MAX38904A TDFN Evaluation Kit

Evaluates: MAX38904A

General Description

The MAX38904A TDFN evaluation kit (EV kit) evaluates the MAX38904A in a TDFN package. The MAX38904A is a low noise linear regulator. The EV Kit operates over an input range of 1.7V to 5.5V and provides a jumper selectable output voltage range from 1.2V to 5.0V. The EV Kit can deliver up to 2A of current.

Features

- Evaluates the MAX38904A IC in a 14-pin (3mm x 3mm) TDFN
- 1.7V to 5.5V Input Range
- 1.2V to 5.0V Jumper Configurable Output Voltage
- Up to 2A Output Current
- Proven 2-Layer 1-oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX38904A TDFN EV Kit Files

FILE	DECRIPTION
MAX38904A TDFN EV Kit BOM	EV Kit Bill of Material
MAX38904A TDFN EV Kit PCB Layout	EV Kit Layout
MAX38904A TDFN EV Kit Schematic	EV Kit Schematic

***Ordering Information* appears at end of data sheet.**

Quick Start

Required Equipment

- MAX38904A 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) Verify that jumper SELA is shunted on pins 2 and 3, and jumper SELB is shunted on only 1 pin (OUT = 3.3V).
3) Connect the 5.5V power supply between the IN and nearest GND terminal posts.
4) Connect the 2A electronic load between the OUT and nearest GND terminal posts.
5) Connect the DVM between the OUT and nearest GND terminal posts.
6) Turn on the power supply.
7) Verify that the voltage at the OUT terminal post is approximately 3.3V.
8) Decrease the power supply to 3.6V (To minimize power dissipation at full load).
9) Enable the electronic load.
10) Verify that the voltage at the OUT terminal post is 3.3V within the device accuracy specification.

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Detailed Description of Hardware

The MAX38904A TDFN EV kit evaluates the MAX38904A in a TDFN package. The MAX38904A 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 MAX38904A TDFN EV kit operates over an input range of 1.7V to 5.5V. The EV kit comes with the MAX38904AATD+ installed and the output voltage is jumper selectable between nine voltage levels: 1.2V, 1.5V, 1.8V, 2.5V, 3.0V, 3.1V, 3.3V, 4.0V, and 5.0V.

EN (Enable)

The EV kit provides a jumper JU101 to enable or disable the MAX38904A. Refer to Table 1 for jumper setting of jumper JU101.

Output Selection (SELA and SELB)

The EV kit provides a set of jumpers SELA and SELB to configure the output voltage of the MAX38904A. Refer to Table 2 for jumper setting of jumpers SELA and SELB.

Table 1. EN (JU101)

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

**Default position.*

Table 2. Output Selection (SELA and SELB)

SELA		SELB		OUTPUT VOLTAGE
SHUNT POSITION	SELA CONNECTION	SHUNT POSITION	SELB CONNECTION	
Not Installed	Hi-Z	1-2	IN	1.2V
1-2	IN	Not Installed	Hi-Z	1.5V
Not Installed	Hi-Z	2-3	GND	1.8V
Not Installed	Hi-Z	Not Installed	Hi-Z	2.5V
2-3	GND	2-3	GND	3.0V
2-3	GND	1-2	IN	3.1V
2-3*	GND*	Not Installed*	Hi-Z*	3.3V*
1-2	IN	2-3	GND	4.0V
1-2	IN	1-2	IN	5.0V

**Default position.*

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 MAX38904A when contacting these component suppliers.*

