MAX38902E Evaluation Kit

Evaluates: MAX38902E

General Description

The MAX38902E evaluation kit (EV kit) evaluates the MAX38902E IC. The MAX38902E is a low noise linear regulator in a TDFN package. The MAX38902E EV kit operates over an input range of 1.7V to 5.5V and provides any output voltage from 0.8V to 5.0V and delivers up to 500mA of current.

The EV kit comes with the MAX38902EATA+ installed.

Features

- Evaluates the MAX38902E IC in an 8-pin (2mm x 2mm) TDFN
- 1.7V to 5.5V Input Range
- 0.8V to 5.0V Resistor Configurable Output Voltage
- Up to 500mA Output Current
- Proven 2-Layer 1-oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX38902E EV Kit Files

FILE	DESCRIPTION
MAX38902E EV BOM	EV Kit Bill of Material
MAX38902E EV PCB Layout	EV Kit Layout
MAX38902E EV Schematic	EV Kit Schematic

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

Quick Start

Required Equipment

- MAX38902E EV kit
- 5.5V, 1A DC power supply
- Electronic load capable of 500mA
- 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 jumpers JU1 is in its default position, as shown in Table 1.
2) Connect the 5.5V power supply between the IN and nearest GND terminal posts.
3) Connect the 500mA 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 2.5V within the device and the resistor divider's accuracy specifications.
7) Decrease the power supply to 3.3V (To minimize power dissipation at full load).
8) Enable the electronic load.
9) Verify that the voltage at the OUT terminal post is 2.5V within the device and the resistor divider's accuracy specifications.

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Detailed Description of Hardware

The MAX38902E EV kit evaluates the MAX38902E IC. The MAX38902E is a low noise linear regulator that delivers 500mA of output current with only 14μV_{RMS} of output noise from 10Hz to 100kHz. The MAX38902E requires only 100mV of input-to-output headroom at full load.

The MAX38902E EV kit operates over an input range of 1.7V to 5.5V and delivers up to 500mA of current.

The MAX38902E EV kit comes with the MAX38902EATA+ installed and the output is resistor configured to 2.5V and can deliver 500mA of current. The output voltage on the EV Kit can be reconfigured to other voltages from 0.8V to 5.0V by replacing feedback resistors R1 and R2. Refer to the *MAX38902E IC data sheet* for feedback resistor calculation.

EN

The EV kit provides a jumper JU1 to enable or disable the MAX38902E. Refer to Table 1 for jumper setting of jumper JU1.

Table 1. EN (JU1)

JU1 SHUNT POSITION	DESCRIPTION
1-2*	Enabled. EN = IN
2-3	Disabled. EN = GND

**Default Position*

Ordering Information

PART	TYPE
MAX38902EEVKIT#	EV Kit

#Denotes RoHS compliant.

