

MAX38904B TDFN Evaluation Kit

Evaluates: MAX38904B

General Description

The MAX38904B TDFN evaluation kit (EV kit) evaluates the MAX38904B in a TDFN package. The MAX38904B is a low noise linear regulator. The EV kit operates over an input range of 1.7V to 5.5V and provides a resistor configurable output voltage range from 0.6V to 5.0V. The EV kit can deliver up to 2A of current.

Features

- Evaluates the MAX38904B IC in a 10-pin (3mm x 3mm) TDFN
- 1.7V to 5.5V Input Range
- 0.6V to 5.0V Resistor Configurable Output Voltage (Default Output Set to 3.3V)
- Up to 2A Output Current
- Proven 2-Layer 1-oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX38904B TDFN EV Kit Files

FILE	DESCRIPTION
MAX38904B TDFN EV Kit BOM	EV Kit Bill of Material
MAX38904B TDFN EV Kit PCB Layout	EV Kit Layout
MAX38904B TDFN EV Kit Schematic	EV Kit Schematic

Ordering Information appears at end of data sheet.

Quick Start

Required Equipment

- MAX38904B TDFN EV kit
- 5.5V, 5A DC power supply
- Electronic load capable of 2A
- Digital voltmeter (DVM)

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation. **Caution: Do not turn on power supply until all connections are completed.**

- 1) Verify that jumper JU101 is shunted on pins 1 and 2 (EV kit enabled).
- 2) Connect the 5.5V power supply between the IN and nearest GND terminal posts.
- 3) Connect the 2A electronic load between the OUT and nearest GND terminal posts.
- 4) Connect the DVM between the OUT and nearest GND terminal posts.
- 5) Turn on the power supply.
- 6) Verify that the voltage at the OUT terminal post is approximately 3.3V.
- 7) Decrease the power supply to 3.6V (To minimize power dissipation at full load).
- 8) Enable the electronic load.
- 9) Verify that the voltage at the OUT terminal post is 3.3V within the device and the resistor divider's accuracy specifications.

Detailed Description of Hardware

The MAX38904B TDFN EV kit evaluates the MAX38904B in a TDFN package. The MAX38904B is a low noise linear regulator that delivers 2A of output current with only 5.1µV_{RMS} of output noise from 10Hz to 100kHz. This regulator requires only 100mV of input-to-output headroom at full load.

The MAX38904B TDFN EV kit operates over an input range of 1.7V to 5.5V. The EV kit comes with the MAX38904BATD+ installed and the output voltage is set to 3.3V by 1% accurate feedback resistors R101 and R102. The EV kit output can be reconfigured to other voltages from 0.6V to 5.0V by replacing feedback resistors R101 and R102. Refer to the *MAX38904 IC data sheet* for feedback resistor calculation.

Component Suppliers

SUPPLIER	WEBSITE
Kemet	www.kemet.com
Murata/TOKO	www.murata.com
TDK	www.tdk.com
Samsung Electro-Mechanics America, Inc.	www.samsungsem.com

Note: Indicate that you are using the MAX38904B when contacting these component suppliers.

EN (Enable)

The EV kit provides a jumper JU101 to enable or disable the MAX38904B. Refer to [Table 1](#) for jumper setting of jumper JU101.

Table 1. EN (JU101)

SHUNT POSITION	DESCRIPTION
1-2*	Enabled. EN = IN*
2-3	Disabled. EN = GND

*Default position.

