

General Description

The MAX14874 evaluation kit (EV kit) is a fully assembled and tested circuit board that evaluates the MAX14874 dual relay/valve/motor driver

The EV kit operates from a single 4.5V to 36V supply and features an on-board linear regulator to generate a 3.3V logic supply. A terminal block allows for easy connections to evaluate operation with relays, valves, and/or motors.

Features

- Operates from a Wide 4.5V to 36V Supply
- Proven PCB Layout
- Fully Assembled and Tested

Ordering Information appears at end of data sheet.

Quick Start

Recommended Equipment

- MAX14874 EV kit
- 24V, 2A power supply
- 50kHz function generator
- DC brushed motor

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation before exercising the full features of the device:

- 1) Verify that all the jumpers are in their default positions, as shown in [Table 1](#).
- 2) Connect the EN1 jumper (J5) to 1-2, so the M1 driver is enabled.
- 3) Connect the 24V DC power supply on the VDD and GND connectors on the EV kit board.
- 4) Connect the DC brushed motor to the M1 and GND terminals on the J8 connector.
- 5) Set the function generator to output a 0V–3.3V 50kHz signal.
- 6) Remove the shunt on the J3 jumper and connect the function generator to the IN1 test point (TP3).
- 7) Turn on the 24V supply.
- 8) Turn on the function generator.

Detailed Description

The MAX14874 EV kit is a fully tested circuit board demonstrating the capabilities of the MAX14874 relay/valve/motor driver.

On-Board LDO

The MAX15006A (U1) on-board LDO generates 3.3V for the logic supply (VL). Close the J2 jumper to use the MAX15006 to power VL.

To use an external supply for VL, open the J2 jumper and connect the external supply to pin 2 of the jumper.

Fault Indicator LED

The $\overline{\text{FAULT}}$ output asserts low when an overcurrent condition exists on M1 or M2 or when the device goes into thermal shutdown. The on-board LED (DS1) turns on when $\overline{\text{FAULT}}$ asserts. The LED turns off when $\overline{\text{FAULT}}$ deasserts.

Monitoring the M1/M2 Current

Both COM1 and COM2 are connected to GND through 100mΩ resistors, for easy current monitoring. Connect a scope probe to the COM1 or COM2 pins (or on the J7 header) to monitor the current through the driver.

Table 1. Jumper Descriptions

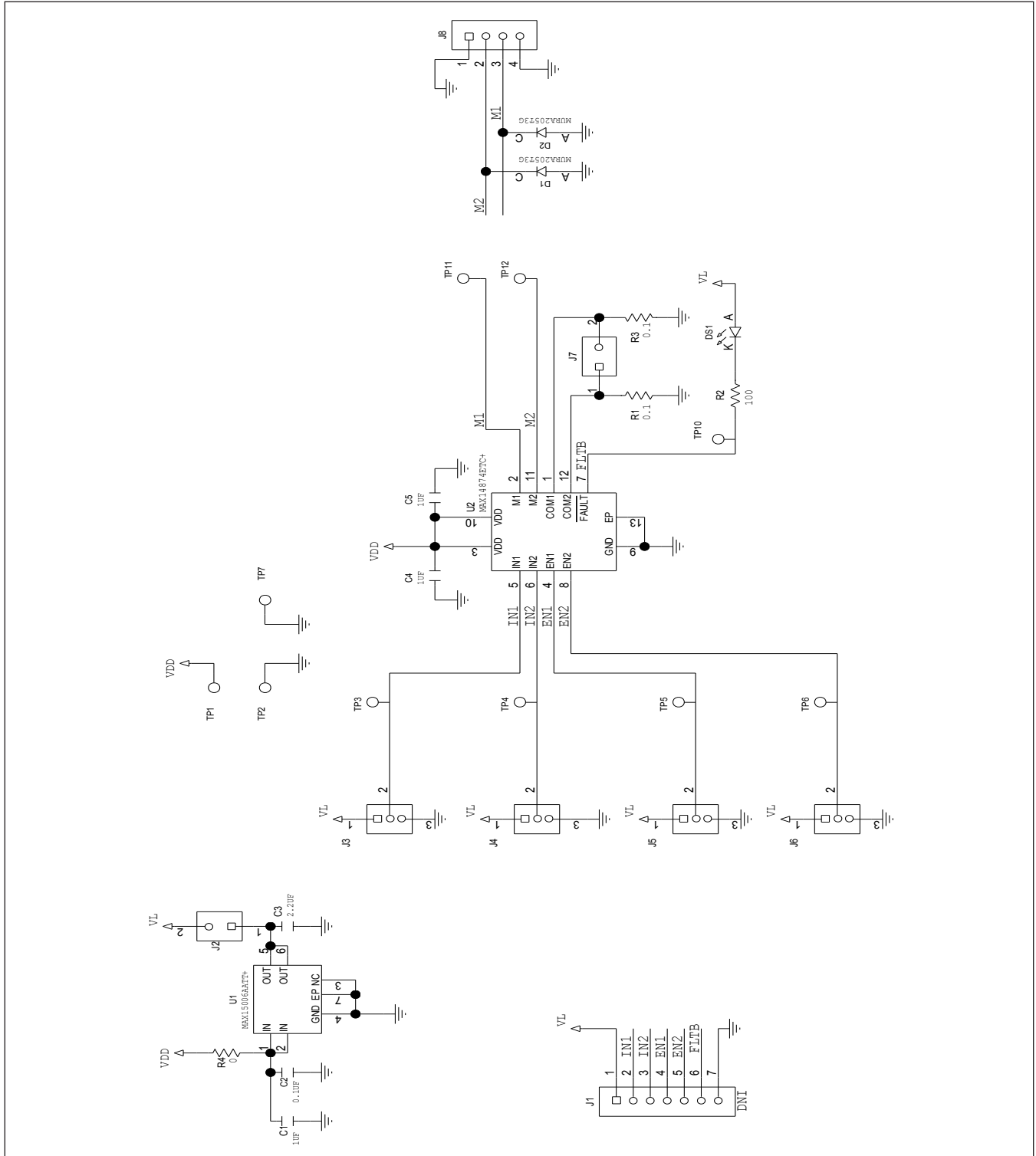
JUMPER	SHUNT POSITON	DESCRIPTION
J2	Open	VL is open.
	Closed*	VL is connected to the MAX15006A circuit. VL is 3.3V.
J3	1-2	IN1 is connected to VL.
	2-3*	IN1 is connected to GND.
J4	1-2	IN2 is connected to VL.
	2-3*	IN2 is connected to GND.
J5	1-2	EN1 is connected to VL. M1 driver is enabled.
	2-3*	EN1 is connected to GND. M1 driver is disabled.
J6	1-2	EN2 is connected to VL. M2 driver is enabled.
	2-3*	EN2 is connected to GND. M2 driver is disabled.
J7	Open*	COM1 is not connected to COM2.
	Closed	COM1 is connected to COM2.

