

# MAXIM

## MAX3967A Evaluation Kit

### General Description

The MAX3967A evaluation kit (EV kit) is an assembled demonstration board that provides complete electrical or optical evaluation of the MAX3967A.

### Component List

| DESIGNATION             | QTY | DESCRIPTION   |
|-------------------------|-----|---|
| C1                      | 1   | 10 $\mu$ F $\pm$ 10% tantalum capacitor (B case)                          |
| C2                      | 1   | 0.1 $\mu$ F $\pm$ 5% ceramic capacitor (0603)                             |
| C4, C7, C8              | 3   | 0.01 $\mu$ F $\pm$ 5% ceramic capacitors (0603)                           |
| C5, C6, C9, C11         | 4   | 0.22F $\pm$ 5% ceramic capacitors (0603)                                  |
| D1                      | 1   | LED, user supplied  |
| J1 – J4                 | 4   | SMA side mount connectors, tab contact                                    |
| JU1, JU2, JU9           | 3   | 3-pin headers, 0.1in centers  |
| JU3, JU4, JU5, JU7, JU8 | 5   | 2-pin headers, 0.1in centers  |
| L1                      | 1   | 1 $\mu$ H inductor 1008CS-102xjb  |
| L2                      | 1   | Ferrite bead (0603) Murata BLM18PG300SN1                                  |
| Q1                      | 1   | Zetex FM591A PNP transistor (SOT-23)                                      |
| R1                      | 1   | 100k $\Omega$ variable resistor BOURNS 3296W-1-104 DIGI-KEY3296W-1-104-ND |
| R2                      | 1   | 4.99 $\Omega$ $\pm$ 1% resistor (0603)                                    |
| R3, R4                  | 2   | 453 $\Omega$ resistors (0603)   |
| R5                      | 1   | 1.0k $\Omega$ $\pm$ 1% resistor (0603)                                    |
| R6                      | 1   | 698 $\Omega$ $\pm$ 1% resistor (0603)                                     |
| R7                      | 1   | 5k $\Omega$ variable resistor DIGI-KEY3296W-1-502-ND                      |
| R8, R9                  | 2   | 82.5 $\Omega$ $\pm$ 1% resistors (0603)                                   |
| R10, R12                | 2   | 121 $\Omega$ $\pm$ 1% resistors (0603)                                    |
| R11                     | 1   | 49.9 $\Omega$ $\pm$ 1% resistor (0603)                                    |
| R13                     | 1   | 20.0k $\Omega$ $\pm$ 1% resistor (0603)                                   |
| TP1-3, TP7              | 4   | Test points DIGI-KEY 5000K-ND   |
| U1                      | 1   | MAX3967AETG   |
| None                    | 8   | Shunts DIGIKEY 9000-ND  |
| None                    | 1   | MAX3967A EV board, rev B  |

### Features

- ◆ Fully Assembled and Tested
- ◆ Single +3.3V Power Supply Operation
- ◆ AC-Coupling Provided On-Board
- ◆ Allows Electrical or Optical Evaluation

### Ordering Information

| PART          | TEMP RANGE     | IC-PACKAGE  |
|---------------|----------------|-------------|
| MAX3967AEVKIT | -40°C to +85°C | 24 Thin QFN |

### Component Suppliers

| SUPPLIER  | PHONE        | FAX          |
|-----------|--------------|--------------|
| AVX       | 803-946-0690 | 803-626-3123 |
| Coilcraft | 847-639-6400 | 847-639-1469 |
| Murata    | 814-237-1431 | 814-238-0490 |
| Zetex     | 516-543-7100 | 516-864-7630 |

**Note:** Please indicate that you are using the MAX3967A when contacting these component suppliers.

### QuickStart

#### Electrical Evaluation

For electrical evaluation of the MAX3967A, configure the evaluation kit as follows:

- 1) Remove all jumpers if there are any. Then reinstall JU3 and JU4.
- 2) To enable the output, connect TX\_DISABLE to GND by placing a shunt on the right side of JU9, or leave JU9 open.
- 3) Connect an oscilloscope to JU1 and JU2 (OUT+ and OUT-) using 50 $\Omega$  cables and 50 $\Omega$  oscilloscope terminations.
- 4) Using a multimeter on the right side of JU8 and ground, adjust the potentiometer R7 to be 300 $\Omega$ . Attach MODSET to the potentiometer by placing a jumper on JU8.
- 5) Install a shunt on jumper the right side of JU1 (TCNOM). See Figure 7 for jumper table.

