



# MAX8722 Evaluation Kit

## General Description

The MAX8722 evaluation kit (EV kit) is an assembled and tested PC board that demonstrates the MAX8722 low-cost, cold-cathode fluorescent lamp (CCFL), back-light controller. Lamp brightness is adjustable by an on-board potentiometer.

## Features

- ◆ **+7V to +24V Input Range**
- ◆ **Open-Lamp Protection with 1s Timeout**
- ◆ **Secondary Short-Circuit Protection with 10ms Timeout**
- ◆ **Brightness Adjustable by an On-Board Potentiometer**
- ◆ **10:1 Digital Pulse-Width Modulation (DPWM) Dimming Range**
- ◆ **Strike Voltage Up to 1.6kV**
- ◆ **High Power to Light Efficiency**
- ◆ **Assembled and Tested**

## Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX8722EVKIT	0°C to +70°C	24 QSOP

## Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	4.7 $\mu$ F $\pm$ 20%, 25V X5R ceramic capacitor (1210) Murata GRM32RR61E475K Taiyo Yuden TMK325BJ475MN TDK C3225X7R1E475M
C2	1	1 $\mu$ F $\pm$ 10%, 25V X7R ceramic capacitor (1206) Murata GRM31MR71E105K Taiyo Yuden TMK316BJ105KL TDK C3216X7R1E105K
C3	1	18pF $\pm$ 10%, 3kV HV ceramic capacitor (1808) TDK C4520C0G3F180K
C4	1	0.015 $\mu$ F $\pm$ 10%, 16V X7R ceramic capacitor (0402) Murata GRP155R71C153K Taiyo Yuden EMK105BJ153KV TDK C1005X7R1C153K
C5, C6, C13	3	0.1 $\mu$ F $\pm$ 10%, 10V X5R ceramic capacitors (0402) Murata GRP155R61A104K Taiyo Yuden LMK105BJ104KV TDK C1005X5R1A104K

DESIGNATION	QTY	DESCRIPTION
C7, C9	2	0.47 $\mu$ F $\pm$ 10%, 10V X5R ceramic capacitors (0402) Murata GRM155R60J474K TDK C1005X5R0J474K
C8	1	0.1 $\mu$ F $\pm$ 10%, 25V X7R ceramic capacitor (0603) Murata GRM188R71E104K Taiyo Yuden TMK107BJ104KA TDK C1608X7R1E104K
C10	0	Not installed (0603)
C11	1	0.01 $\mu$ F $\pm$ 10%, 25V X7R ceramic capacitor (0402) Murata GRP155R71E103K Taiyo Yuden TMK105BJ103KV TDK C1005X7R1E103K
C12	1	0.22 $\mu$ F $\pm$ 10%, 6.3V X5R ceramic capacitor (0402) Taiyo Yuden JMK105BJ224KV TDK C1005X5R0J224K
CN1	1	Shrouded header for CCFL lamp connection, 3.5mm pin spacing, PC board mount JST SM02B-BHSS-1-TB



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## Component List (continued)

DESIGNATION	QTY	DESCRIPTION
D1	1	Dual Schottky diode, Common Anode, SOT-323 Central Semiconductor CMSSH-3A Diodes Incorporated BAT54AW
F1	1	Fuse, 2A, 32V (1206) AVX F1206A2R00FWTR
JU1	1	2-pin header
JU2	0	Not installed (0603)
JU3	1	3-pin header
N1A/B, N2A/B	2	Dual n-channel MOSFETs, 30V, 0.095, SOT23-6 Fairchild FDC6561AN
R1	1	150 $\Omega$ $\pm$ 1% resistor (0402)

