



## MAX17121 Evaluation Kit

**Evaluates: MAX17121**

### General Description

The MAX17121 evaluation kit (EV kit) is an assembled and tested circuit board that contains all the components necessary to evaluate the MAX17121 IC. The MAX17121 is a dual, high-voltage, level-shifting scan driver to drive the TFT panel integrated gate logic. The driver outputs swing from -30V to +40V. To save power, complementary outputs are provided to allow charge sharing during state changes. The EV kit operates from a DC supply range from +2.2V to +3.6V and consumes 250 $\mu$ A (typ).

### Features

- ◆ Two High-Voltage, Level-Shifting Scan Drivers
- ◆ +2.2V to +3.6V Input Supply Voltage Range (VDD)
- ◆ -30V to +40V Output Swing
- ◆ Demonstrates Output Charge Sharing
- ◆ Evaluates the MAX17121 in 24-Pin, 4mm x 4mm, Thin QFN Package
- ◆ Fully Assembled and Tested

### Ordering Information

PART	TYPE
MAX17121EVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

### Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	0.1 $\mu$ F $\pm$ 10%, 50V X7R ceramic capacitors (0603) Murata GRM188R71H104K TDK C1608X7R1H104K
C3	1	1 $\mu$ F $\pm$ 10%, 10V X5R ceramic capacitor (0603) Murata GRM188R61A105K TDK C1608X5R1A105K
C4, C5	2	1 $\mu$ F $\pm$ 10%, 50V X7R ceramic capacitors (1206) Murata GRM31MR71H105KA TDK C3216X7R1H105K
C6-C9	4	0.01 $\mu$ F $\pm$ 10%, 100V X7R ceramic capacitors (0603) Murata GRM188R72A103K

DESIGNATION	QTY	DESCRIPTION
CKVBCS1, CKVBCS2, CKVCS1, CKVCS2, DISH	5	Test points, white
JU1	1	2-pin header, 0.1in centers
R1	1	20k $\Omega$ $\pm$ 5% resistor (0603)
R2-R5	4	200 $\Omega$ $\pm$ 5% resistors (1210)
R6-R9	4	200 $\Omega$ $\pm$ 5% resistors (0805)
U1	1	High-voltage scan driver (24 TQFN-EP*) Maxim MAX17121ETG+
—	1	Shunt
—	1	PCB: MAX17121 EVALUATION KIT+

\*EP = Exposed pad.

### Component Suppliers

SUPPLIER	PHONE	WEBSITE
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
TDK Corp.	847-803-6100	www.component.tdk.com

**Note:** Indicate that you are using the MAX17121 when contacting these component suppliers.

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## Quick Start

### Required Equipment

- +3.3V, 100mA DC power supply (VDD)
- +35V, 100mA DC power supply (VON)
- -25V, 100mA DC power supply (VOFF)
- Voltmeter

### Procedure

The MAX17121 EV kit is fully assembled and tested. Follow the steps below to verify board operation.

**Caution: Do not turn on the power supply until all connections are completed.**

- 1) Connect the +3.3V DC power supply to the VDD and AGND PCB pads.
- 2) Connect the +35V DC power supply to the VON and AGND PCB pads.
- 3) Connect the -25V DC power supply to the VOFF and AGND PCB pads.
- 4) Turn on the power supply.
- 5) Note that the logic inputs (STV, CPV1, and CPV2) must be set to AGND or VDD.
- 6) Verify the STVP logic per the table below at the respective test points:

SIGNAL	LOGIC STATE				
EN	H	H	H	H	L
STV	L	L	H	H	X
CPV <sub>1</sub>	L	↑	L	H	X
CKV <sub>—</sub>	Hi-Z (CS)	Toggle	VOFF	VON	VOFF
CKVB <sub>—</sub>	Hi-Z (CS)	Toggle	VON	VOFF	VOFF

**Note:** H = VDD, L = GND, Hi-Z = high impedance, and X = don't care.

- 7) Verify the CKV<sub>—</sub> and CKVB<sub>—</sub> logic per the table below at the respective test points:

SIGNAL	LOGIC STATE				
EN	H	H	H	H	L
STV	L	L	H	H	X
CPV <sub>—</sub>	L	↑	L	H	X
CKV <sub>—</sub>	Hi-Z (CS)	Toggle	VOFF	VON	VOFF
CKVB <sub>—</sub>	Hi-Z (CS)	Toggle	VON	VOFF	VOFF

**Note:** H = VDD, L = GND, ↑ = rising edge, CS = charge-share state, and X = don't care.

### Detailed Description of Hardware

The MAX17121 EV kit contains all the components necessary to evaluate the MAX17121 IC. The MAX17121 is a dual, high-voltage, level-shifting scan driver to drive TFT panel integrated gate logic. The drivers' outputs swing from -30V to +40V and two sets of complementary outputs are provided to allow charge sharing during state changes. The EV kit operates from a DC supply range from +2.2V to +3.6V and consumes 250µA (typ).