*Default position.

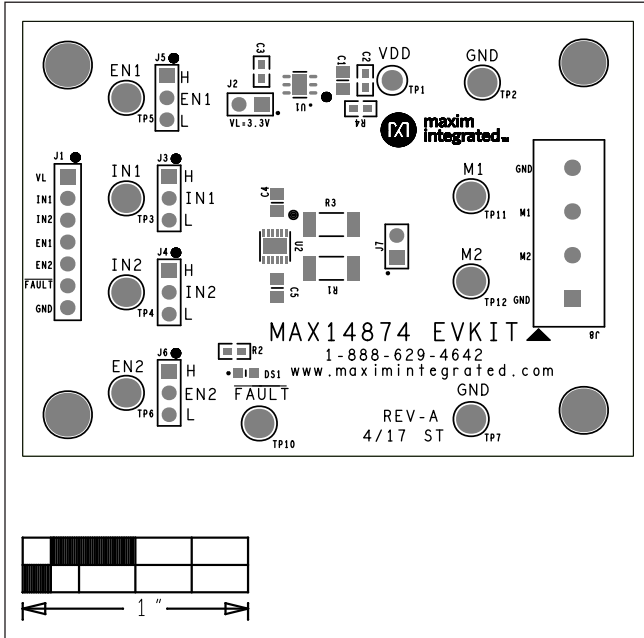
MAX14874 EV Kit Bill of Materials

ITEM	REF_DES	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C1, C4, C5	3	GRM21BR71H105KA12; CL21B105KBFNNNE; C2012X7R1H105K085AC; UMK212B7105KG	MURATA; SAMSUNG ELECTRONICS; TDK; TAIYO YUDEN	1UF	CAPACITOR; SMT (0805); CERAMIC CHIP; 1UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
2	C2	1	GRM188R72A104KA35; CC0603KRX7R0BB104	MURATA; TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 100V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
3	C3	1	GRM188R71A225KE15; CL10B225KP8NNN	MURATA; SAMSUNG	2.2UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 2.2UF; 10V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
4	D1, D2	2	MURA205T3G	ON SEMICONDUCTOR	MURA205T3G	DIODE; RECT; SMA (DO-214AC); PIV=50V; IF=2A
5	DS1	1	LTST-C190EKT	LITE-ON ELECTRONICS; INC.	LTST-C190EKT	DIODE; LED; STANDARD; RED; SMT (0603); PIV=2V; IF=0.02A
6	J1	1	PBC07SAAN	SULLINS ELECTRONICS CORP.	PBC07SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 7PINS; -65 DEGC TO +125 DEGC
7	J2, J7	2	PCC02SAAN	SULLINS	PCC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 2PINS; -65 DEGC TO +125 DEGC
8	J3-J6	4	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC
9	J8	1	OSTTC042162	ON-SHORE TECHNOLOGY INC	OSTTC042162	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK ONE PIECE WIRE PROTECTOR; COLOR BLUE; RIGHT ANGLE; 4PINS
10	R1, R3	2	WSL2010R1000FEA18	VISHAY DALE	0.1	RESISTOR; 2010; 0.1 OHM; 1%; 75PPM; 1W; THICK FILM
11	R2	1	CRCW0603100RPF; ERJ- 3EKF1000	VISHAY DALE/PANASONIC	100	RESISTOR; 0603; 100 OHM; 1%; 100PPM; 0.10W; THICK FILM
12	R4	1	CR0603-16W-000T; CR0603- 16W-000RJT	VENKEL LTD.	0	RESISTOR; 0603; 0 OHM; 5%; JUMPER; 0.063W; THICK FILM
13	SU1-SU7	7	STC02SYAN	SULLINS ELECTRONICS CORP.	STC02SYAN	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.256IN; BLACK; INSULATION=PBT CONTACT=PHOSPHOR BRONZE; COPPER PLATED TIN OVERALL
14	TP1	1	5010	KEYSTONE	N/A	MULTIPURPOSE;
15	TP2, TP7	2	5011	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
16	TP3-TP6, TP10-TP12	7	5014	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
17	U1	1	MAX15006AATT+	MAXIM	MAX15006AAT T+	IC; VREG; ULTRA-LOW QUIESCENT-CURRENT LINEAR REGULATOR; TDFN6-EP 3X3
18	U2	1	MAX14874ETC+	MAXIM	MAX14874ETC +	EVKIT PART-IC; TDFN12-EP; DUAL 1/2H BRIDGE VALVE/MOTOR DRIVER; PACKAGE CODE: TD1233+1; PACKAGE OUTLINE: 21-0664
19	PCB	1	MAX14874	MAXIM	PCB	PCB:MAX14874
TOTAL		40				