DESIGNATION	QTY	DESCRIPTION
R2, R11	0	Not installed (0402)
R3	1	40.2 $\Omega$ $\pm$ 1% resistor (0603)
R4	1	200k $\Omega$ $\pm$ 1% resistor (0402)
R5	1	100k $\Omega$ $\pm$ 1% resistor (0402)
R6	1	169k $\Omega$ $\pm$ 1% resistor (0603)
R7, R8	2	100k $\Omega$ $\pm$ 5% resistors (0402)
R9	1	100k $\Omega$ potentiometer (multiturn), 3/8" square
R10	1	1k $\Omega$ $\pm$ 5% resistor (0402)
T1	1	CCFL transformer, 93:1 Sumida 5371-400-W1423 (CIUH8D42 style) TOKO T912MG-1018 (BLC103B style)
U1	1	MAX8722EEG (24 QSOP)

## Component Suppliers

SUPPLIER	PHONE	FAX	WEBSITE
AVX	843-946-0238	843-626-3123	www.avxcorp.com
Central Semiconductor	631-435-1110	631-435-1824	www.centalsemi.com
Diodes Incorporated	805-446-4800	805-446-4850	www.diodes.com
Fairchild Semiconductor	888-522-5372	972-910-8036	www.fairchildsemi.com
JST	847-473-1957	847-473-0144	www.jst.com
Murata	770-436-1300	770-436-3030	www.murata.com
Sumida	847-545-6700	847-545-6720	www.sumida.com
Taiyo Yuden	800-348-2496	847-925-0899	www.t-yuden.com
TDK	847-803-6100	847-390-4405	www.component.tdk.com
TOKO	847-297-0070	847-699-1194	www.tokoam.com

**Note:** Indicate you are using the MAX8722 when contacting these manufacturers.

## Quick Start

### Recommended Equipment

Before you begin, you need the following equipment:

- A DC power supply capable of supplying a voltage between +7V to +24V at 2A to power the MAX8722 board

- A CCFL lamp with the following specifications:
  - Maximum RMS strike voltage  $\leq$  1.6kV
  - RMS lamp current  $\leq$  6mA
  - Input power  $\leq$  4W

**Warning:** High voltages are present on this evaluation kit. Use caution when making connections and applying power!

**Do not turn on the power until all connections are made!**

# MAX8722 Evaluation Kit

Evaluates: MAX8722

## Procedure

- 1) Connect the lamp to the connector CN1.
- 2) Connect the +7V to +24V supply to the pads labeled VIN and GND on the MAX8722 EV kit.
- 3) Turn on the power supply.
- 4) Enable the MAX8722 by removing the shunt on JU1.

## Shutdown

A shunt installed on JU1 places the MAX8722 in shutdown mode.

## DPWM Chopping Frequency (Jumpers JU2 and JU3 and Resistor R6)

Resistor R6 sets the DPWM chopping frequency ( $f_{DPWM}$ ) according to the following equation:

$$f_{DPWM}(\text{Hz}) = \frac{209\text{Hz} \times 169\text{k}\Omega}{R6}$$

The MAX8722 EV kit is shipped with R6 equal to 169k $\Omega$ , which sets  $f_{DPWM}$  to 209Hz.

## Detailed Description

### Brightness

The brightness of the lamp is adjustable by turning potentiometer R9.

**Table 1. Jumper and Resistor Settings**

JU2	JU3	R6	DPWM PIN	FREQUENCY
Open	2-3	169k $\Omega$	DPWM is used as an output.	$f_{DPWM} = 209\text{Hz}$
Short	Open. Connect SYNC to an external high frequency (between 13kHz and 45kHz).	Open	DPWM is used as an output.	$f_{DPWM} = f_{EXT} / 128$
Open	1-2	169k $\Omega$	Connect DPWM to an external low-frequency signal (between 100Hz and 350Hz).	$f_{DPWM} = f_{EXT}$