Ordering Information

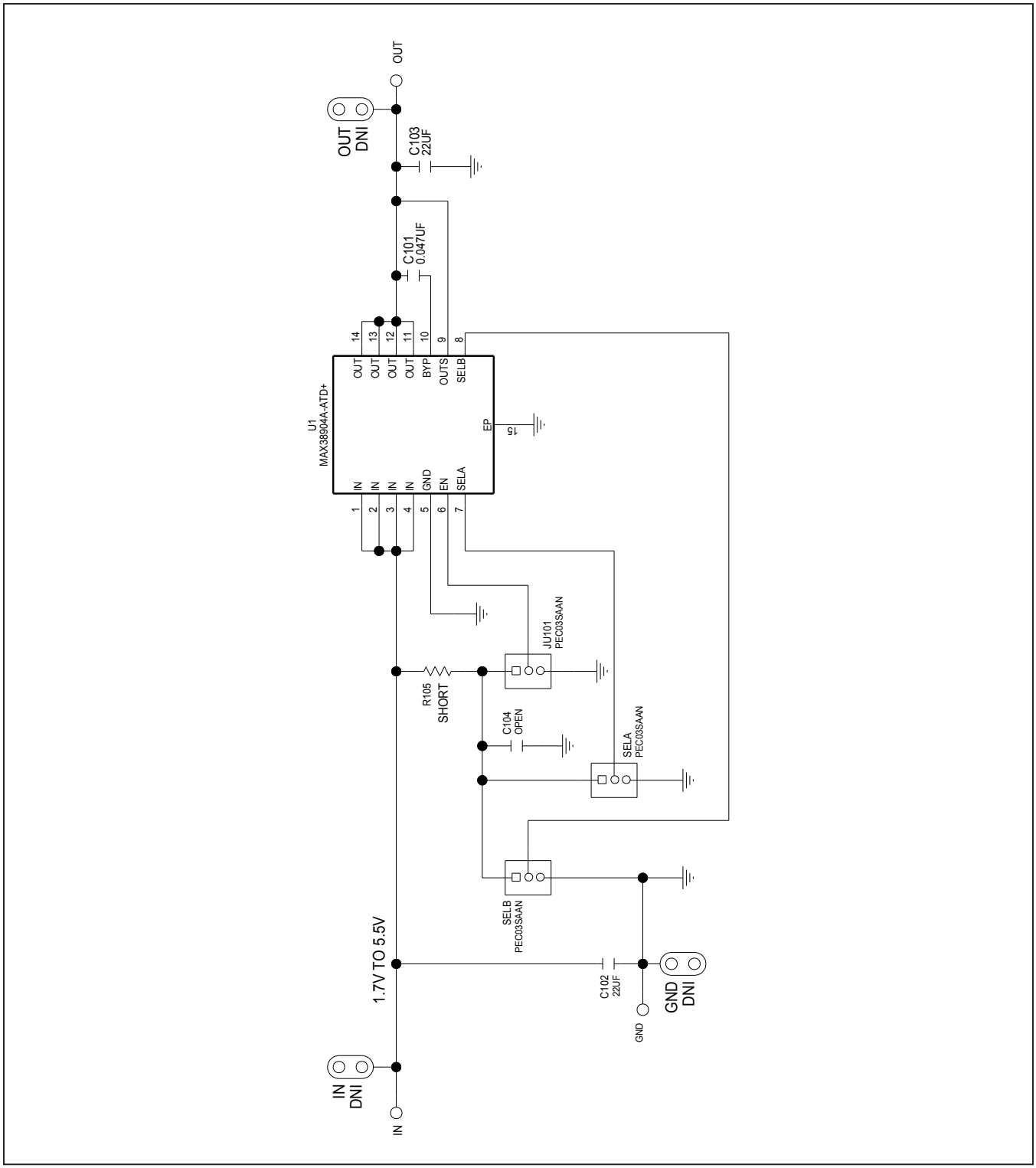
PART	TYPE
MAX38904AEVK#TDFN	EV Kit

#Denotes RoHS

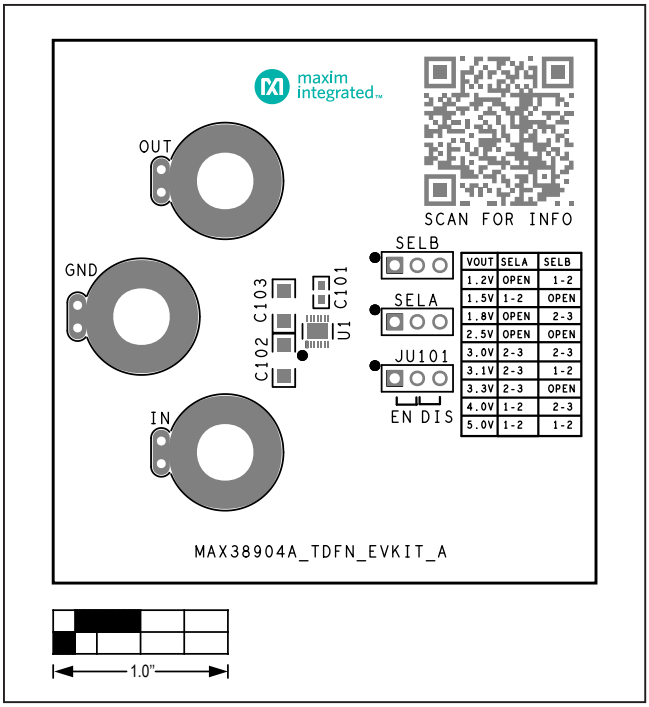
MAX38904A TDFN EV Kit Bill of Materials

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	JU101, SELA, SELB	—	3	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS
5	SU1-SU3	—	3	STC02SYAN	SULLINS ELECTRONICS CORP.	STC02SYAN	TEST POINT; JUMPER; STR; TOTAL LENGTH = 0.256IN; BLACK; INSULATION = PBT CONTACT = PHOSPHOR BRONZE; COPPER PLATED TIN OVERALL
6	U1	—	1	MAX38904A-ATD+	MAXIM	MAX38904A-ATD+	EVKIT PART - IC; 1.7V-5.5VIN; 2A; PIN-SELECTABLE OUTPUT VOLTAGE; ENABLE LOW NOISE LDO LINEAR REGULATOR; PACKAGE OUTLINE: 21-0137; LAND PATTERN: 90-0063
7	PCB	—	1	MAX38904ATDFN	MAXIM	PCB	PCB:MAX38904ATDFN
8	GND_PAD, IN_PAD, OUT_PAD	DNP	0	9020 BUSS	WEICO WIRE	MAXIMPAD	EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG
9	C104	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR
10	R105	DNP	0	N/A	N/A	SHORT	PACKAGE OUTLINE 0603 RESISTOR
TOTAL			14				