The MAX17121 EV kit provides PCB pads to connect the logic inputs and scan-driver outputs. Test points are also provided to monitor the charge sharing, EN, and DISH states. Jumper JU1 is provided to enable/disable the MAX17121 device (see Table 1).

**Table 1. Jumper JU1 Function**

SHUNT POSITION	EN PIN	DESCRIPTION
Installed	Connected to VDD	MAX17121 enabled
Not installed	Connected to ground	MAX17121 disabled

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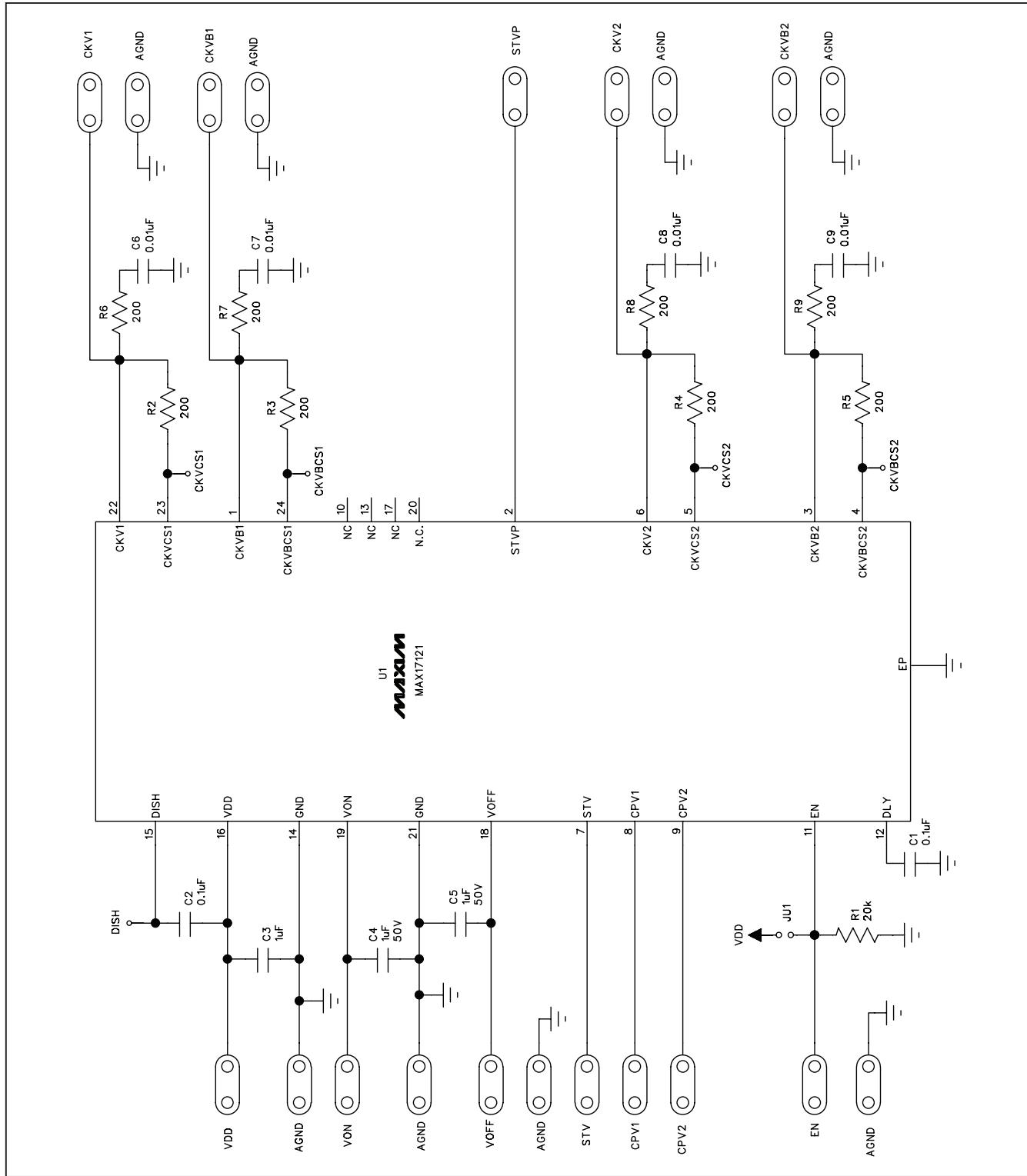