# MAX8722 Evaluation Kit

Evaluates: MAX8722

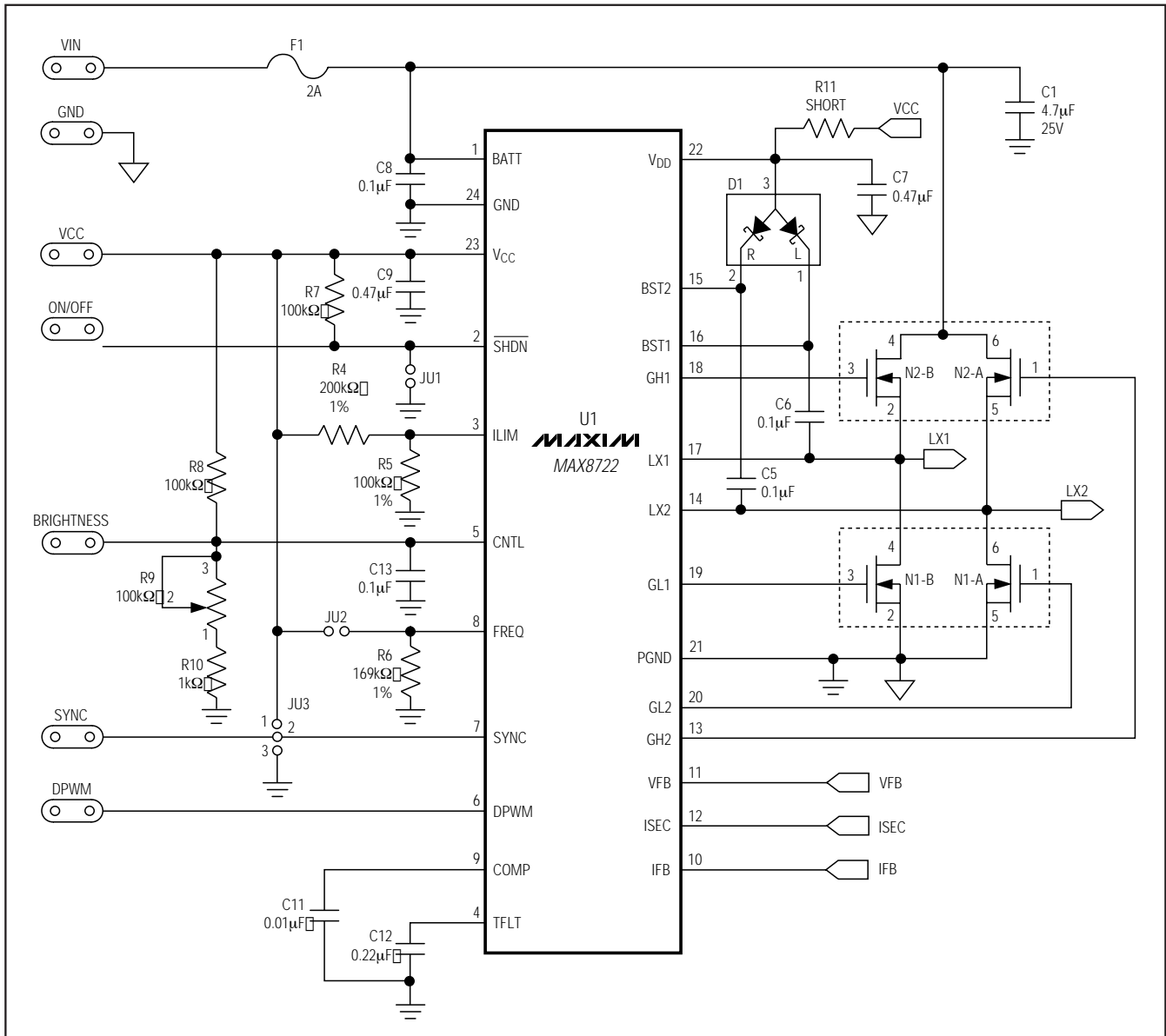


Figure 1. MAX8722 EV Kit Schematic

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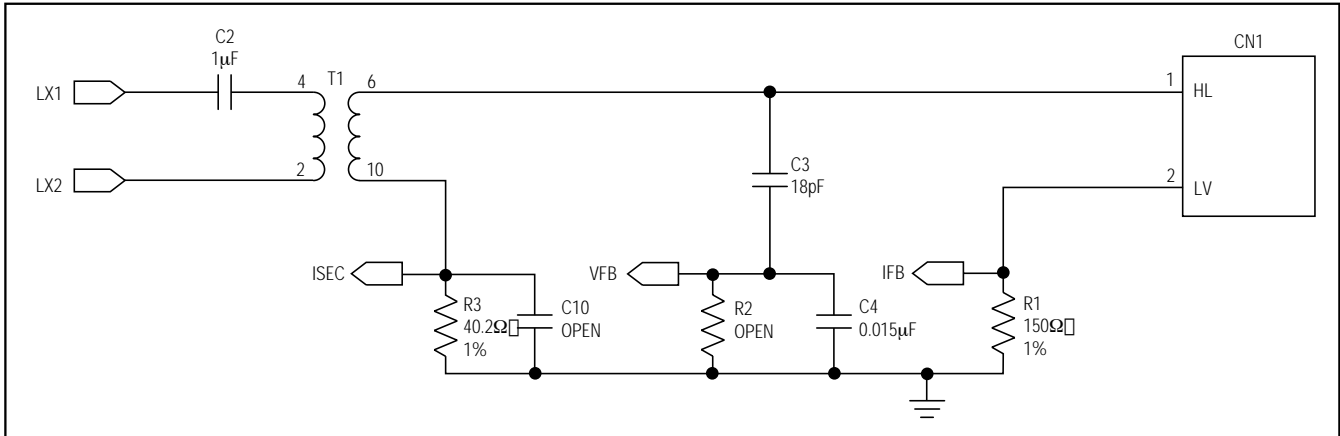