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**Evaluates: MAX3967A**

- 6) Apply a differential signal to J4 (IN+) and J3 (IN-) with 1V differential signal amplitude and 100Mbps data rate.
- 7) Adjust the oscilloscope vertical gain of both channels to 10mV/div. Set the oscilloscope to display the differential signal [(OUT+) - (OUT-)].
- 8) Attach a 3.3V power source to the V<sub>CC</sub> and GND terminals (J6 and J10). Set the current limit to 300mA.
- 9) Place an ammeter across JU7 to measure the I<sub>MON</sub> current.
- 10) The output signal is approximately 40mV<sub>p-p</sub>. Adjust R7 to vary the level of the signal.
- 3) Solder LED onto socket D1, see the Figure 1 for socket layout. Connect the anode to OUT- and the cathode to OUT+.
- 4) Attach MODSET to the potentiometer by placing a jumper on JU8.
- 5) Install a shunt on jumper the right side of JU1 to set the tempco to “nominal” (TC connected to TCNOM).
- 6) Connect output of LED to an optical-to-electrical (O-to-E) converter and connect the output of the O-to-E to an oscilloscope.
- 7) Apply a differential signal to J4 (IN+) and J3 (IN-) with 1V differential signal amplitude and 100Mbps data rate.
- 8) Attach a 3.3V power source to the V<sub>CC</sub> and GND terminals (J6 and J10). Set the current limit to 300mA.
- 9) To enable the output, connect TX\_DISABLE to GND by placing a shunt on the right side of JU9, or leave JU9 open.

## Optical Evaluation

For optical evaluation of the MAX3967A, configure the evaluation kit as follows:

- 1) Remove resistor R2 from the evaluation kit.
- 2) Disconnect cables from J1 (OUT+) and J2 (OUT-).

**Table 1. Adjustment and Control Descriptions (see Quick Start first)**

| COMPONENT | NAME                | FUNCTION   |
|-----------|---------------------|--|
| D1        | LED                 | D1 is a socket for an LED in a TO-46 header. Remove R2 before inserting an LED into socket D1.   |
| JU1       | TCNOM               | JU1 connects TC to either TCNOM or TCMIN. Place a jumper on the right two pins to connect TC to TCNOM. Place a jumper on the left two pins to connect TC to the jumper JU2.  |
| JU2       | TCMIN               | JU1 must have the left two pins shorted in order for JU2 to be operable. JU2 will connect TC directly to TCMIN when the right two pins are shorted or connect TC to TCMIN through R1 when the left two pins are shorted. |
| JU3       | PB1                 | Shorting JU3 connects PB1 to ground. See MAX3967A data sheet, table 1.   |
| JU4       | PB2                 | Shorting JU4 connects PB2 to ground. See MAX3967A data sheet, table 1.   |
| JU5       | PB3                 | Shorting JU5 connects PB3 to ground. See MAX3967A data sheet, table 1.   |
| JU7       | MON                 | JU7 connect MON to ground through a 1kΩ resistor.  |
| JU8       | MODSET              | Place a jumper on JU8 to connect MODSET to potentiometer R7.   |
| JU9       | TX_DISABLE          | Enables/disables the output modulation. Shunt across the left two pins of JU9 to force a static zero at the outputs. TX_DISABLE has an internal pull down resistor to enable the part when this pin is left open.        |
| R1        | R <sub>TC</sub>     | When the left two pins of JU1 and JU2 have been shorted this potentiometer is used to set the tempco of the modulation current.  |
| R7        | R <sub>MODSET</sub> | When JU8 is shunted, R7 allows adjustment of the LED modulation-current amplitude.   |

