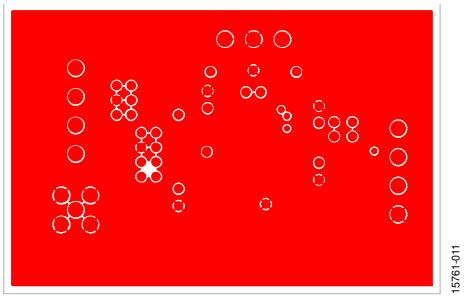

Figure 11. EVAL-ADM3066EEBZ/EVAL-ADM3066EEB1Z Layer 4

ORDERING INFORMATION

BILL OF MATERIALS

Table 2. EVAL-ADM3066EEBZ

Qty	Reference Designator	Description	Supplier	Part Number
2	C1, C6	Capacitor, 100 nF, 0805	Multicomp	MCCA000274
3	C2, C4, C5	Capacitor, not placed/optional	Not applicable	Not applicable
2	C3, C7	Capacitor, 10 µF, Case B	Kemet	B45196H3106K209
8	A, B, DI, RO, A_GND, B_GND, DI_GND, RO_GND	High speed test point, silver pin	Not applicable	040/30P/LA/KP2 SILVER
2	DE, $\overline{RE}$	Test point, yellow	Vero Technologies	20-313140
1	GND	Test point, black	Vero Technologies	20-2137
1	DI_	SMA right angle jack	Not applicable	5-1814400-1
1	J1	Two-way terminal block	Lumberg	KRM 02
2	J3, J5	Four-way terminal block	Lumberg	KRM 04
1	LK1	8-pin (4 × 2), 0.1" header and shorting block	Harwin	M20-9953646 and M7566-05
1	LK2	6-pin (3 × 2), 0.1" header and shorting block	Harwin	M20-9953646 and M7566-05
3	LK3, LK4, LK6	Jumper block, 2-pin, 0.1" spacing	Harwin	M20-9990246 and M7566-05
2	R1, R2	Resistor, not placed/optional		Not applicable
1	R3	Resistor, 0 Ω, 0805	Vishay Draloric	CRCW08050000Z0EA
2	RT1, RT2	Resistor, 120 Ω, 0805	Multicomp	MC 0.1W 0805 1% 120R
1	U1	10-lead MSOP	Analog Devices, Inc.	ADM3066EBRMZ
2	VCC, VIO	Test point, red	Vero Technologies	20-313137

Table 3. EVAL-ADM3066EEB1Z

Qty	Reference Designator	Description	Supplier	Part Number
2	C1, C6	Capacitor, 100 nF, 0805	Multicomp	MCCA000274
3	C2, C4, C5	Capacitor, not placed/optional	Not applicable	Not applicable
2	C3, C7	Capacitor, 10 µF, Case B	Kemet	B45196H3106K209
8	A, B, DI, RO, A_GND, B_GND, DI_GND, RO_GND	High speed test point, silver pin	Not applicable	040/30P/LA/KP2 SILVER
2	DE, $\overline{RE}$	Test point, yellow	Vero Technologies	20-313140
1	GND	Test point, black	Vero Technologies	20-2137
1	DI_	SMA right angle jack	Not applicable	5-1814400-1
1	J1	Two-way terminal block	Lumberg	KRM 02
2	J3, J5	Four-way terminal block	Lumberg	KRM 04
1	LK1	8-pin (4 × 2), 0.1" header and shorting block	Harwin	M20-9953646 and M7566-05
1	LK2	6-pin (3 × 2), 0.1" header and shorting block	Harwin	M20-9953646 and M7566-05
3	LK3, LK4, LK6	Jumper block, 2-pin, 0.1" spacing	Harwin	M20-9990246 and M7566-05
2	R1, R2	Resistor, not placed/optional		Not applicable
1	R3	Resistor, 0 Ω, 0805	Vishay Draloric	CRCW08050000Z0EA
2	RT1, RT2	Resistor, 120 Ω, 0805	Multicomp	MC 0.1W 0805 1% 120R
1	U1	10-lead LFCSP	Analog Devices, Inc.	ADM3066EBCPZ
2	VCC, VIO	Test point, red	Vero Technologies	20-313137

RELATED LINKS

Resource	Description
ADM3066E	3.0 V to 5.5 V, ±12 kV IEC ESD Protected, 50 Mbps RS-485 Transceiver
AN-960	RS-485/RS-422 Circuit Implementation Guide
Interface RS-485 and RS-422	RS-485/RS-422 Product Selection

ESD Caution
ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

ANALOG DEVICES

www.analog.com