Figure 2. MAX8722 EV Kit Schematic—High-Voltage Section

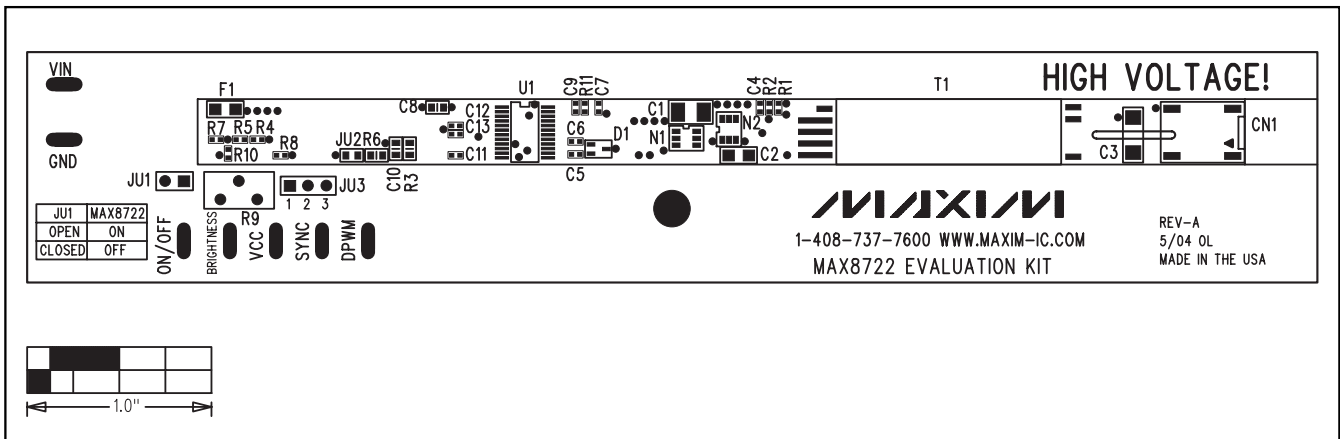


Figure 3. MAX8722 EV Kit Component Placement Guide—Component Side