Component Suppliers

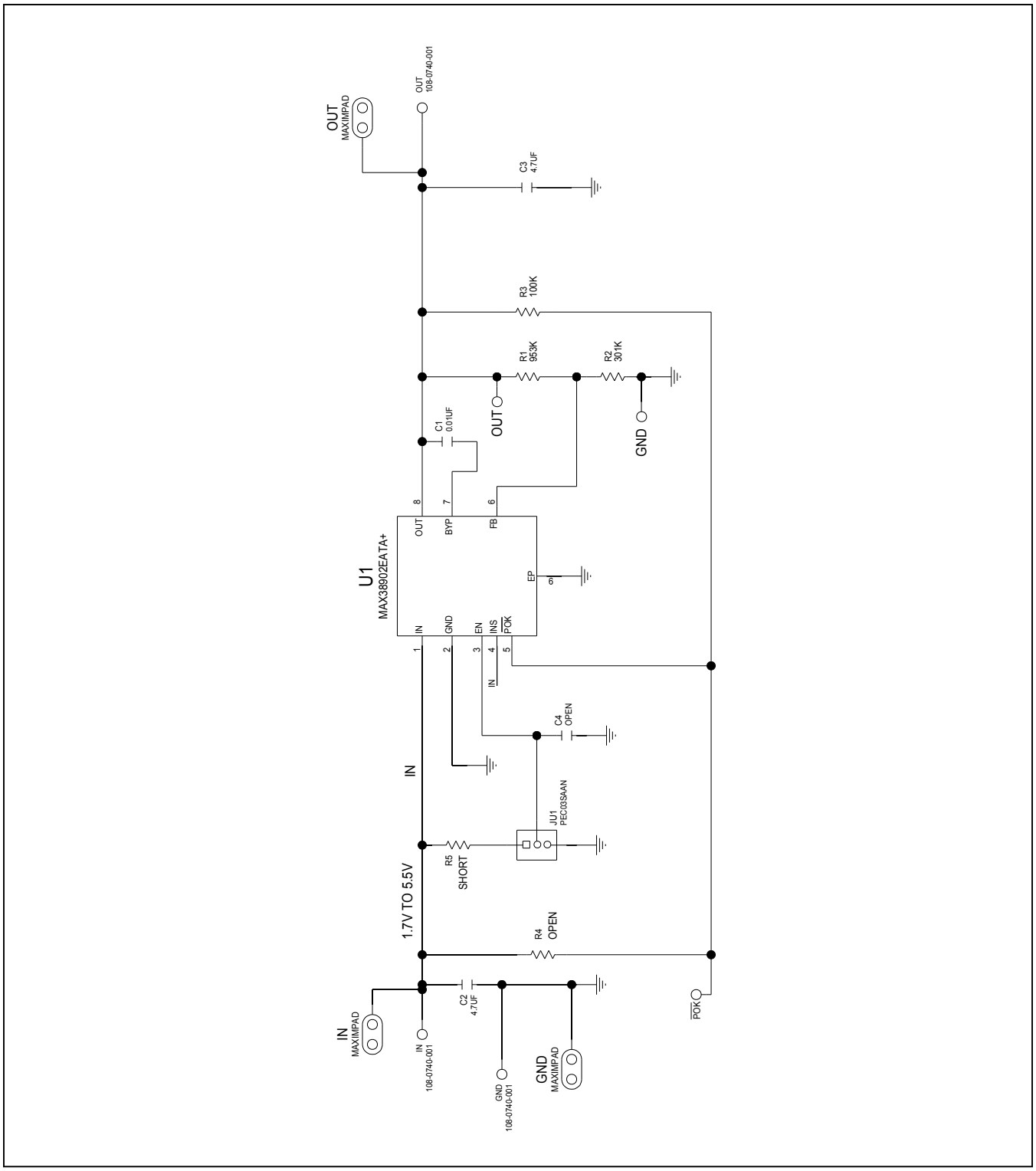
SUPPLIER	WEBSITE
Murata/TOKO	www.murata.com
TDK	www.tdk.com
Samsung Electro-Mechanics America. Inc.	www.samsungsem.com

Note: *Indicate that you are using the MAX38902E when contacting these component suppliers.*

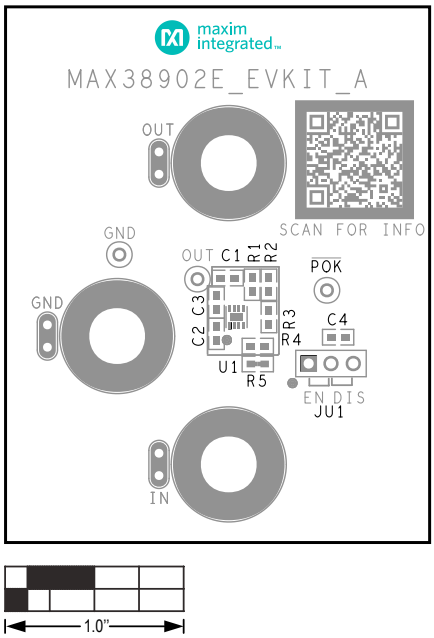
MAX38902E EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C1	—	1	C1608C0G1H103J080AA; CGA3E2C0G1H103J080AD; GRM1885C1H103JA01	TDK;TDK;MURATA	0.01UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.01UF; 50V; TOL = 5%; TG = -55°C to +125°C; TC = C0G
2	C2, C3	—	2	GMC10X7R475K6R3NT; CL10B475KQ8NQN	CAL-CHIP ELECTRONIC INC.; SAMSUNG EL	4.7UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7UF; 6.3V; TOL = 10%; MODEL=; 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	JU1	—	1	PEC03SAAN	SULLINS	PEC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS
5	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;
6	R1	—	1	ERJ-3EKF9533	PANASONIC	953K	RES; SMT (0603); 953K; 1%; ±100PPM/DEGC; 0.1W
7	R2	—	1	CPF0603F301KC	TE CONNECTIVITY	301K	RESISTOR; 0603; 301KΩ; 1%; 50PPM; 0.063W; THIN FILM
8	R3	—	1	CRCW0603100KFK; RC0603FR-07100KL; RC0603FR-13100KL; ERJ-3EKF1003; AC0603FR-07100KL	VISHAY DALE;YAGEO;YAGEO; PANASONIC	100K	RESISTOR; 0603; 100K; 1%; 100PPM; 0.10W; THICK FILM
9	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
10	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;
11	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;
12	U1	—	1	MAX38902EATA+	MAXIM	MAX38902EATA+	EVKIT PART - IC; MAX38902EATA+; 14MICRO VRMS LOW NOISE 500 MILLIAMPERE LDO LINEAR REGULATOR; PACKAGE OUTLINE DRAWING: 21-0168; PACKAGE CODE: T822+3C; LAND PATTERN: 90-0065
13	PCB	—	1	MAX38902E	MAXIM	PCB	PCB:MAX38902E
14	BUMP1-BUMP4	DNI	4	SJ-5003(BLACK)	3M ELECTRONIC SOLUTIONS DIVISION	SJ-5003(BLACK)	BUMPER; BLACK-HEMISPHERICAL SHAPE EVKIT EH0231; 0.44D/0.2BH; RESILIENT ELASTOMER POLYURETHANE
15	C1	DNP	0	C1608C0G1E103J	TDK	0.01UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.01UF; 25V; TOL = 5%; MODEL=; TG = -55°C TO +125°C; TC = C0G
16	C2	DNP	0	C1608X5R1C475K080AC	TDK/TAIYO YUDEN	4.7UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7UF; 16V; TOL = 10%; MODEL=; TG = -55°C TO +85°C; TC = X5R
17	C2	DNP	0	GRM188C71A475KE11; C1608X7S1A475K080AC	MURATA; TDK	4.7UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7UF; 10V; TOL = 10%; TG = -55°C TO +125°C; TC = X7S
18	C4	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR
19	R4	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 RESISTOR
20	R5	DNP	0	N/A	N/A	SHORT	PACKAGE OUTLINE 0603 RESISTOR
TOTAL			20				