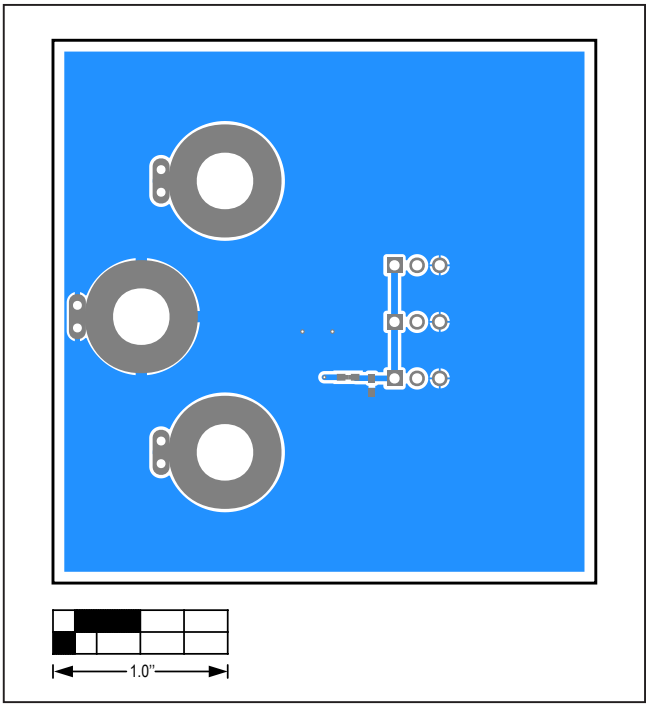
MAX38904A TDFN EV Kit Schematic



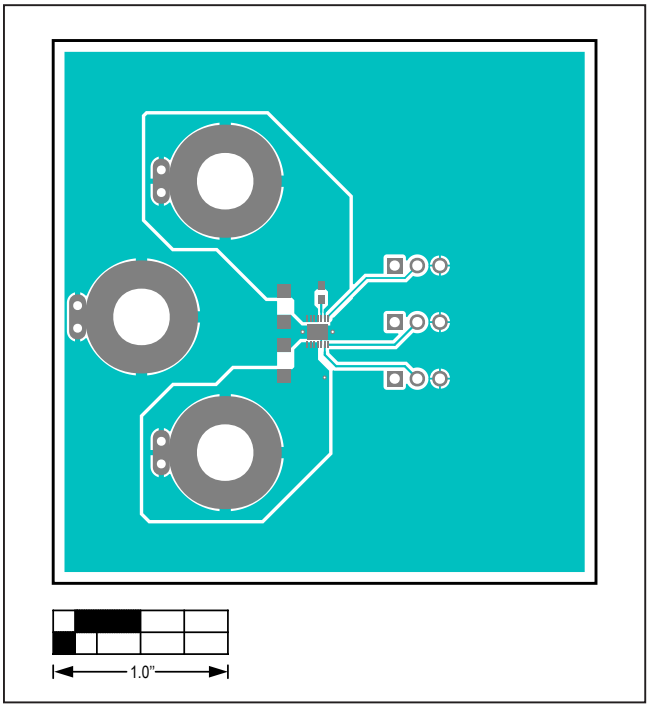
MAX38904A TDFN EV Kit PCB Layout Diagrams



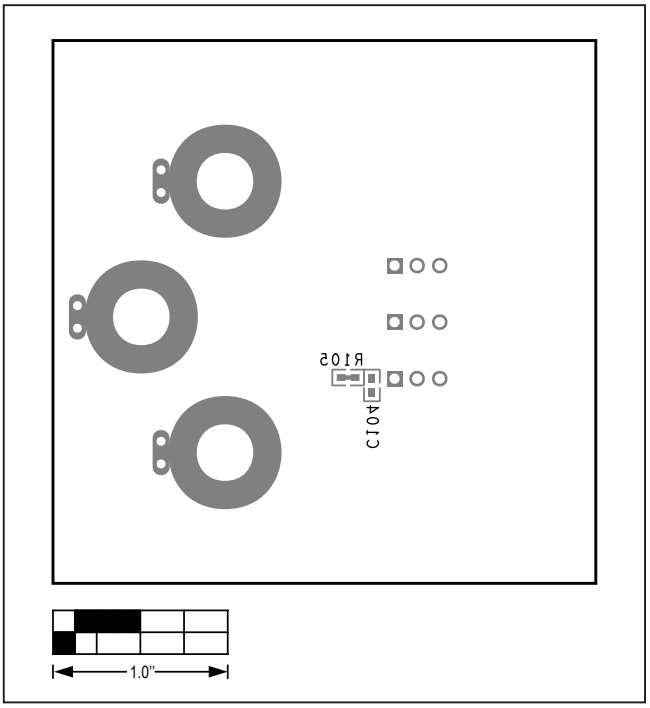
MAX38904A TDFN EV Kit PCB Layout—Top Silkscreen



MAX38904A TDFN EV Kit PCB Layout—Bottom Layer



MAX38904A TDFN EV Kit PCB Layout—Top Layer



MAX38904A TDFN EV Kit PCB Layout—Bottom Silkscreen

Revision History

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