Figure 1. MAX17121 EV Kit Schematic

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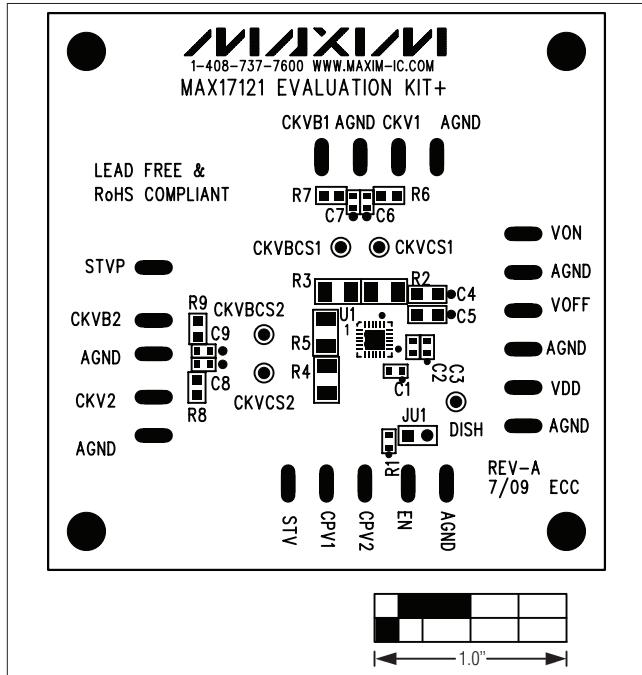


Figure 2. MAX17121 EV Kit Component Placement Guide—Component Side

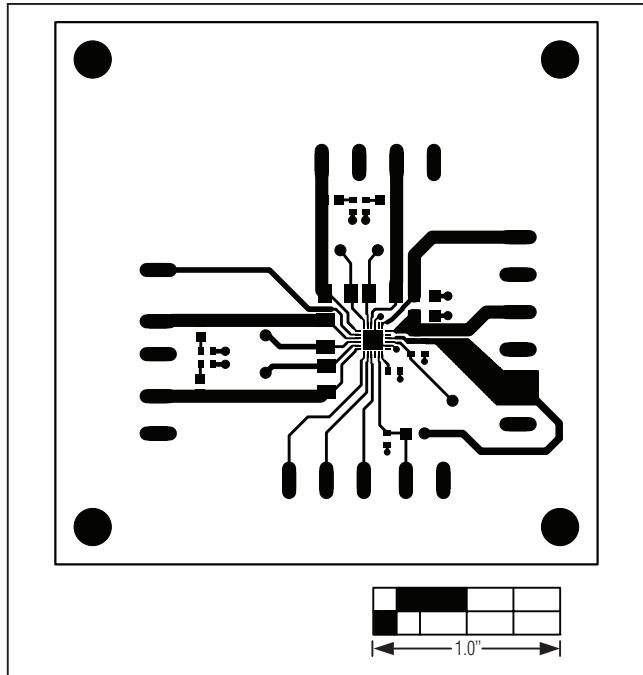


Figure 3. MAX17121 EV Kit PCB Layout—Component Side

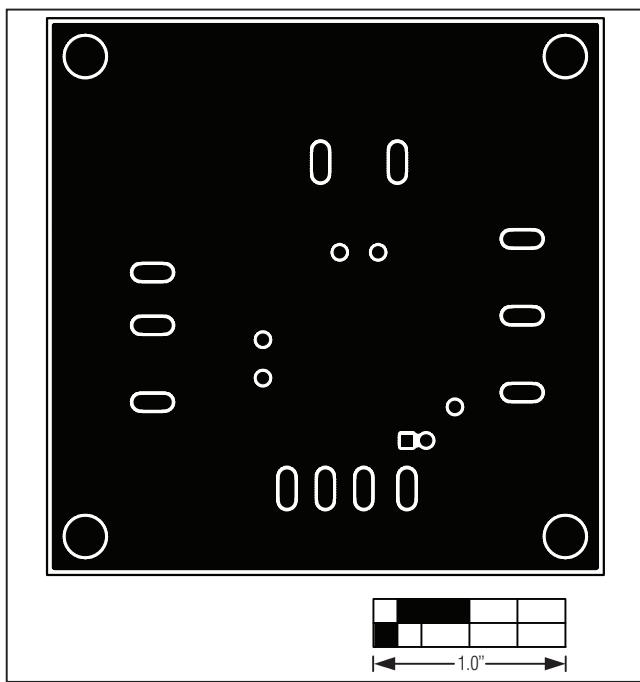


Figure 4. MAX17121 EV Kit PCB Layout—Solder Side

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