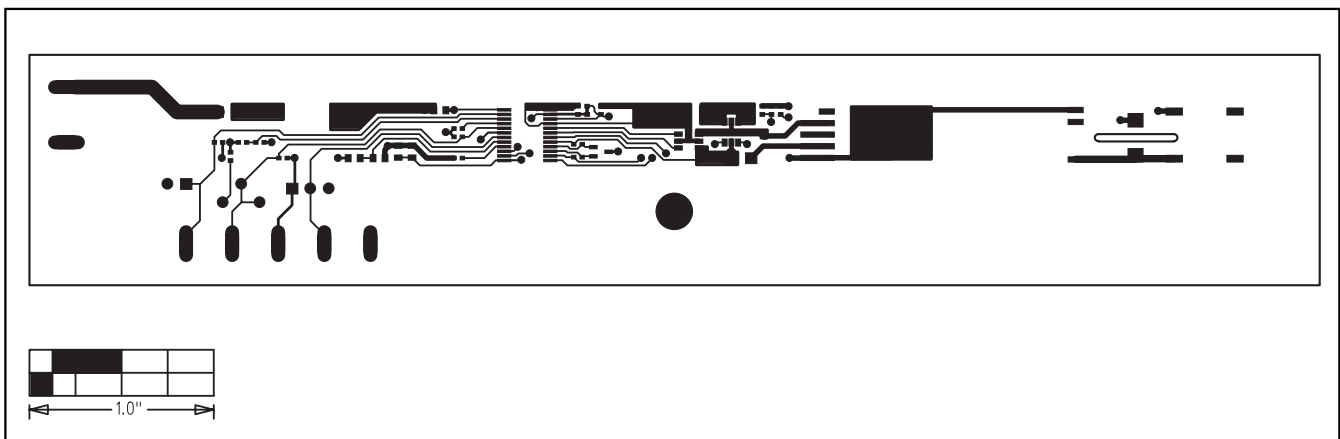


Figure 4. MAX8722 EV Kit PC Board Layout—Component Side

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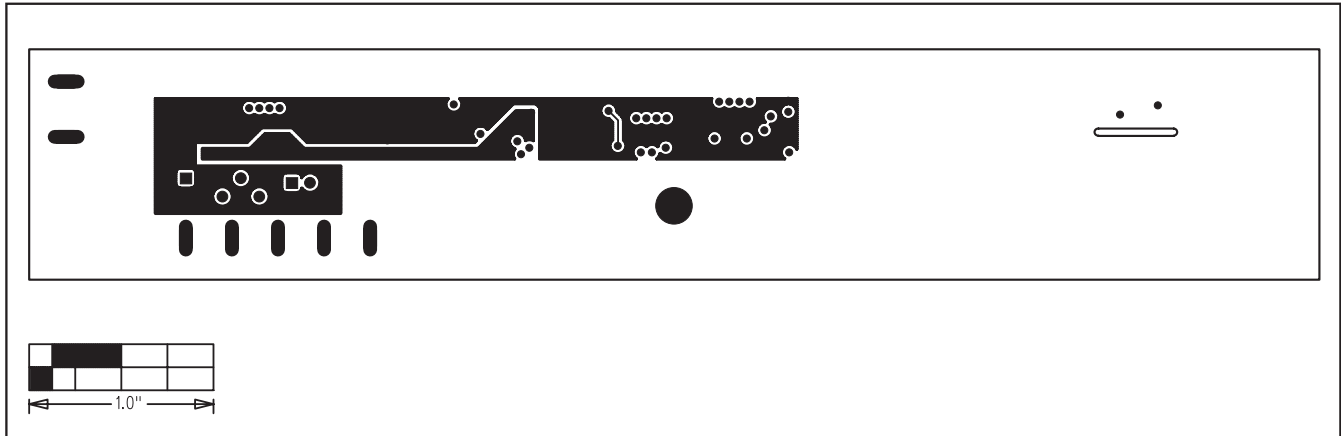