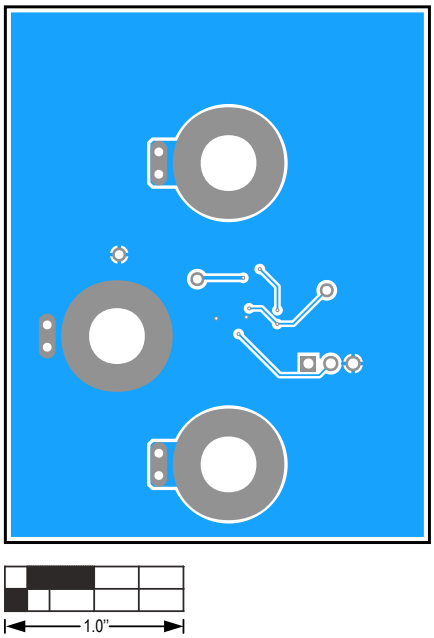
MAX38902E EV Kit Schematic



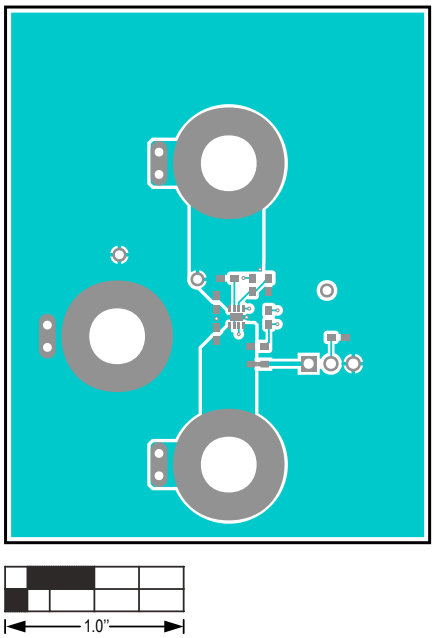
MAX38902E EV Kit PCB Layout Diagrams



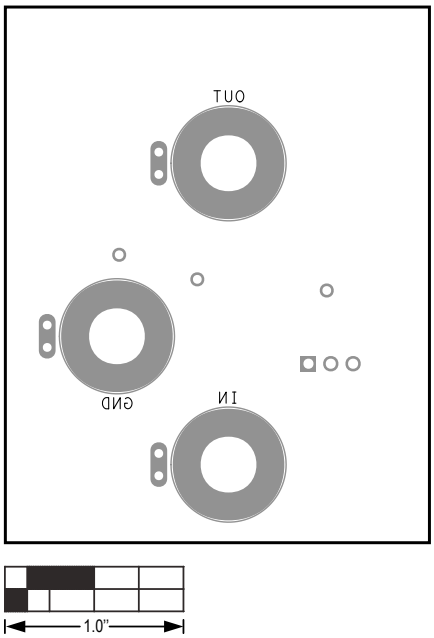
MAX38902E EV Kit—Top Silkscreen



MAX38902E EV Kit—Bottom View



MAX38902E EV Kit—Top View



MAX38902E EV Kit—Bottom Silkscreen

Revision History

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