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Evaluates: MAX3967A

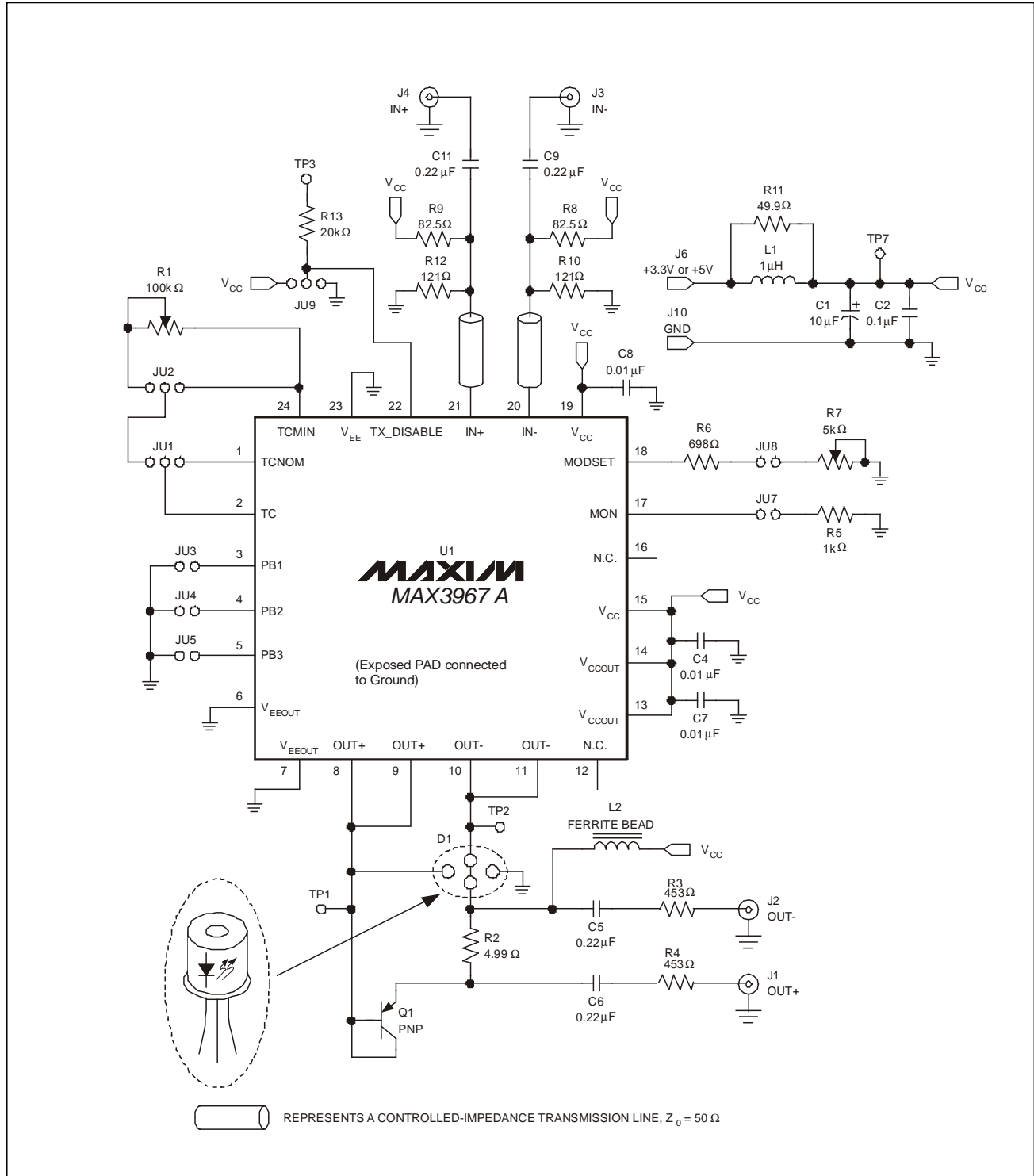


Figure 1. MAX3967A EV Kit Schematic

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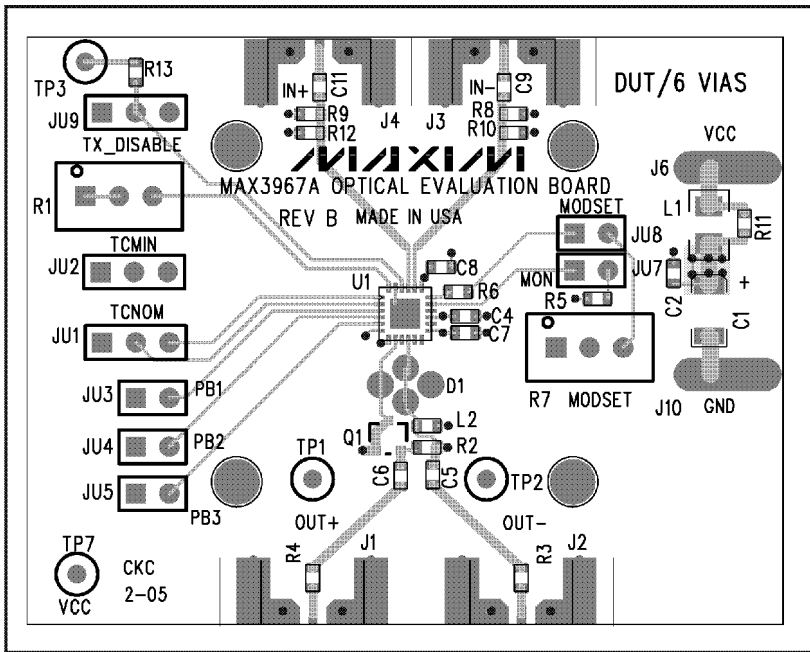