Ordering Information

PART	TYPE
MAX38904BEVK#TDFN	EV Kit

#Denotes RoHS

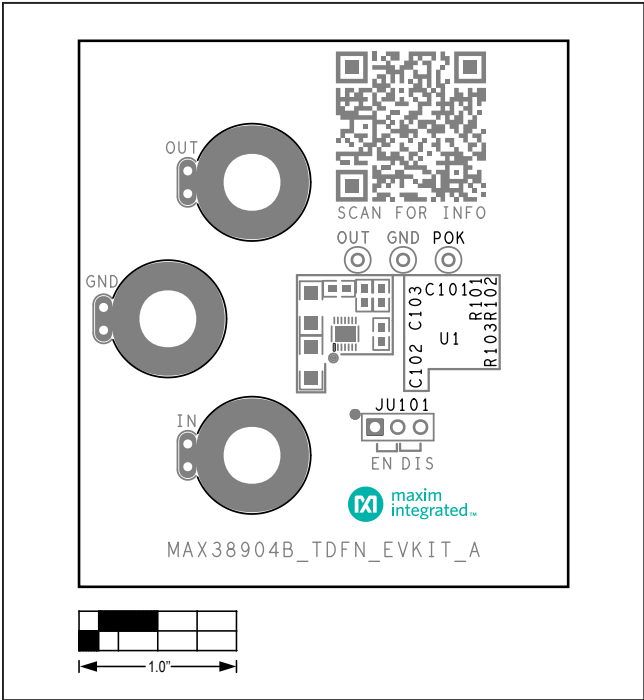
MAX38904B TDFN EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C101	—	1	C0603C473K5RAC; GRM188R71H473KA61; GCM188R71H473KA55; CGA3E2X7R1H473K080AA	KEMET;MURATA; MURATA;TDK	0.047μF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.047μF; 50V; TOL = 10%; MODEL = X7R; TG = -55°C TO +125°C; TC = X7R
2	C102, C103	—	2	GRM31CR70J226K	MURATA	22μF	CAPACITOR; SMT (1206); CERAMIC CHIP; 22μF; 6.3V; TOL = 10%; MODEL = GRM SERIES; TG = -55°C TO +125°C; TC = X7R
3	GND, IN, OUT	—	3	108-0740-001	EMERSON NETWORK POWER	108-0740-001	CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN
4	GND_PAD, IN_PAD, OUT_PAD	—	3	9020 BUSS	WEICO WIRE	MAXIMPAD	EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG
5	JU101	—	1	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS
6	POK	—	1	5002	KEystone	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 0.3IN; BOARD HOLE = 0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;
7	R101	—	1	CRCW0603909KFK	VISHAY DALE	909K	RESISTOR; 0603; 909KΩ; 1%; 100PPM; 0.1W; THICK FILM
8	R102	—	1	ERJ-3EKF2003	PANASONIC	200K	RESISTOR; 0603; 200KΩ; 1%; 100PPM; 0.1W; THICK FILM
9	R103	—	1	CRCW0603100KFK; RC0603FR-07100KL; RC0603FR-13100KL; ERJ-3EKF1003; AC0603FR-07100KL	VISHAY;YAGEO; YAGEO;PANASONIC; YAGEO	100K	RESISTOR; 0603; 100K; 1%; 100PPM; 0.10W; THICK FILM
10	SU1	—	1	STC02SYAN	SULLINS ELECTRONICS CORP.	STC02SYAN	TEST POINT; JUMPER; STR; TOTAL LENGTH = 0.256IN; BLACK; INSULATION = PBT CONTACT = PHOSPHOR BRONZE; COPPER PLATED TIN OVERALL
11	TP_GND	—	1	5001	KEystone	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 0.3IN; BOARD HOLE = 0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
12	TP_OUT	—	1	5000	KEystone	N/A	TEST POINT; PIN DIA = 0.1IN; TOTAL LENGTH = 0.3IN; BOARD HOLE = 0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;
13	U1	—	1	MAX38904B-ATD+	MAXIM	MAX38904B-ATD+	EVKIT PART - IC; MAX38904B-ATD+; 2A LOW NOISE LDO LINEAR REGULATOR; PACKAGE OUTLINE DEVICE: 21-0137
14	PCB	—	1	MAX38904BTDFN	MAXIM	PCB	PCB;MAX38904BTDFN
15	C104	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR
16	R104	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 RESISTOR
17	R105	DNP	0	N/A	N/A	SHORT	PACKAGE OUTLINE 0603 RESISTOR
TOTAL			19				

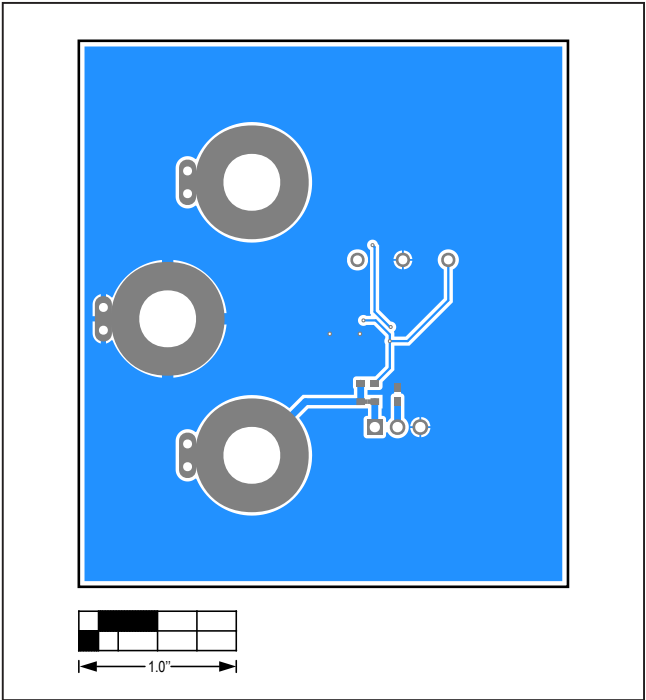
The schematic shows the MAX3894BATD+ (U1) with the following connections:

- IN (MAXIMPAD):** Connected to pin 1 (IN).
- IN (108-0740-001):** Connected to pin 2 (IN).
- GND (MAXIMPAD):** Connected to pin 5 (GND).
- GND (108-0740-001):** Connected to pin 5 (GND).
- 1.7V TO 5.5V:** Connected to pin 3 (IN).
- R105 (SHORT):** Connected between pin 3 (IN) and pin 4 (IN).
- R104 (OPEN):** Connected between pin 4 (IN) and pin 6 (EN).
- JU101 (PECISSAN):** Connected between pin 6 (EN) and pin 7 (GS).
- C102 (22UF):** Connected between pin 7 (GS) and ground.
- C104 (OPEN):** Connected between pin 7 (GS) and ground.
- OUT (MAXIMPAD):** Connected to pin 14 (OUT).
- OUT (108-0740-001):** Connected to pin 13 (OUT).
- C101 (0.047UF):** Connected between pin 13 (OUT) and pin 12 (OUT).
- R101 (909K):** Connected between pin 12 (OUT) and pin 11 (OUT).
- R102 (200K):** Connected between pin 11 (OUT) and ground.
- R103 (100K):** Connected between pin 11 (OUT) and pin 10 (BYP).
- C103 (22UF):** Connected between pin 10 (BYP) and ground.
- POK:** Connected to pin 9 (POK).
- EP:** Connected to pin 8 (EP).

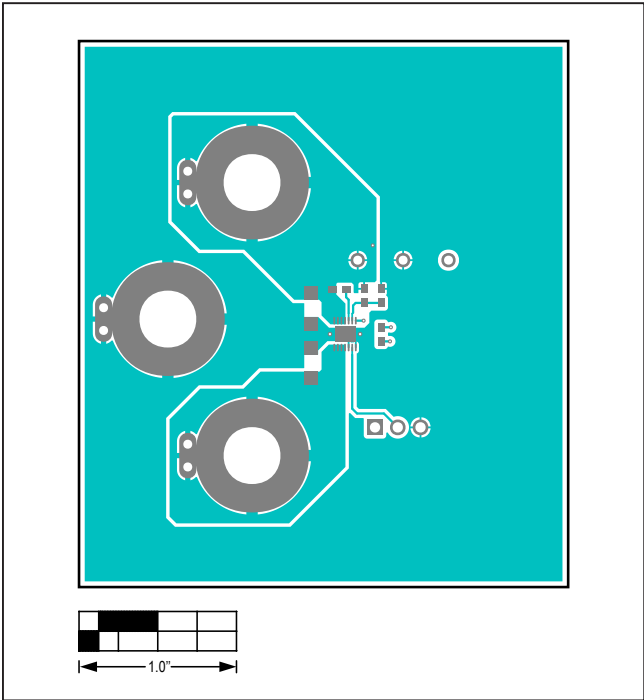
MAX38904B TDFN EV Kit PCB Layout Diagrams



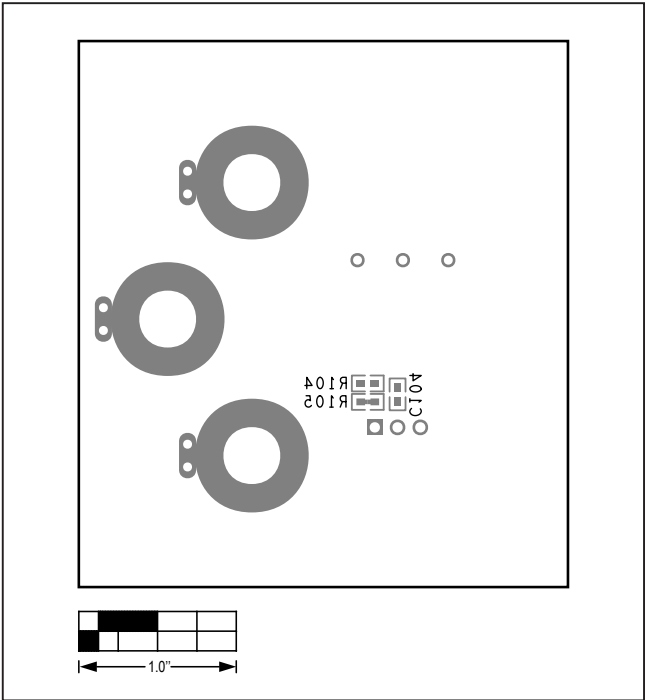
MAX38904B TDFN EV Kit PCB Layout—Top Silkscreen



MAX38904B TDFN EV Kit PCB Layout—Bottom Layer



MAX38904B TDFN EV Kit PCB Layout—Top Layer



MAX38904B TDFN EV Kit PCB Layout—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	2/19	Initial release	—

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9