Figure 5. MAX8722 EV Kit PC Board Layout—Layer 2

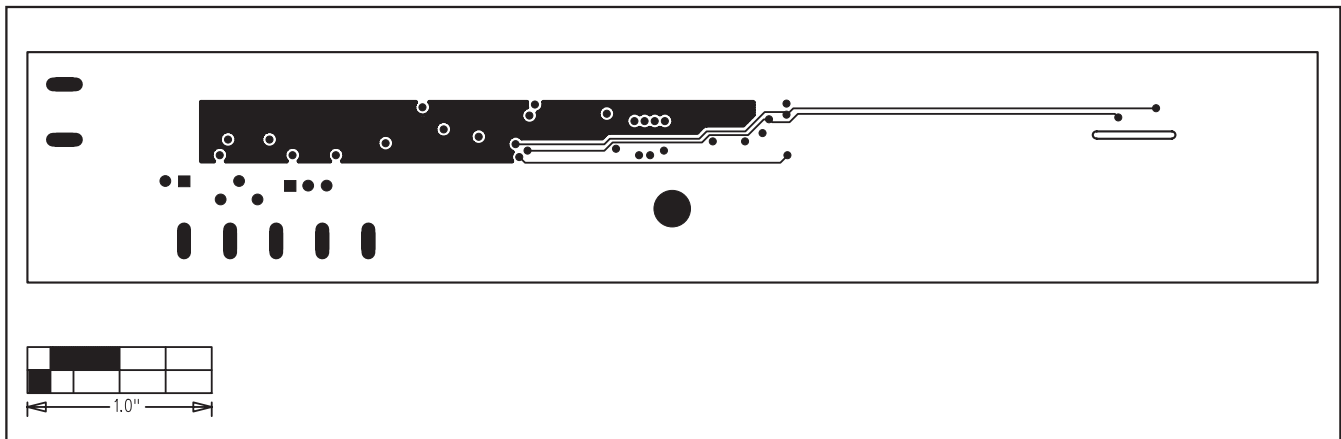


Figure 6. MAX8722 EV Kit PC Board Layout—Layer 3

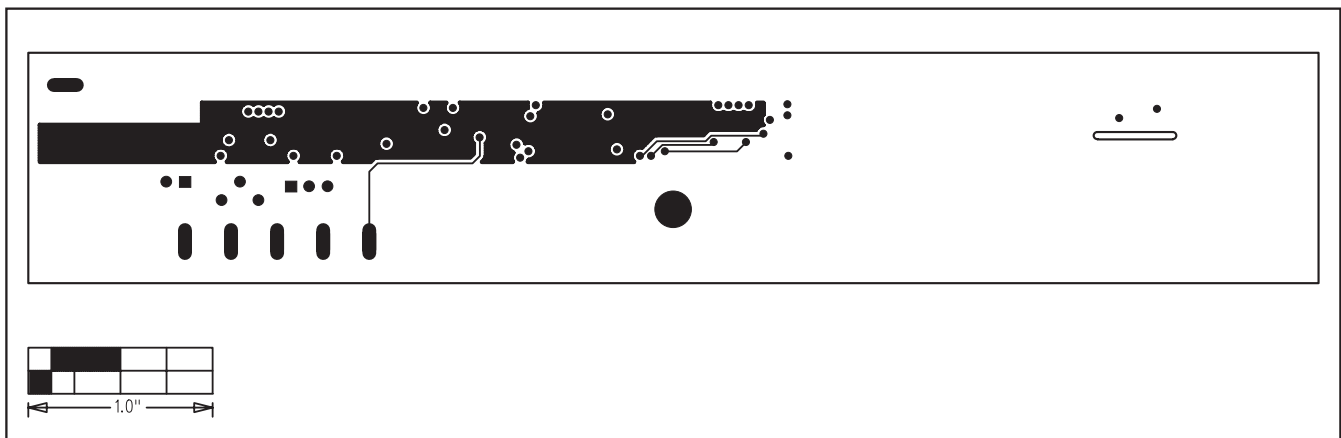


Figure 7. MAX8722 EV Kit PC Board Layout—Solder Side

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

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