Figure 2. MAX3967A EV Kit PC Component Placement Guide - Component Side

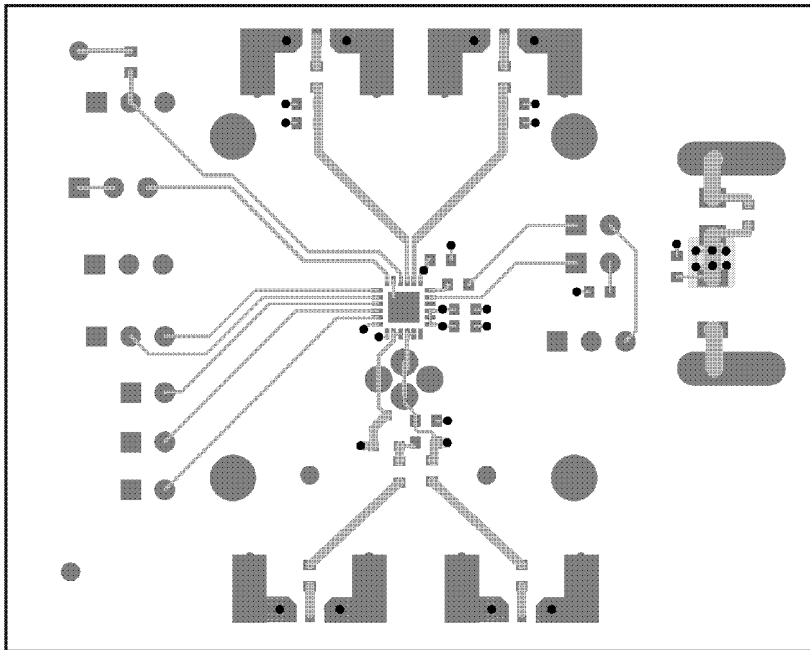


Figure 3. MAX3967A EV Kit PC Board Layout - Component Side

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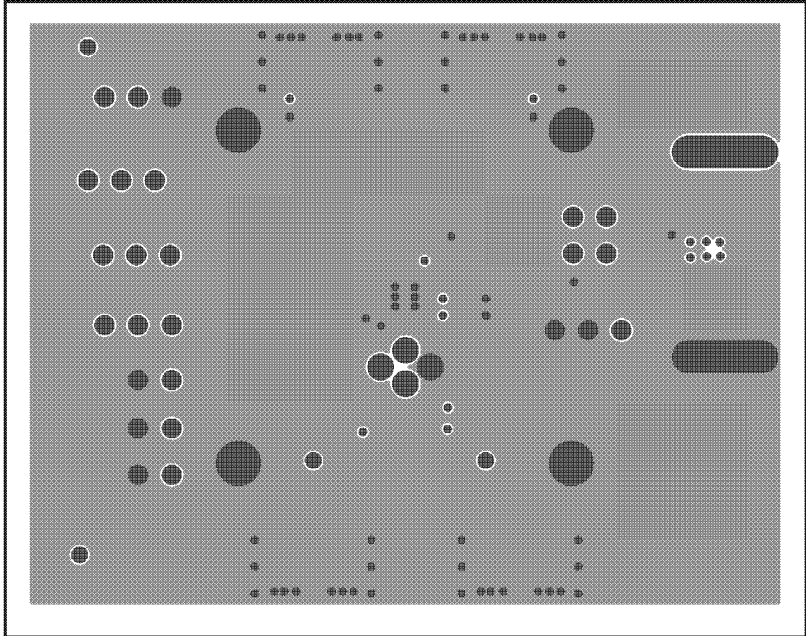


Figure 4. MAX3967A EV Kit PC Board Layout - Ground Plane.