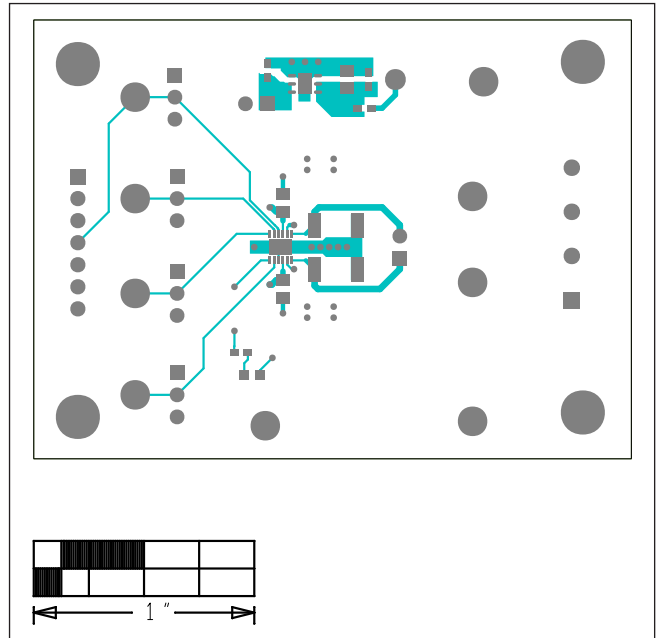
MAX14874 EV Kit Schematic



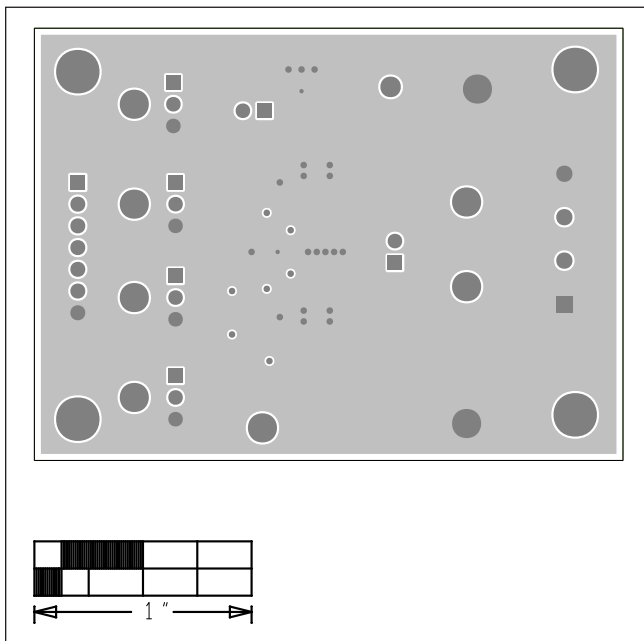
MAX14874 EV Kit PCB Layout Diagrams



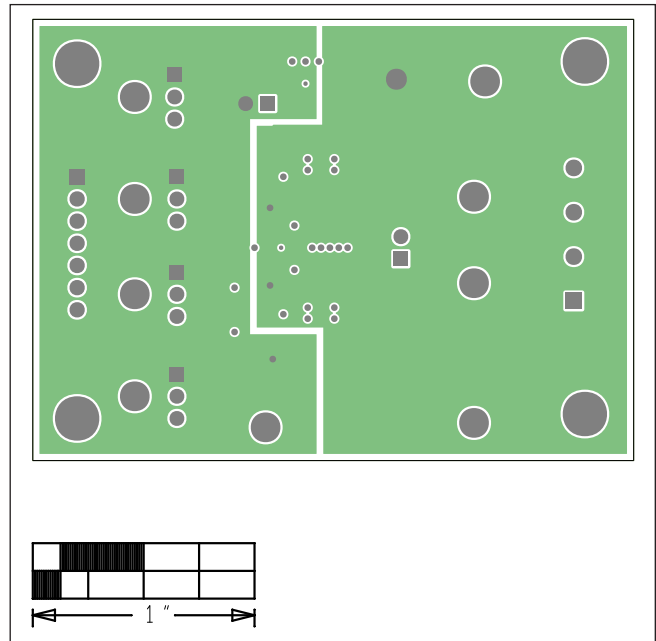
MAX14874 EV Kit—Top Silkscreen



MAX14874 EV Kit—Top

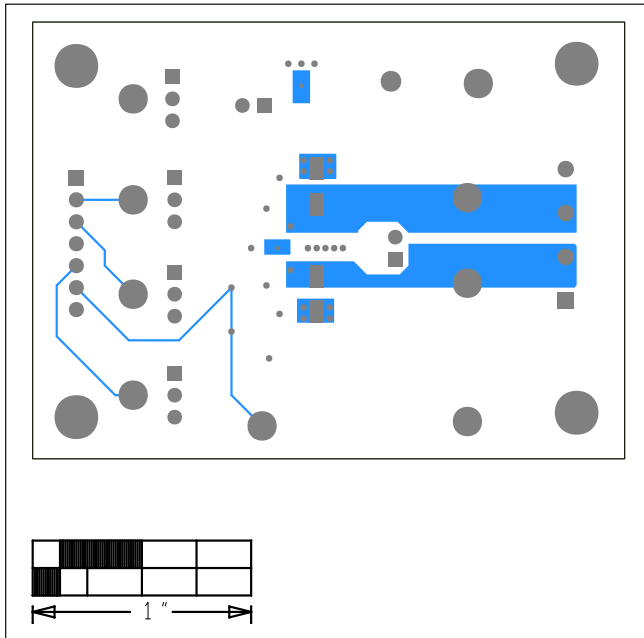


MAX14874 EV Kit—Internal 2

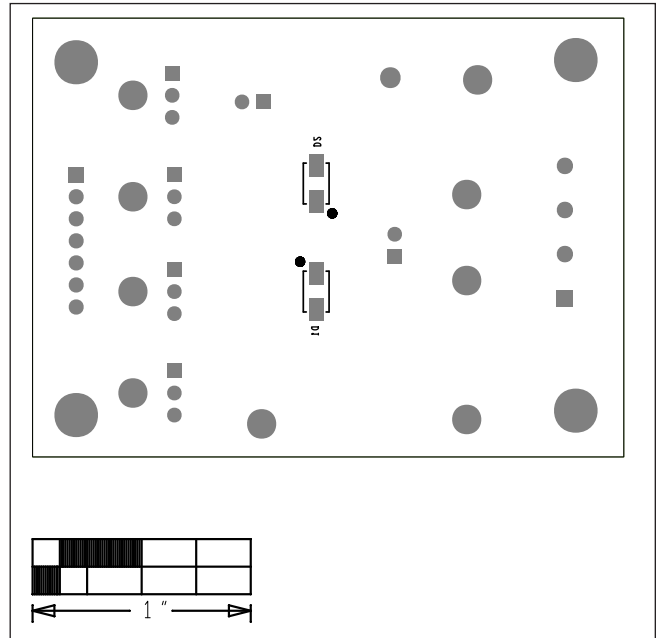


MAX14874 EV Kit—Internal 3

MAX14874 EV Kit PCB Layout Diagrams (continued)



MAX14874 EV Kit—Bottom



MAX14874 EV Kit—Bottom Silkscreen

Ordering Information

PART	TYPE
MAX14874EVKIT#	EV Kit

#Denotes RoHS compliant.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	6/17	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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