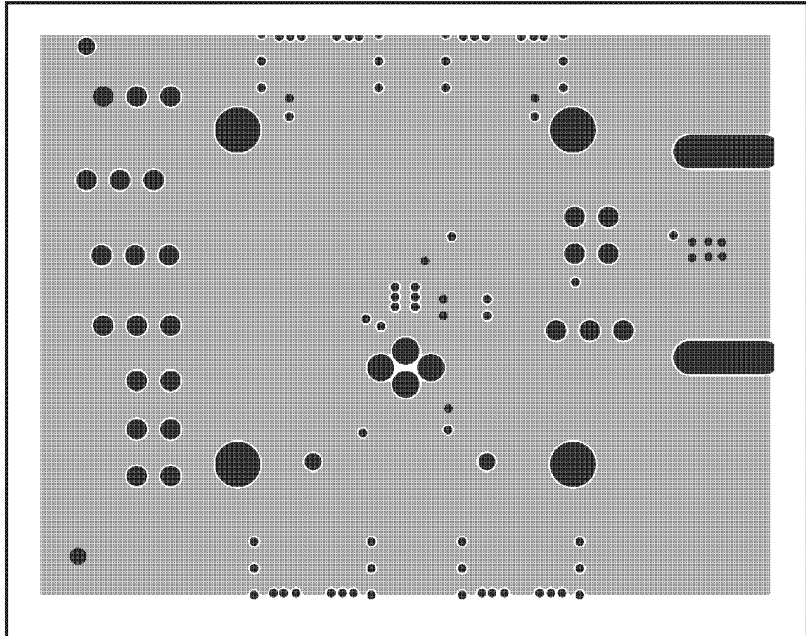


Figure 5. MAX3967A EV Kit PC Board Layout - Power Plane.

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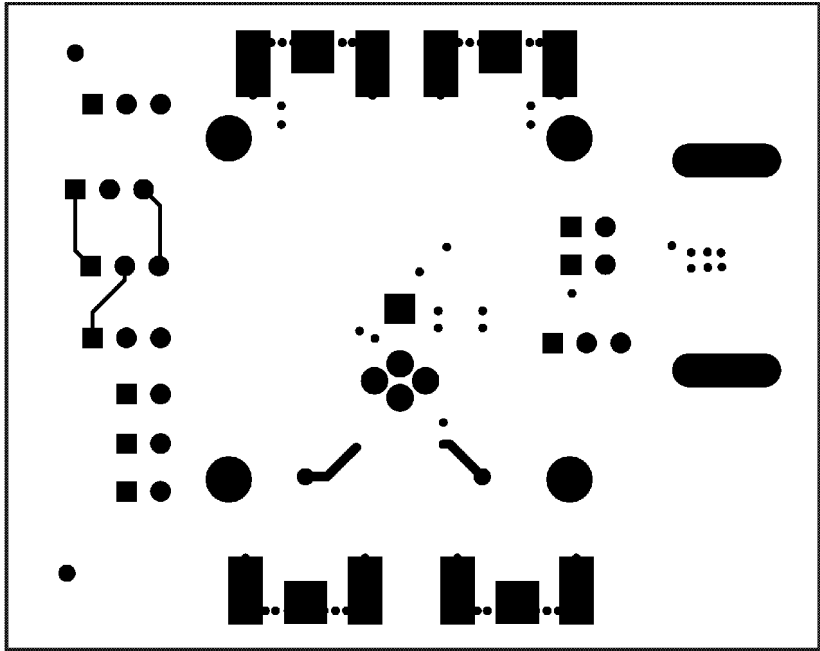


Figure 6. MAX3967A EV Kit PC Board Layout - Solder Side..

| Temperature Coefficient | JU1  | JU2  |
|-------------------------|------|------|
| Nominal Temp Co         | BC   | open |
| Minimum Temp Co         | AB   | EF   |
| Maximum Temp Co         | open | open |

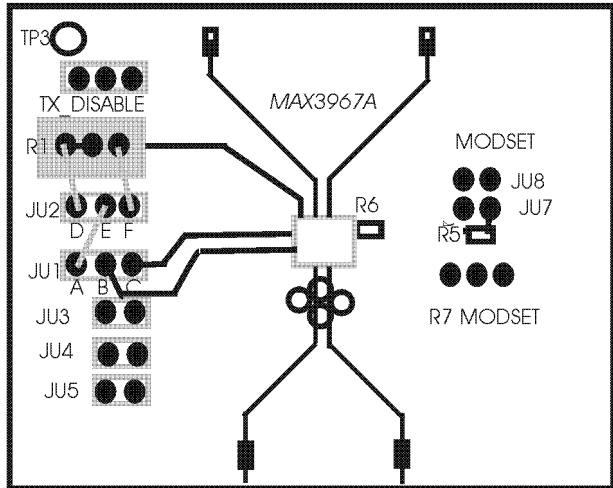


Figure 7. Temperature Coefficient Jumper Table.

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